JMAP
REGENTS BY TYPE

The NY Integrated Algebra Regents Exams
Fall 2007-August 2013

Integrated Algebra Multiple Choice Regents Exam Questions

1 The box-and-whisker plot below represents the results of tests scores in a math class.
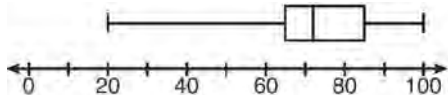

What do the scores 65, 85, and 100 represent?
1) Q_1, median, Q_3
2) Q_1, Q_3, maximum
3) median, Q_1, maximum
4) minimum, median, maximum

2 A designer created a garden, as shown in the diagram below. The garden consists of four quarter-circles of equal size inside a square. The designer put a fence around both the inside and the outside of the garden.

5 yd   5 yd
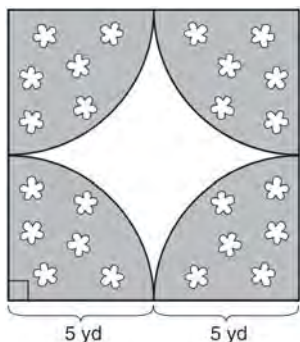
Which expression represents the amount of fencing, in yards, that the designer used for the fence?
1) $40 + 10\pi$
2) $40 + 25\pi$
3) $100 + 10\pi$
4) $100 + 25\pi$

3 Which event is certain to happen?
1) Everyone walking into a room will have red hair.
2) All babies born in June will be males.
3) The Yankees baseball team will win the World Series.
4) The Sun will rise in the east.

4 The bull's-eye of a dartboard has a radius of 2 inches and the entire board has a radius of 9 inches, as shown in the diagram below.
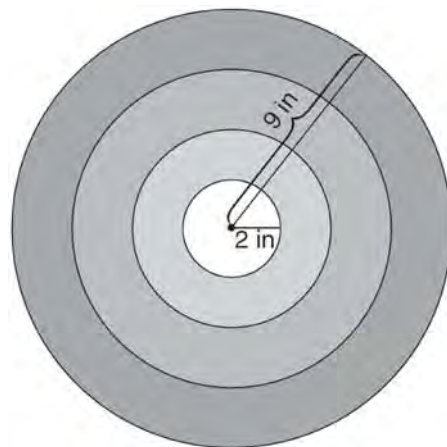
If a dart is thrown and hits the board, what is the probability that the dart will land in the bull's-eye?
1) $\dfrac{2}{9}$
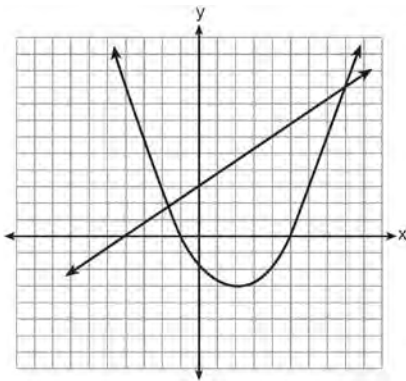2) $\dfrac{7}{9}$
3) $\dfrac{4}{81}$
4) $\dfrac{49}{81}$

1

5   Which statement illustrates the additive identity property?
1) $6 + 0 = 6$
2) $-6 + 6 = 0$
3) $4(6 + 3) = 4(6) + 4(3)$
4) $(4 + 6) + 3 = 4 + (6 + 3)$

6   Two equations were graphed on the set of axes below.

Which point is a solution of the system of equations shown on the graph?
1) $(8, 9)$
2) $(5, 0)$
3) $(0, 3)$
4) $(2, -3)$

7   Which is the equation of a parabola that has the same vertex as the parabola represented by $y = x^2$, but is wider?
1) $y = x^2 + 2$
2) $y = x^2 - 2$
3) $y = 2x^2$
4) $y = \frac{1}{2}x^2$

8   The statement $|-15| < x < |-20|$ is true when x is equal to
1) -16
2) -14
3) 17
4) 21

9   Which equation represents the line that passes through the point $(3, 4)$ and is parallel to the x-axis?
1) $x = 4$
2) $x = -3$
3) $y = 4$
4) $y = -3$

10   A car depreciates (loses value) at a rate of 4.5% annually. Greg purchased a car for $12,500. Which equation can be used to determine the value of the car, V, after 5 years?
1) $V = 12,500(0.55)^5$
2) $V = 12,500(0.955)^5$
3) $V = 12,500(1.045)^5$
4) $V = 12,500(1.45)^5$

11   The inequality $-2 \le x \le 3$ can be written as
1) $(-2, 3)$
2) $[-2, 3)$
3) $(-2, 3]$
4) $[-2, 3]$

12 What is $24x^2y^6 - 16x^6y^2 + 4xy^2$ divided by $4xy^2$?

1) $6xy^4 - 4x^5$

2) $6xy^4 - 4x^5 + 1$

3) $6x^2y^3 - 4x^6y$

4) $6x^2y^3 - 4x^6y + 1$

13 The expression $\dfrac{2x^2 + 10x - 28}{4x + 28}$ is equivalent to

1) $\dfrac{x-2}{2}$

2) $x - 1$

3) $\dfrac{x+2}{2}$

4) $\dfrac{x+5}{2}$

14 Which equation represents a line that is parallel to the line whose equation is $2x - 3y = 9$?

1) $y = \dfrac{2}{3}x - 4$

2) $y = -\dfrac{2}{3}x + 4$

3) $y = \dfrac{3}{2}x - 4$

4) $y = -\dfrac{3}{2}x + 4$

15 The current population of a town is 10,000. If the population, P, increases by 20% each year, which equation could be used to find the population after t years?

1) $P = 10,000(0.2)^t$

2) $P = 10,000(0.8)^t$

3) $P = 10,000(1.2)^t$

4) $P = 10,000(1.8)^t$

16 Brianna's score on a national math assessment exceeded the scores of 95,000 of the 125,000 students who took the assessment. What was her percentile rank?

1) 6

2) 24

3) 31

4) 76

17 Which point lies on the graph represented by the equation $3y + 2x = 8$?

1) $(-2, 7)$

2) $(0, 4)$

3) $(2, 4)$

4) $(7, -2)$

18 The probability it will rain tomorrow is $\dfrac{1}{2}$. The probability that our team will win tomorrow's basketball game is $\dfrac{3}{5}$. Which expression represents the probability that it will rain and that our team will *not* win the game?

1) $\dfrac{1}{2} + \dfrac{3}{5}$

2) $\dfrac{1}{2} + \dfrac{2}{5}$

3) $\dfrac{1}{2} \times \dfrac{3}{5}$

4) $\dfrac{1}{2} \times \dfrac{2}{5}$

19 Which equation is an example of the use of the associative property of addition?

1) $x + 7 = 7 + x$

2) $3(x + y) = 3x + 3y$

3) $(x + y) + 3 = x + (y + 3)$

4) $3 + (x + y) = (x + y) + 3$

3

20 Marcy determined that her father's age is four less than three times her age. If x represents Marcy's age, which expression represents her father's age?
1) $3x - 4$
2) $3(x - 4)$
3) $4x - 3$
4) $4 - 3x$

21 The number of hours spent on math homework during one week and the math exam grades for eleven students in Ms. Smith's algebra class are plotted below.


Ms. Smith's Class
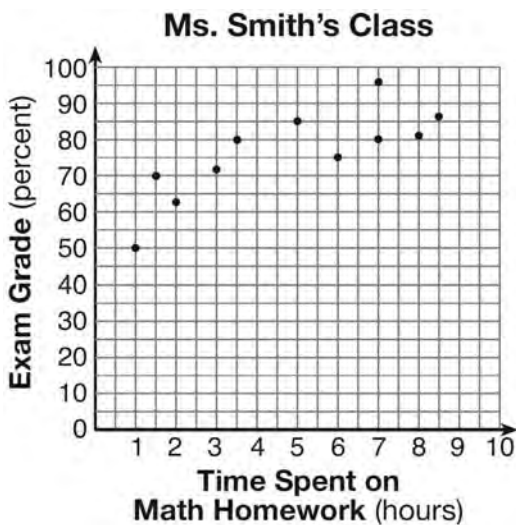
Based on the plotted data, what is the correlation between the time spent on homework and the exam grade?
1) positive
2) negative
3) no correlation
4) cannot be determined

22 If the point $(5, k)$ lies on the line represented by the equation $2x + y = 9$, the value of k is
1) 1
2) 2
3) −1
4) −2

23 The line represented by the equation $2y - 3x = 4$ has a slope of
1) $-\frac{3}{2}$
2) 2
3) 3
4) $\frac{3}{2}$

24 Which equation is represented by the graph below?
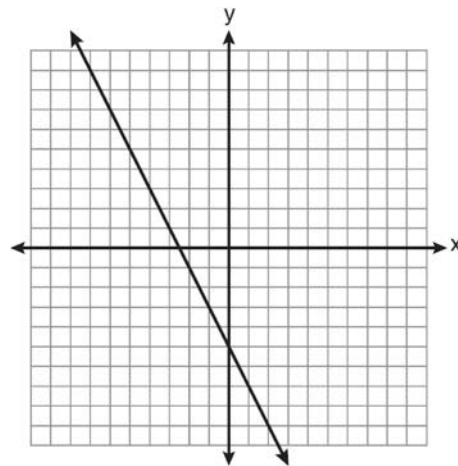
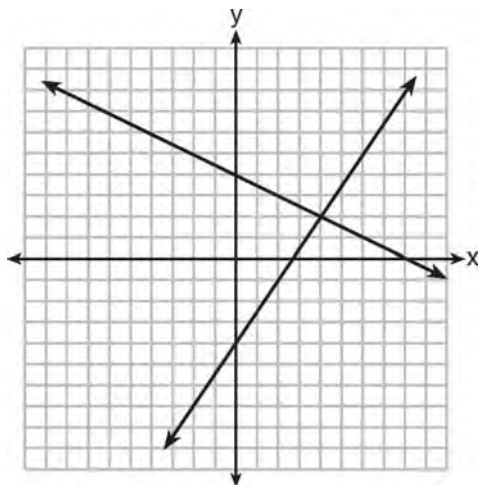1) $2y + x = 10$
2) $y - 2x = -5$
3) $-2y = 10x - 4$
4) $2y = -4x - 10$

4

25 A system of equations is graphed on the set of axes below.

The solution of this system is
1) $(0,4)$
2) $(2,4)$
3) $(4,2)$
4) $(8,0)$

26 Factored completely, the expression
$3x^3 - 33x^2 + 90x$ is equivalent to
1) $3x(x^2 - 33x + 90)$
2) $3x(x^2 - 11x + 30)$
3) $3x(x + 5)(x + 6)$
4) $3x(x - 5)(x - 6)$

27 The roots of the equation $3x^2 - 27x = 0$ are
1) 0 and 9
2) 0 and −9
3) 0 and 3
4) 0 and −3

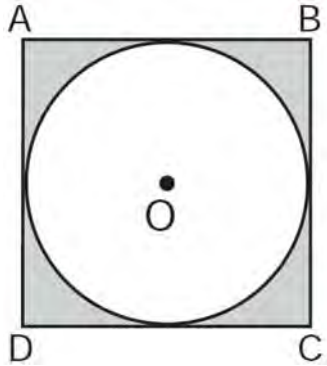28 Which graph does *not* represent the graph of a function?

1)

2)

3)

4)
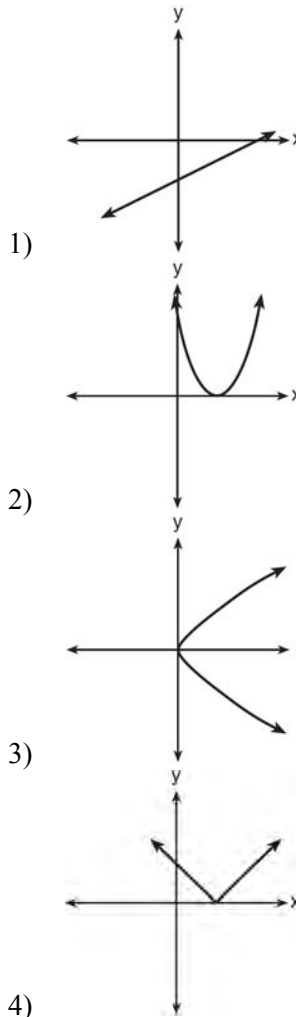
29 Monique has three sons who play football, two sons who play baseball, and one son who plays both sports. If all of her sons play baseball or football, how many sons does she have?
1) 5
2) 6
3) 3
4) 4

30 In the diagram below, circle *O* is inscribed in square *ABCD*. The square has an area of 36.

What is the area of the circle?
1) 9?
2) 6?
3) 3?
4) 36?

31 In triangle *RST*, angle *R* is a right angle. If $TR = 6$ and $TS = 8$, what is the length of $\overline{RS}$?
1) 10
2) 2
3) $2\sqrt{7}$
4) $7\sqrt{2}$

32 Byron is 3 years older than Doug. The product of their ages is 40. How old is Doug?
1) 10
2) 8
3) 5
4) 4

33 In right triangle *ABC*, m∠*C* = 90, *AC* = 7, and $AB = 13$. What is the length of $\overline{BC}$?
1) 6
2) 20
3) $\sqrt{120}$
4) $\sqrt{218}$

34 The box-and-whisker plot below represents the ages of 12 people.
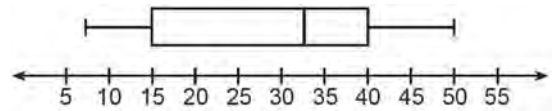
What percentage of these people are age 15 or older?
1) 25
2) 35
3) 75
4) 85

35 A value of *x* that makes the expression
$$\frac{x^2 + 4x - 12}{x^2 - 2x - 15}$$ undefined is
1) −6
2) −2
3) 3
4) 5

6

36 Mr. Stanton asked his students to write an algebraic expression on a piece of paper. He chose four students to go to the board and write their expression.

Robert wrote: $4(2x + 5) \geq 17$

Meredith wrote: $3y - 7 + 11z$

Steven wrote: $9w + 2 = 20$

Cynthia wrote: $8 + 10 - 4 = 14$

Which student wrote an algebraic expression?
1) Robert
2) Meredith
3) Steven
4) Cynthia

37 If $x = -3$, what is the value of $|x - 4| - x^2$?
1) -8
2) -2
3) 7
4) 16

38 If $2y + 2w = x$, then w, in terms of x and y, is equal to
1) $x - y$
2) $\dfrac{x - 2y}{2}$
3) $x + y$
4) $\dfrac{x + 2y}{2}$

39 The value of the expression $6! + \dfrac{5!\,(3!)}{4!} - 10$ is
1) 50
2) 102
3) 740
4) 750

40 In the figure below, $ABCD$ is a square and semicircle O has a radius of 6.
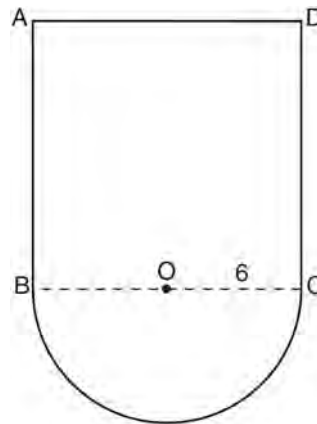
What is the area of the figure?
1) $36 + 6\pi$
2) $36 + 18\pi$
3) $144 + 18\pi$
4) $144 + 36\pi$

41 The diagram below shows the graph of which inequality?

1) $y > x - 1$
2) $y \geq x - 1$
3) $y < x - 1$
4) $y \leq x - 1$

7

42 If the volume of a cube is 8 cubic centimeters, what is its surface area, in square centimeters?
1) 32
2) 24
3) 12
4) 4

43 For which values of x is the fraction $\dfrac{x^2 + x - 6}{x^2 + 5x - 6}$ undefined?
1) 1 and −6
2) 2 and −3
3) 3 and −2
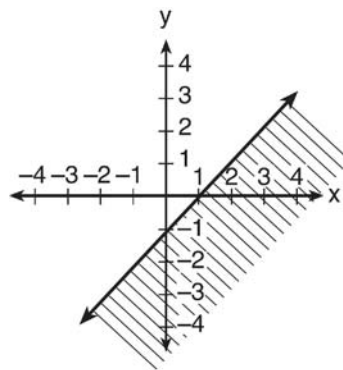4) 6 and −1

44 The roots of a quadratic equation can be found using the graph below.
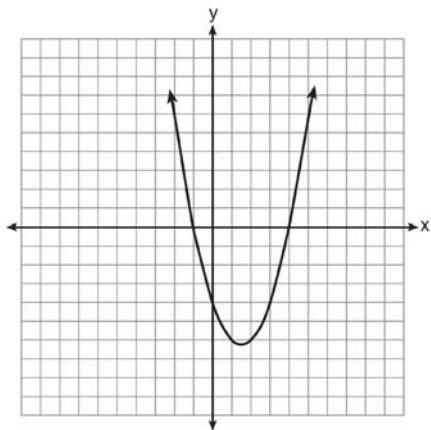
What are the roots of this equation?
1) −4, only
2) −4 and −1
3) −1 and 4
4) −4, −1, and 4

45 Which expression is equivalent to $\dfrac{2x^6 - 18x^4 + 2x^2}{2x^2}$?
1) $x^3 - 9x^2$
2) $x^4 - 9x^2$
3) $x^3 - 9x^2 + 1$`
4) $x^4 - 9x^2 + 1$

46 Which table shows bivariate data?

Age (yr)	Frequency
14	12
15	21
16	14
17	19
18	15

1)

Type of Car	Average Gas Mileage (mpg)
van	25
SUV	23
luxury	26
compact	28
pickup	22

2)

Time Spent Studying (hr)	Test Grade (%)
1	65
2	72
3	83
4	85
5	92

3)

Day	Temperature (degrees F)
Monday	63
Tuesday	58
Wednesday	72
Thursday	74
Friday	78

4)

47 The length of one side of a square is 13 feet. What is the length, to the *nearest foot*, of a diagonal of the square?
1) 13
2) 18
3) 19
4) 26

48 Which verbal expression is represented by $2(x + 4)$?
1) twice the sum of a number and four
2) the sum of two times a number and four
3) two times the difference of a number and four
4) twice the product of a number and four

49 Which set builder notation describes $\{-2, -1, 0, 1, 2, 3\}$?
1) $\{x \mid -3 \le x \le 3, \text{ where } x \text{ is an integer}\}$
2) $\{x \mid -3 < x \le 4, \text{ where } x \text{ is an integer}\}$
3) $\{x \mid -2 < x < 3, \text{ where } x \text{ is an integer}\}$
4) $\{x \mid -2 \le x < 4, \text{ where } x \text{ is an integer}\}$

50 The graph of a parabola is represented by the equation $y = ax^2$ where a is a positive integer. If a is multiplied by 2, the new parabola will become
1) narrower and open downward
2) narrower and open upward
3) wider and open downward
4) wider and open upward

51 The solution of the equation $5 - 2x = -4x - 7$ is
1) 1
2) 2
3) -2
4) -6

52 Which situation is an example of bivariate data?
1) the number of pizzas Tanya eats during her years in high school
2) the number of times Ezra puts air in his bicycle tires during the summer
3) the number of home runs Elias hits per game and the number of hours he practices baseball
4) the number of hours Nellie studies for her mathematics tests during the first half of the school year

53 Which situation describes a negative correlation?
1) the amount of gas left in a car's tank and the amount of gas used from it
2) the number of gallons of gas purchased and the amount paid for the gas
3) the size of a car's gas tank and the number of gallons it holds
4) the number of miles driven and the amount of gas used

54 What is the sum of $\dfrac{2y}{y + 5}$ and $\dfrac{10}{y + 5}$ expressed in simplest form?
1) 1
2) 2
3) $\dfrac{12y}{y + 5}$
4) $\dfrac{2y + 10}{y + 5}$

55 What is the solution set of the system of equations $x + y = 5$ and $y = x^2 - 25$?
1) $\{(0, 5), (11, -6)\}$
2) $\{(5, 0), (-6, 11)\}$
3) $\{(-5, 0), (6, 11)\}$
4) $\{(-5, 10), (6, -1)\}$

56 If $rx - st = r$, which expression represents x?

1) $\dfrac{r + st}{r}$

2) $\dfrac{r}{r + st}$

3) $\dfrac{r}{r - st}$

4) $\dfrac{r - st}{r}$

57 Given:

A = {all odd integers from 1 through 19, inclusive}

B = {9, 11, 13, 15, 17}

What is the complement of set B within set A?

1) {3, 5, 7}
2) {3, 5, 7, 19}
3) {1, 3, 5, 7}
4) {1, 3, 5, 7, 19}

58 What is the slope of the line that passes through the points $(2, -3)$ and $(5, 1)$?

1) $-\dfrac{2}{3}$

2) $\dfrac{2}{3}$

3) $-\dfrac{4}{3}$

4) $\dfrac{4}{3}$

59 The expression $100n^2 - 1$ is equivalent to

1) $(10n + 1)(10n - 1)$
2) $(10n - 1)(10n - 1)$
3) $(50n + 1)(50n - 1)$
4) $(50n - 1)(50n - 1)$

60 Noj is 5 years older than Jacob. The product of their ages is 84. How old is Noj?

1) 6
2) 7
3) 12
4) 14

61 A set of data is graphed on the scatter plot below.
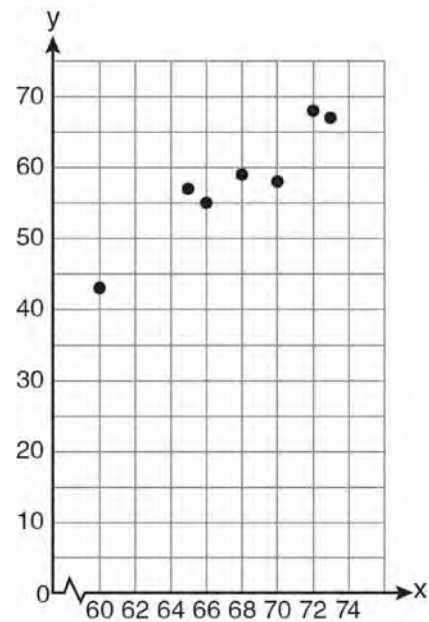
This scatter plot shows

1) no correlation
2) positive correlation
3) negative correlation
4) undefined correlation

62 Campsite *A* and campsite *B* are located directly opposite each other on the shores of Lake Omega, as shown in the diagram below. The two campsites form a right triangle with Sam's position, *S*. The distance from campsite *B* to Sam's position is 1,300 yards, and campsite *A* is 1,700 yards from his position.
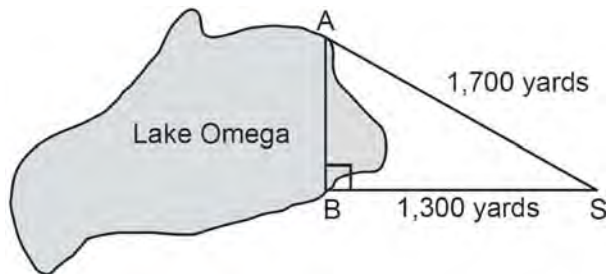
What is the distance from campsite *A* to campsite *B*, to the *nearest yard*?
1) 1,095
2) 1,096
3) 2,140
4) 2,141

63 Elizabeth is baking chocolate chip cookies. A single batch uses $\frac{3}{4}$ teaspoon of vanilla. If Elizabeth is mixing the ingredients for five batches at the same time, how many tablespoons of vanilla will she use?

$$3 \text{ teaspoons} = 1 \text{ tablespoon}$$

1) $1\frac{1}{4}$

2) $1\frac{3}{4}$

3) $3\frac{3}{4}$

4) $5\frac{3}{4}$

64 Which graph represents a function?

1)

2)

3)

4)
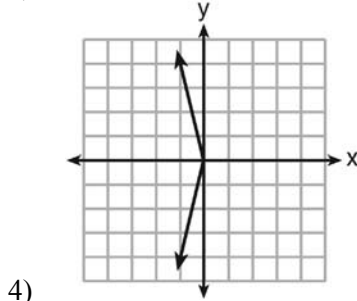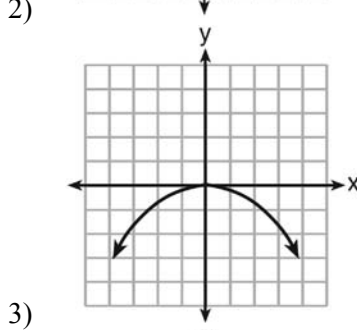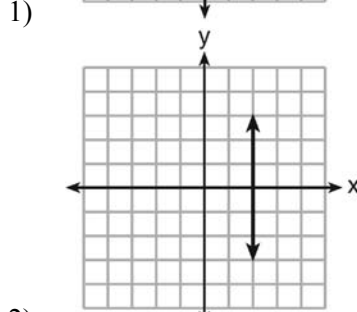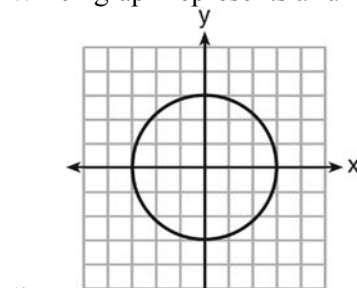
65 What is one-third of 3^6?
1) 1^2
2) 3^2
3) 3^5
4) 9^6

11

66 The graph of $y = |x + 2|$ is shown below.
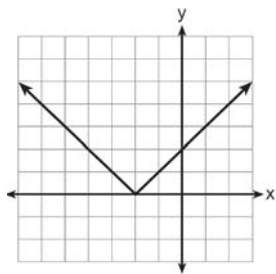
Which graph represents $y = -|x + 2|$?

1)

2)

3)

4)
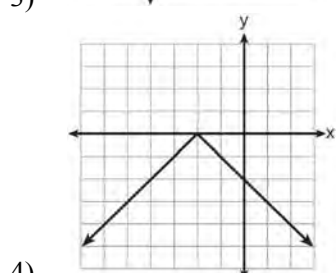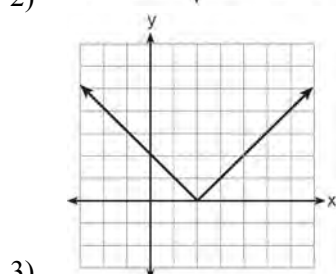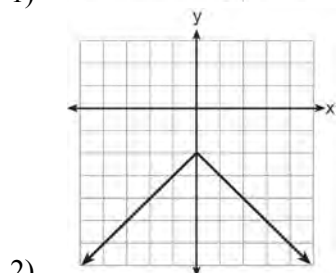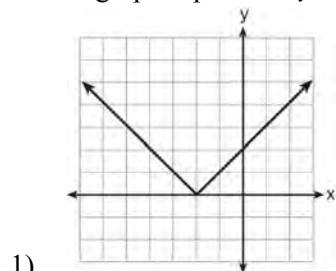
67 What is $2\sqrt{45}$ expressed in simplest radical form?
1) $3\sqrt{5}$
2) $5\sqrt{5}$
3) $6\sqrt{5}$
4) $18\sqrt{5}$

68 The cumulative frequency table below shows the length of time that 30 students spent text messaging on a weekend.

Minutes Used	Cumulative Frequency
31–40	2
31–50	5
31–60	10
31–70	19
31–80	30

Which 10-minute interval contains the first quartile?
1) $31 - 40$
2) $41 - 50$
3) $51 - 60$
4) $61 - 70$

69 In a baseball game, the ball traveled 350.7 feet in 4.2 seconds. What was the average speed of the ball, in feet per second?
1) 83.5
2) 177.5
3) 354.9
4) 1,472.9

12

70 What is the solution of the equation $\frac{x+2}{2} = \frac{4}{x}$?

1)   1 and −8
2)   2 and −4
3)   −1 and 8
4)   −2 and 4

71 The formula for the volume of a pyramid is
$V = \frac{1}{3} Bh$. What is h expressed in terms of B and V?

1) $h = \frac{1}{3} VB$

2) $h = \frac{V}{3B}$

3) $h = \frac{3V}{B}$

4) $h = 3VB$

72 Which value of x is the solution of the equation
$\frac{1}{7} + \frac{2x}{3} = \frac{15x - 3}{21}$?

1)   6
2)   0
3) $\frac{4}{13}$
4) $\frac{6}{29}$

73 If n is an odd integer, which equation can be used to find three consecutive odd integers whose sum is −3?

1) $n + (n + 1) + (n + 3) = -3$
2) $n + (n + 1) + (n + 2) = -3$
3) $n + (n + 2) + (n + 4) = -3$
4) $n + (n + 2) + (n + 3) = -3$

74 The rectangular prism shown below has a length of 3.0 cm, a width of 2.2 cm, and a height of 7.5 cm.
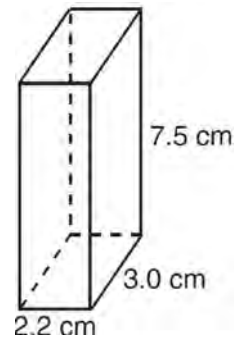
What is the surface area, in square centimeters?
1)   45.6
2)   49.5
3)   78.0
4)   91.2

75 Using the substitution method, Ken solves the following system of equations algebraically.

$$2x - y = 5$$
$$3x + 2y = -3$$

Which equivalent equation could Ken use?
1) $3x + 2(2x - 5) = -3$
2) $3x + 2(5 - 2x) = -3$
3) $3\left(y + \frac{5}{2} \right) + 2y = -3$
4) $3\left(\frac{5}{2} - y \right) + 2y = -3$

76 What is the value of $\left| \dfrac{4(-6) + 18}{4!} \right|$?

1) $\dfrac{1}{4}$

2) $-\dfrac{1}{4}$

3) 12

4) -12

77 What is the slope of the line represented by the equation $4x + 3y = 12$?

1) $\dfrac{4}{3}$

2) $\dfrac{3}{4}$

3) $-\dfrac{3}{4}$

4) $-\dfrac{4}{3}$

78 Written in set-builder notation, $S = \{1, 3, 5, 7, 9\}$ is
1) $\{x | 1 < x < 9,\ \text{where } x \text{ is a prime number}\}$
2) $\{x | 1 \le x \le 9,\ \text{where } x \text{ is a prime number}\}$
3) $\{x | 1 < x < 9,\ \text{where } x \text{ is an odd integer}\}$
4) $\{x | 1 \le x \le 9,\ \text{where } x \text{ is an odd integer}\}$

79 A school newspaper will survey students about the quality of the school's lunch program. Which method will create the *least* biased results?
1) Twenty-five vegetarians are randomly surveyed.
2) Twenty-five students are randomly chosen from each grade level.
3) Students who dislike the school's lunch program are chosen to complete the survey.
4) A booth is set up in the cafeteria for the students to voluntarily complete the survey.

80 What is the sum of $-3x^2 - 7x + 9$ and $-5x^2 + 6x - 4$?
1) $-8x^2 - x + 5$
2) $-8x^4 - x + 5$
3) $-8x^2 - 13x + 13$
4) $-8x^4 - 13x^2 + 13$

81 Which graph represents the inequality $y \ge x + 3$?
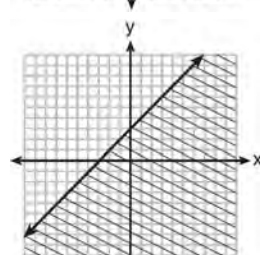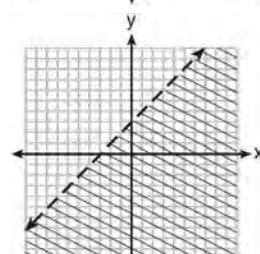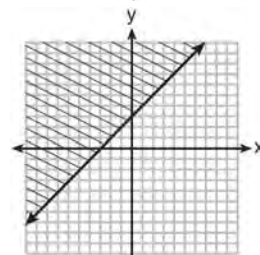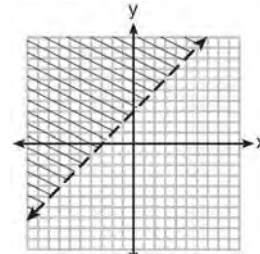
1)

2)

3)

4)

14

82 The equation $3(4x) = (4x)3$ illustrates which property?
1) commutative
2) associative
3) distributive
4) multiplicative inverse

83 How is the graph of $y = x^2 + 4x + 3$ affected when the coefficient of x^2 is changed to a smaller positive number?
1) The graph becomes wider, and the y-intercept changes.
2) The graph becomes wider, and the y-intercept stays the same.
3) The graph becomes narrower, and the y-intercept changes.
4) The graph becomes narrower, and the y-intercept stays the same.

84 The expression $9a^2 - 64b^2$ is equivalent to
1) $(9a - 8b)(a + 8b)$
2) $(9a - 8b)(a - 8b)$
3) $(3a - 8b)(3a + 8b)$
4) $(3a - 8b)(3a - 8b)$

85 Craig sees an advertisement for a car in a newspaper. Which information would *not* be classified as quantitative?
1) the cost of the car
2) the car's mileage
3) the model of the car
4) the weight of the car

86 The total score in a football game was 72 points. The winning team scored 12 points more than the losing team. How many points did the winning team score?
1) 30
2) 42
3) 54
4) 60

87 A car uses one gallon of gasoline for every 20 miles it travels. If a gallon of gasoline costs $3.98, how much will the gas cost, to the *nearest dollar*, to travel 180 miles?
1) 9
2) 36
3) 45
4) 80

88 If the expression $(2y^a)^4$ is equivalent to $16y^8$, what is the value of a?
1) 12
2) 2
3) 32
4) 4

89 Which coordinates represent a point in the solution set of the system of inequalities shown below?

$$y \le \frac{1}{2}x + 13$$

$$4x + 2y > 3$$

1) $(-4, 1)$
2) $(-2, 2)$
3) $(1, -4)$
4) $(2, -2)$

15

90 A survey is being conducted to determine if a cable company should add another sports channel to their schedule. Which random survey would be the least biased?
1) surveying 30 men at a gym
2) surveying 45 people at a mall
3) surveying 50 fans at a football game
4) surveying 20 members of a high school soccer team

91 A cube with faces numbered 1 through 6 is rolled 75 times, and the results are given in the table below.

Number	Frequency
1	7
2	22
3	14
4	6
5	20
6	6

Based on these results, which statement is true?
1) $P(\text{odd}) < P(\text{even})$
2) $P(3 \text{ or less}) < P(\text{odd})$
3) $P(\text{even}) < P(2 \text{ or } 4)$
4) $P(2 \text{ or } 4) < P(3 \text{ or less})$

92 What is the solution of $\dfrac{2}{x+1} = \dfrac{x+1}{2}$?
1) −1 and −3
2) −1 and 3
3) 1 and −3
4) 1 and 3

93 The value of y in the equation $0.06y + 200 = 0.03y + 350$ is
1) 500
2) $1,666.\overline{6}$
3) 5,000
4) $18,333.\overline{3}$

94 Which expression represents "5 less than twice x"?
1) $2x - 5$
2) $5 - 2x$
3) $2(5 - x)$
4) $2(x - 5)$

95 When $2x^2 - 3x + 2$ is subtracted from $4x^2 - 5x + 2$, the result is
1) $2x^2 - 2x$
2) $-2x^2 + 2x$
3) $-2x^2 - 8x + 4$
4) $2x^2 - 8x + 4$

96 Marie currently has a collection of 58 stamps. If she buys s stamps each week for w weeks, which expression represents the total number of stamps she will have?
1) $58sw$
2) $58 + sw$
3) $58s + w$
4) $58 + s + w$

16

97 Which graph does *not* represent a function?

1)

2)

3)

4)
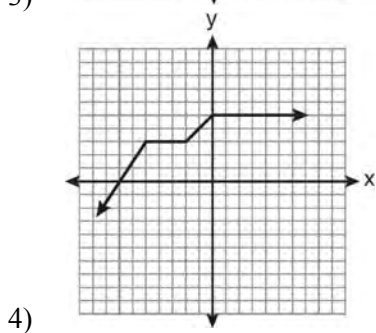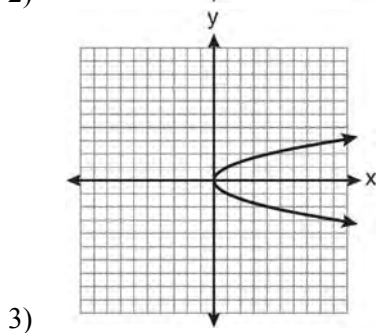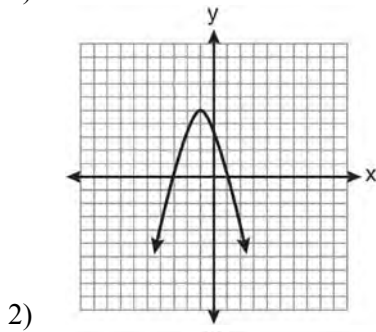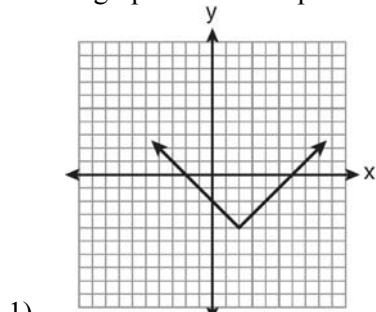
98 Which expression represents the number of hours in w weeks and d days?
1) $7w + 12d$
2) $84w + 24d$
3) $168w + 24d$
4) $168w + 60d$

99 Which equation is true?

1) $\dfrac{c^5}{d^7} \div \dfrac{d^3}{c} = \dfrac{c^4}{d^4}$

2) $(-2m^2 p)^3 = -8m^6 p^3$

3) $\left(\dfrac{s^3 t^8}{s^4 t^5} \right)^2 = \dfrac{t^5}{s^2}$

4) $(-2a^2 b^3)(3ab^2) = a^3 b^5$

100 The product of $\dfrac{4x^2}{7y^2}$ and $\dfrac{21y^3}{20x^4}$, expressed in simplest form, is

1) $0.6x^2 y$

2) $\dfrac{3y}{5x^2}$

3) $\dfrac{12x^2 y^3}{20x^4 y^2}$

4) $\dfrac{84x^2 y^3}{140x^4 y^2}$

101 Given: $A = \{1, 3, 5, 7, 9\}$

$B = \{2, 4, 6, 8, 10\}$

$C = \{2, 3, 5, 7\}$

$D = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

What statement is *false*?
1) $A \cup B \cup C = D$
2) $A \cap B \cap C = \{\}$
3) $A \cup C = \{1, 2, 3, 5, 7\}$
4) $A \cap C = \{3, 5, 7\}$

102 What is the product of $(3x + 2)$ and $(x - 7)$?
1) $3x^2 - 14$
2) $3x^2 - 5x - 14$
3) $3x^2 - 19x - 14$
4) $3x^2 - 23x - 14$

103 How many solutions are there for the following system of equations?

$$y = x^2 - 5x + 3$$
$$y = x - 6$$

1) 1
2) 2
3) 3
4) 0

104 The expression $\dfrac{\left(4x^3\right)^2}{2x}$ is equivalent to
1) $4x^4$
2) $4x^5$
3) $8x^4$
4) $8x^5$

105 The scatter plot below shows the profit, by month, for a new company for the first year of operation. Kate drew a line of best fit, as shown in the diagram.
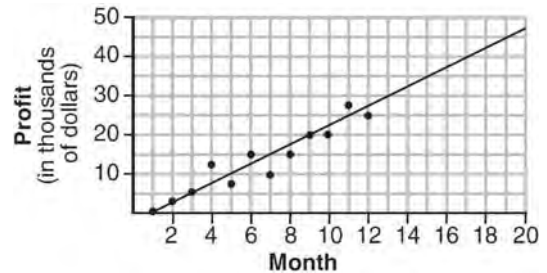
Using this line, what is the best estimate for profit in the 18th month?
1) $35,000
2) $37,750
3) $42,500
4) $45,000

106 Which set of data can be classified as quantitative?
1) first names of students in a chess club
2) ages of students in a government class
3) hair colors of students in a debate club
4) favorite sports of students in a gym class

107 In $\triangle ABC$, $m\angle C = 90$. If $AB = 5$ and $AC = 4$, which statement is *not* true?
1) $\cos A = \dfrac{4}{5}$
2) $\tan A = \dfrac{3}{4}$
3) $\sin B = \dfrac{4}{5}$
4) $\tan B = \dfrac{5}{3}$

108 Which value of x is in the solution set of
$-3x + 8 \geq 14$?
1) -3
2) -1
3) 0
4) 3

109 Jason's part-time job pays him $155 a week. If he has already saved $375, what is the minimum number of weeks he needs to work in order to have enough money to buy a dirt bike for $900?
1) 8
2) 9
3) 3
4) 4

110 Which ordered pair is in the solution set of the system of inequalities $y \leq 3x + 1$ and $x - y > 1$?
1) $(-1, -2)$
2) $(2, -1)$
3) $(1, 2)$
4) $(-1, 2)$

111 Which equation represents a line that is parallel to the y-axis and passes through the point $(4, 3)$?
1) $x = 3$
2) $x = 4$
3) $y = 3$
4) $y = 4$

112 Which equation represents a line that has a slope of $\frac{3}{4}$ and passes through the point $(2, 1)$?
1) $3y = 4x - 5$
2) $3y = 4x + 2$
3) $4y = 3x - 2$
4) $4y = 3x + 5$

113 In right triangle ABC shown below, what is the value of $\cos A$?
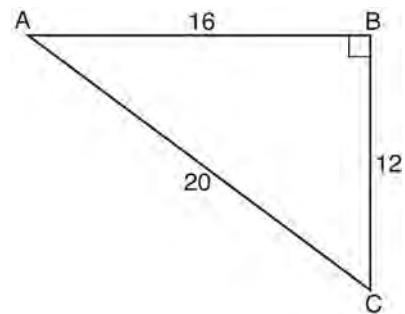
1) $\frac{12}{20}$
2) $\frac{16}{20}$
3) $\frac{20}{12}$
4) $\frac{20}{16}$

114 Which equation represents a line that is parallel to the line whose equation is $y = -3x - 7$?
1) $y = -3x + 4$
2) $y = -\frac{1}{3}x - 7$
3) $y = \frac{1}{3}x + 5$
4) $y = 3x - 2$

19

115 The actual dimensions of a rectangle are 2.6 cm by 6.9 cm. Andy measures the sides as 2.5 cm by 6.8 cm. In calculating the area, what is the relative error, to the *nearest thousandth*?
1) 0.055
2) 0.052
3) 0.022
4) 0.021

116 Gabriella has 20 quarters, 15 dimes, 7 nickels, and 8 pennies in a jar. After taking 6 quarters out of the jar, what will be the probability of Gabriella randomly selecting a quarter from the coins left in the jar?
1) $\dfrac{14}{44}$
2) $\dfrac{30}{44}$
3) $\dfrac{14}{50}$
4) $\dfrac{20}{50}$

117 The expression $\dfrac{x-3}{x+2}$ is undefined when the value of x is
1) −2, only
2) −2 and 3
3) 3, only
4) −3 and 2

118 Is the equation $A = 21000(1 - 0.12)^t$ a model of exponential growth or exponential decay, and what is the rate (percent) of change per time period?
1) exponential growth and 12%
2) exponential growth and 88%
3) exponential decay and 12%
4) exponential decay and 88%

119 The box-and-whisker plot below represents a set of grades in a college statistics class.
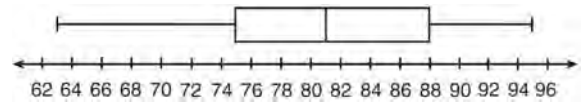
Which interval contains exactly 50% of the grades?
1) 63-88
2) 63-95
3) 75-81
4) 75-88

120 What are the coordinates of the vertex and the equation of the axis of symmetry of the parabola shown in the graph below?
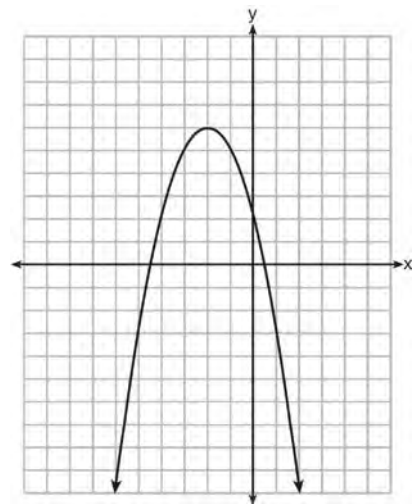
1) $(0,2)$ and $y = 2$
2) $(0,2)$ and $x = 2$
3) $(-2,6)$ and $y = -2$
4) $(-2,6)$ and $x = -2$

121 The roots of the equation $x^2 - 14x + 48 = 0$ are
1) −6 and −8
2) −6 and 8
3) 6 and −8
4) 6 and 8

122 A correct translation of "six less than twice the value of x" is
1) $2x < 6$
2) $2x - 6$
3) $6 < 2x$
4) $6 - 2x$

123 Which expression is equivalent to $64 - x^2$?
1) $(8 - x)(8 - x)$
2) $(8 - x)(8 + x)$
3) $(x - 8)(x - 8)$
4) $(x - 8)(x + 8)$

124 An art studio has a list of information posted with each sculpture that is for sale. Each entry in the list could be classified as quantitative *except* for the
1) cost
2) height
3) artist
4) weight

125 The expression $\dfrac{6 \times 10^{-7}}{3 \times 10^{-3}}$ is equivalent to

1) 2×10^4
2) 2×10^{10}
3) 2×10^{-4}
4) 2×10^{-10}

126 When $8x^2 + 3x + 2$ is subtracted from $9x^2 - 3x - 4$, the result is
1) $x^2 - 2$
2) $17x^2 - 2$
3) $-x^2 + 6x + 6$
4) $x^2 - 6x - 6$

127 Which statement is true about the data set 4, 5, 6, 6, 7, 9, 12?
1) mean = mode
2) mode = median
3) mean < median
4) mode > mean

128 A cell phone can receive 120 messages per minute. At this rate, how many messages can the phone receive in 150 seconds?
1) 48
2) 75
3) 300
4) 18,000

129 Given: $A = \{2, 4, 5, 7, 8\}$
$\qquad\qquad B = \{3, 5, 8, 9\}$
What is $A \cup B$?
1) $\{5\}$
2) $\{5, 8\}$
3) $\{2, 3, 4, 7, 9\}$
4) $\{2, 3, 4, 5, 7, 8, 9\}$

130 Which graph represents a function?

1)

2)

3)

4)
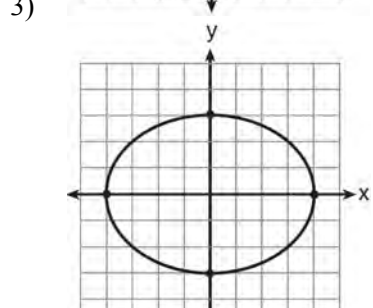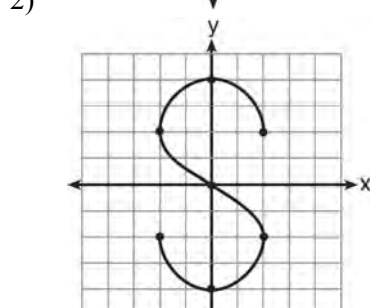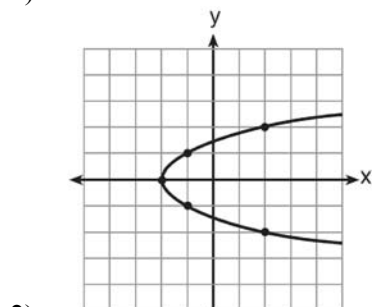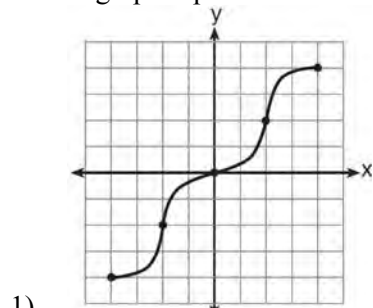
131 Given: $R = \{1, 2, 3, 4\}$

$A = \{0, 2, 4, 6\}$

$P = \{1, 3, 5, 7\}$

What is $R \cap P$?

1) $\{0, 1, 2, 3, 4, 5, 6, 7\}$
2) $\{1, 2, 3, 4, 5, 7\}$
3) $\{1, 3\}$
4) $\{2, 4\}$

132 Which equation could be used to find the measure of angle D in the right triangle shown in the diagram below?
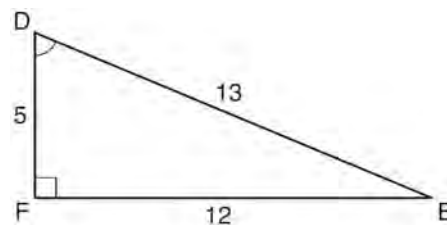
1) $\cos D = \dfrac{12}{13}$

2) $\cos D = \dfrac{13}{12}$

3) $\sin D = \dfrac{5}{13}$

4) $\sin D = \dfrac{12}{13}$

133 Which interval notation represents $-3 \le x \le 3$?
1) $[-3, 3]$
2) $(-3, 3]$
3) $[-3, 3)$
4) $(-3, 3)$

134 If $A = \{0, 1, 3, 4, 6, 7\}$, $B = \{0, 2, 3, 5, 6\}$, and $C = \{0, 1, 4, 6, 7\}$, then $A \cap B \cap C$ is
1) $\{0, 1, 2, 3, 4, 5, 6, 7\}$
2) $\{0, 3, 6\}$
3) $\{0, 6\}$
4) $\{0\}$

135 If $k = am + 3mx$, the value of m in terms of a, k, and x can be expressed as
1) $\dfrac{k}{a + 3x}$
2) $\dfrac{k - 3mx}{a}$
3) $\dfrac{k - am}{3x}$
4) $\dfrac{k - a}{3x}$

136 The solutions of $x^2 = 16x - 28$ are
1) -2 and -14
2) 2 and 14
3) -4 and -7
4) 4 and 7

137 What is the slope of the line that passes through the points $(4, -7)$ and $(9, 1)$?
1) $\dfrac{5}{8}$
2) $\dfrac{8}{5}$
3) $-\dfrac{6}{12}$
4) $-\dfrac{13}{6}$

138 What is the vertex of the parabola represented by the equation $y = -2x^2 + 24x - 100$?
1) $x = -6$
2) $x = 6$
3) $(6, -28)$
4) $(-6, -316)$

139 Mr. Smith invested $2,500 in a savings account that earns 3% interest compounded annually. He made no additional deposits or withdrawals. Which expression can be used to determine the number of dollars in this account at the end of 4 years?
1) $2500(1 + 0.03)^4$
2) $2500(1 + 0.3)^4$
3) $2500(1 + 0.04)^3$
4) $2500(1 + 0.4)^3$

140 The sum of $3x^2 + 5x - 6$ and $-x^2 + 3x + 9$ is
1) $2x^2 + 8x - 15$
2) $2x^2 + 8x + 3$
3) $2x^4 + 8x^2 + 3$
4) $4x^2 + 2x - 15$

141 The expression $\dfrac{2x + 13}{2x + 6} - \dfrac{3x - 6}{2x + 6}$ is equivalent to
1) $\dfrac{-x + 19}{2(x + 3)}$
2) $\dfrac{-x + 7}{2(x + 3)}$
3) $\dfrac{5x + 19}{2(x + 3)}$
4) $\dfrac{5x + 7}{4x + 12}$

142 The diagram below shows right triangle *LMP*.
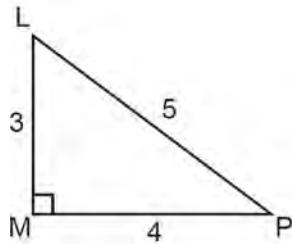
Which ratio represents the tangent of $\angle PLM$?

1) $\frac{3}{4}$

2) $\frac{3}{5}$

3) $\frac{4}{3}$

4) $\frac{5}{4}$

143 Which expression represents $\frac{x^2 - 3x - 10}{x^2 - 25}$ in simplest form?

1) $\frac{2}{5}$

2) $\frac{x+2}{x+5}$

3) $\frac{x-2}{x-5}$

4) $\frac{-3x-10}{-25}$

144 If Angelina's weekly allowance is *d* dollars, which expression represents her allowance, in dollars, for *x* weeks?

1) dx

2) $7dx$

3) $x + 7d$

4) $\frac{d}{x}$

145 If $s = \frac{2x + t}{r}$, then *x* equals

1) $\frac{rs - t}{2}$

2) $\frac{rs + 1}{2}$

3) $2rs - t$

4) $rs - 2t$

146 Mr. Taylor raised all his students' scores on a recent test by five points. How were the mean and the range of the scores affected?

1) The mean increased by five and the range increased by five.

2) The mean increased by five and the range remained the same.

3) The mean remained the same and the range increased by five.

4) The mean remained the same and the range remained the same.

147 The volume of a cylindrical can in 32π cubic inches. If the height of the can is 2 inches, what is its radius, in inches?

1) 8

2) 2

3) 16

4) 4

148 The sum of $8n^2 - 3n + 10$ and $-3n^2 - 6n - 7$ is

1) $5n^2 - 9n + 3$

2) $5n^2 - 3n - 17$

3) $-11n^2 - 9n - 17$

4) $-11n^2 - 3n + 3$

149 Which ratio represents the cosine of angle A in the right triangle below?
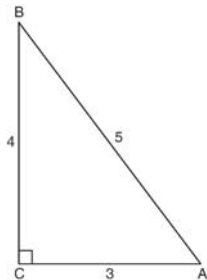
1) $\dfrac{3}{5}$

2) $\dfrac{5}{3}$

3) $\dfrac{4}{5}$

4) $\dfrac{4}{3}$

150 If the roots of a quadratic equation are −2 and 3, the equation can be written as
1) $(x-2)(x+3)=0$
2) $(x+2)(x-3)=0$
3) $(x+2)(x+3)=0$
4) $(x-2)(x-3)=0$

151 Carol plans to sell twice as many magazine subscriptions as Jennifer. If Carol and Jennifer need to sell at least 90 subscriptions in all, which inequality could be used to determine how many subscriptions, x, Jennifer needs to sell?
1) $x \geq 45$
2) $2x \geq 90$
3) $2x - x \geq 90$
4) $2x + x \geq 90$

152 Based on the line of best fit drawn below, which value could be expected for the data in June 2015?
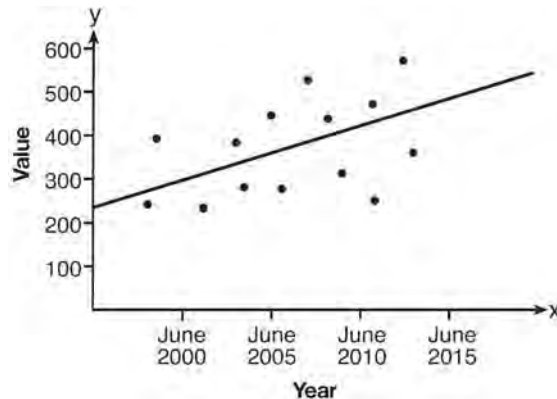
1) 230
2) 310
3) 480
4) 540

153 Three fair coins are tossed. What is the probability that two heads and one tail appear?

1) $\dfrac{1}{8}$

2) $\dfrac{3}{8}$

3) $\dfrac{3}{6}$

4) $\dfrac{2}{3}$

154 Timmy bought a skateboard and two helmets for a total of d dollars. If each helmet cost h dollars, the cost of the skateboard could be represented by
1) $2dh$

2) $\dfrac{dh}{2}$

3) $d - 2h$

4) $d - \dfrac{h}{2}$

155 If the area of a rectangle is represented by $x^2 + 8x + 15$ and its length is represented by $x + 5$, which expression represents the width of the rectangle?
1) $x + 3$
2) $x - 3$
3) $x^2 + 6x + 5$
4) $x^2 + 7x + 10$

156 If five times a number is less than 55, what is the greatest possible integer value of the number?
1) 12
2) 11
3) 10
4) 9

157 Peter walked 8,900 feet from home to school.

$$1 \text{ mile} = 5,280 \text{ feet}$$

How far, to the *nearest tenth of a mile*, did he walk?
1) 0.5
2) 0.6
3) 1.6
4) 1.7

158 In a given linear equation, the value of the independent variable decreases at a constant rate while the value of the dependent variable increases at a constant rate. The slope of this line is
1) positive
2) negative
3) zero
4) undefined

159 Which graph represents the inequality $y > 3$?
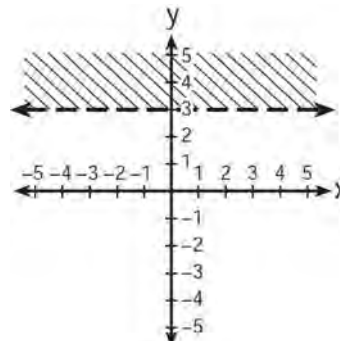
1)
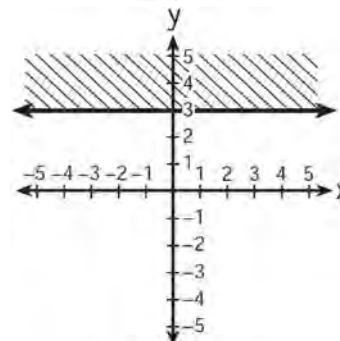
2)
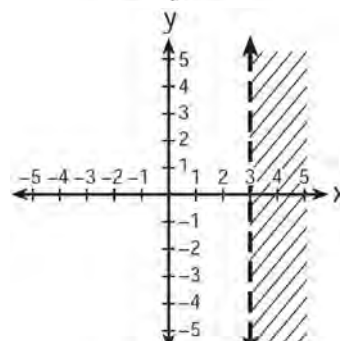
3)
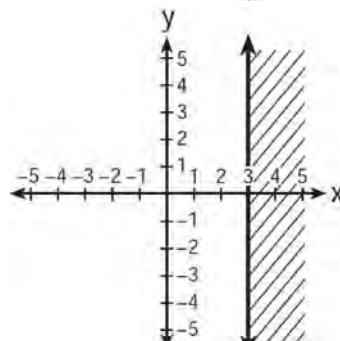
4)

160 Which fraction is equivalent to $\dfrac{4}{3a} - \dfrac{5}{2a}$?

1) $-\dfrac{1}{a}$

2) $-\dfrac{1}{5a}$

3) $-\dfrac{7}{6a}$

4) $-\dfrac{7}{6a^2}$

161 A scatter plot was constructed on the graph below and a line of best fit was drawn.
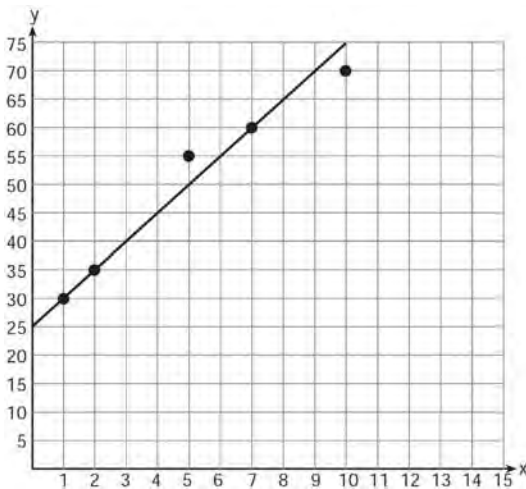
What is the equation of this line of best fit?
1) $y = x + 5$
2) $y = x + 25$
3) $y = 5x + 5$
4) $y = 5x + 25$

162 Which interval notation describes the set $S = \{x \mid 1 \le x < 10\}$?
1) $[1, 10]$
2) $(1, 10]$
3) $[1, 10)$
4) $(1, 10)$

163 The equation of the axis of symmetry of the graph of $y = 2x^2 - 3x + 7$ is

1) $x = \dfrac{3}{4}$

2) $y = \dfrac{3}{4}$

3) $x = \dfrac{3}{2}$

4) $y = \dfrac{3}{2}$

164 Which expression can be used to change 75 kilometers per hour to meters per minute?

1) $\dfrac{75 \text{ km}}{1 \text{ hr}} \times \dfrac{1 \text{ km}}{1,000 \text{ m}} \times \dfrac{1 \text{ hr}}{60 \text{ min}}$

2) $\dfrac{75 \text{ km}}{1 \text{ hr}} \times \dfrac{1 \text{ km}}{1,000 \text{ m}} \times \dfrac{60 \text{ min}}{1 \text{ hr}}$

3) $\dfrac{75 \text{ km}}{1 \text{ hr}} \times \dfrac{1,000 \text{ m}}{1 \text{ km}} \times \dfrac{1 \text{ hr}}{60 \text{ min}}$

4) $\dfrac{75 \text{ km}}{1 \text{ hr}} \times \dfrac{1,000 \text{ m}}{1 \text{ km}} \times \dfrac{60 \text{ min}}{1 \text{ hr}}$

165 There are 18 students in a class. Each day, the teacher randomly selects three students to assist in a game: a leader, a recorder, and a timekeeper. In how many possible ways can the jobs be assigned?
1) 306
2) 816
3) 4896
4) 5832

27

166 The quotient of $\dfrac{8x^5 - 2x^4 + 4x^3 - 6x^2}{2x^2}$ is

1) $16x^7 - 4x^6 + 8x^5 - 12x^4$
2) $`4x^7 - x^6 + 2x^5 - 3x^4$
3) $4x^3 - x^2 + 2x - 3x$
4) $4x^3 - x^2 + 2x - 3$

167 Which set of coordinates is a solution of the equation $2x - y = 11$?

1) $(-6, 1)$
2) $(-1, 9)$
3) $(0, 11)$
4) $(2, -7)$

168 The expression $\dfrac{14 + x}{x^2 - 4}$ is undefined when x is

1) -14, only
2) 2, only
3) -2 or 2
4) $-14, -2,$ or 2

169 A soda container holds $5\dfrac{1}{2}$ gallons of soda. How many ounces of soda does this container hold?

| 1 quart = 32 ounces |
| 1 gallon = 4 quarts |

1) 44
2) 176
3) 640
4) 704

170 What is the solution of the system of equations shown in the graph below?
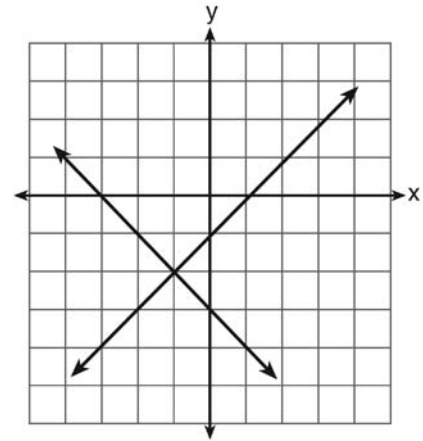
1) $(1, 0)$ and $(-3, 0)$
2) $(0, -3)$ and $(0, -1)$
3) $(-1, -2)$
4) $(-2, -1)$

171 A bag contains five green gumdrops and six red gumdrops. If Kim pulls a green gumdrop out of the bag and eats it, what is the probability that the next gumdrop she pulls out will be red?

1) $\dfrac{5}{11}$
2) $\dfrac{5}{10}$
3) $\dfrac{6}{11}$
4) $\dfrac{6}{10}$

172 The scatter plot shown below represents a relationship between *x* and *y*.
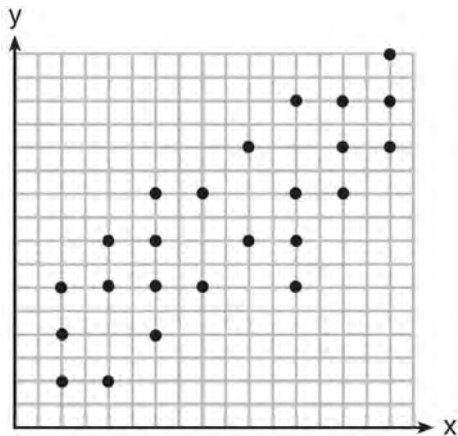
This type of relationship is
1) a positive correlation
2) a negative correlation
3) a zero correlation
4) not able to be determined

173 The length of a rectangle is 15 and its width is *w*. The perimeter of the rectangle is, *at most*, 50. Which inequality can be used to find the longest possible width?
1) $30 + 2w < 50$
2) $30 + 2w \le 50$
3) $30 + 2w > 50$
4) $30 + 2w \ge 50$

174 Given:
$A = \{$perfect square integers from 4-100, inclusive$\}$
$B = \{16, 36, 49, 64\}$
The complement of set B in the universal set A is
1) $\{9, 25, 81\}$
2) $\{4, 9, 25, 81, 100\}$
3) $\{1, 4, 9, 25, 81, 100\}$
4) $\{4, 16, 36, 49, 64, 100\}$

175 A cube, with faces numbered 1 to 6, is rolled, and a penny is tossed at the same time. How many elements in the sample space consist of an even number and a tail?
1) 12
2) 2
3) 3
4) 4

176 Which type of function is graphed below?
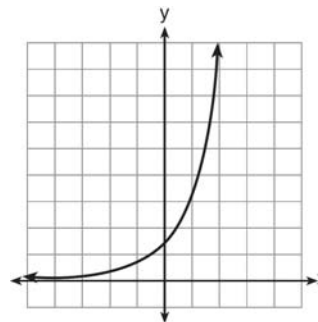
1) linear
2) quadratic
3) exponential
4) absolute value

177 What is the perimeter of the figure shown below, which consists of an isosceles trapezoid and a semicircle?
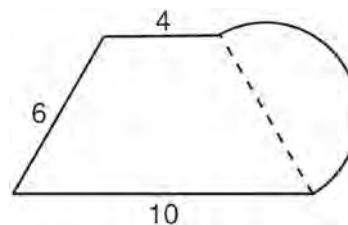
1) $20 + 3\pi$
2) $20 + 6\pi$
3) $26 + 3\pi$
4) $26 + 6\pi$

Integrated Algebra Multiple Choice Regents Exam Questions

178 Which value of x is the solution of $\frac{2x-3}{x-4} = \frac{2}{3}$?

1) $-\frac{1}{4}$

2) $\frac{1}{4}$

3) -4

4) 4

179 What is the range of the data represented in the box-and-whisker plot shown below?
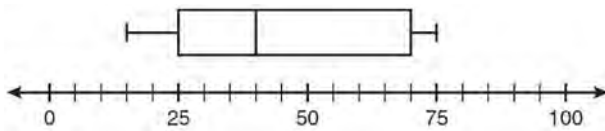
1) 40
2) 45
3) 60
4) 100

180 Jack wants to replace the flooring in his rectangular kitchen. He calculates the area of the floor to be 12.8 square meters. The actual area of the floor is 13.5 square meters. What is the relative error in calculating the area of the floor, to the *nearest thousandth*?

1) 0.051
2) 0.052
3) 0.054
4) 0.055

181 Given: $Q = \{0, 2, 4, 6\}$

$\qquad W = \{0, 1, 2, 3\}$

$\qquad Z = \{1, 2, 3, 4\}$

What is the intersection of sets Q, W, and Z?

1) $\{2\}$
2) $\{0, 2\}$
3) $\{1, 2, 3\}$
4) $\{0, 1, 2, 3, 4, 6\}$

182 Roger is having a picnic for 78 guests. He plans to serve each guest at least one hot dog. If each package, p, contains eight hot dogs, which inequality could be used to determine how many packages of hot dogs Roger will need to buy?

1) $p \geq 78$
2) $8p \geq 78$
3) $8 + p \geq 78$
4) $78 - p \geq 8$

183 In the diagram below, *MATH* is a rectangle, $GB = 4.6$, $MH = 6$, and $HT = 15$.
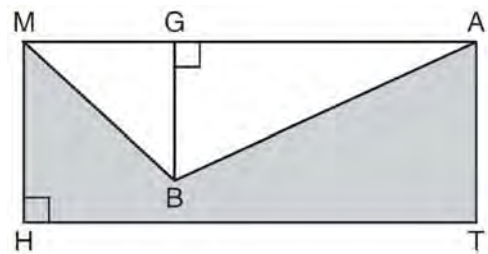
What is the area of polygon *MBATH*?

1) 34.5
2) 55.5
3) 90.0
4) 124.5

184 Which graph can be used to find the solution of the following system of equations?

$$y = x^2 + 2x + 3$$

$$2y - 2x = 10$$
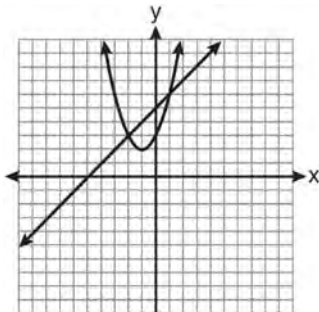
1)
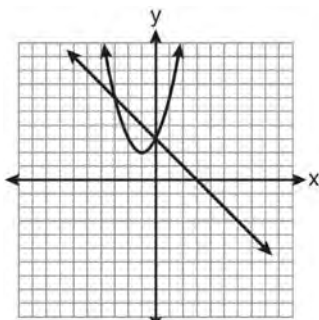
2)
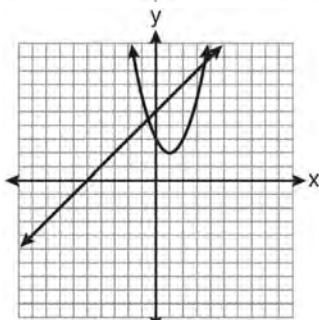
3)
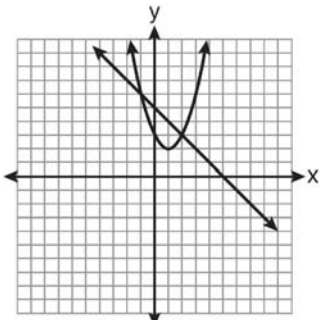
4)

185 Maria has a set of 10 index cards labeled with the digits 0 through 9. She puts them in a bag and selects one at random. The outcome that is most likely to occur is selecting
1) an odd number
2) a prime number
3) a number that is at most 5
4) a number that is divisible by 3

186 The box-and-whisker plot below represents the math test scores of 20 students.
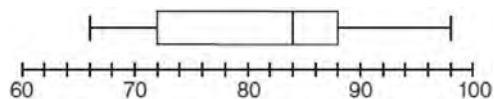
What percentage of the test scores are *less than* 72?
1) 25
2) 50
3) 75
4) 100

187 Which set of data can be classified as qualitative?
1) scores of students in an algebra class
2) ages of students in a biology class
3) numbers of students in history classes
4) eye colors of students in an economics class

188 A hiker walked 12.8 miles from 9:00 a.m. to noon. He walked an additional 17.2 miles from 1:00 p.m. to 6:00 p.m. What is his average rate for the entire walk, in miles per hour?
1) 3.75
2) 3.86
3) 4.27
4) 7.71

189 Which ratio represents $\sin x$ in the right triangle shown below?
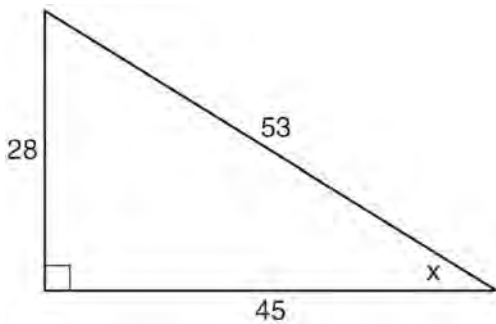
1) $\dfrac{28}{53}$

2) $\dfrac{28}{45}$

3) $\dfrac{45}{53}$

4) $\dfrac{53}{28}$

190 Which equation represents a quadratic function?
1) $y = x + 2$
2) $y = |x + 2|$
3) $y = x^2$
4) $y = 2^x$

191 This year, John played in 10 baseball games. In these games he had hit the ball 2, 3, 0, 1, 3, 2, 4, 0, 2, and 3 times. In the first 10 games he plays next year, John wants to increase his average (mean) hits per game by 0.5. What is the total number of hits John needs over the first 10 games next year to achieve his goal?
1) 5
2) 2
3) 20
4) 25

192 What are the vertex and axis of symmetry of the parabola shown in the diagram below?
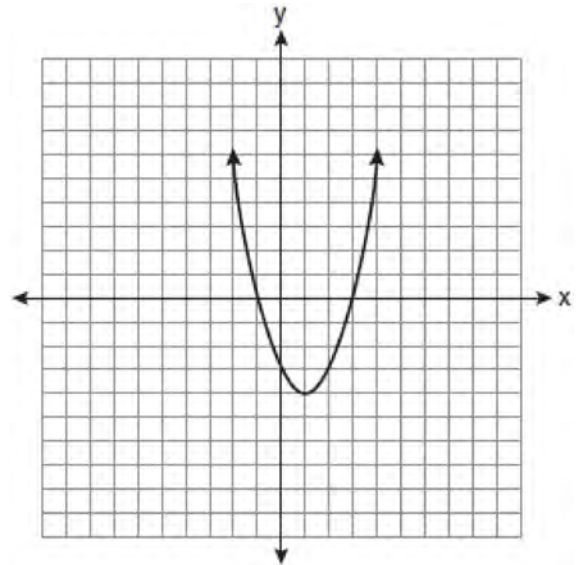
1) vertex: $(1, -4)$; axis of symmetry: $x = 1$
2) vertex: $(1, -4)$; axis of symmetry: $x = -4$
3) vertex: $(-4, 1)$; axis of symmetry: $x = 1$
4) vertex: $(-4, 1)$; axis of symmetry: $x = -4$

193 The number of calories burned while jogging varies directly with the number of minutes spent jogging. If George burns 150 calories by jogging for 20 minutes, how many calories does he burn by jogging for 30 minutes?
1) 100
2) 180
3) 200
4) 225

194 An example of an algebraic expression is
1) $x + 2$
2) $y = x + 2$
3) $y < x + 2$
4) $y = x^2 + 2x$

195 Which expression is equivalent to $3^3 \cdot 3^4$?
1) 9^{12}
2) 9^7
3) 3^{12}
4) 3^7

196 What is the slope of the line whose equation is $3x - 7y = 9$?
1) $-\dfrac{3}{7}$
2) $\dfrac{3}{7}$
3) $-\dfrac{7}{3}$
4) $\dfrac{7}{3}$

197 The figure shown below is composed of two rectangles and a quarter circle.
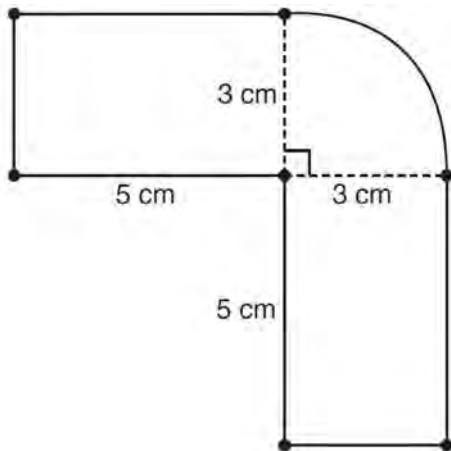
What is the area of this figure, to the *nearest square centimeter?*
1) 33
2) 37
3) 44
4) 58

198 A survey is being conducted to determine which school board candidate would best serve the Yonkers community. Which group, when randomly surveyed, would likely produce the most bias?
1) 15 employees of the Yonkers school district
2) 25 people driving past Yonkers High School
3) 75 people who enter a Yonkers grocery store
4) 100 people who visit the local Yonkers shopping mall

199 Four hundred licensed drivers participated in the math club's survey on driving habits. The table below shows the number of drivers surveyed in each age group.

Ages of People in Survey on Driving Habits

Age Group	Number of Drivers
16–25	150
26–35	129
36–45	33
46–55	57
56–65	31

Which statement best describes a conclusion based on the data in the table?
1) It may be biased because no one younger than 16 was surveyed.
2) It would be fair because many different age groups were surveyed.
3) It would be fair because the survey was conducted by the math club students.
4) It may be biased because the majority of drivers surveyed were in the younger age intervals.

200 Three high school juniors, Reese, Matthew, and Chris, are running for student council president. A survey is taken a week before the election asking 40 students which candidate they will vote for in the election. The results are shown in the table below.

Candidate's Name	Number of Students Supporting Candidate
Reese	15
Matthew	13
Chris	12

Based on the table, what is the probability that a student will vote for Reese?

1) $\frac{1}{3}$

2) $\frac{3}{5}$

3) $\frac{3}{8}$

4) $\frac{5}{8}$

201 What is $\frac{7}{12x} - \frac{y}{6x^2}$ expressed in simplest form?

1) $\frac{7-y}{6x}$

2) $\frac{7-y}{12x-6x^2}$

3) $-\frac{7y}{12x^2}$

4) $\frac{7x-2y}{12x^2}$

202 In the diagram below, what is the slope of the line passing through points A and B?
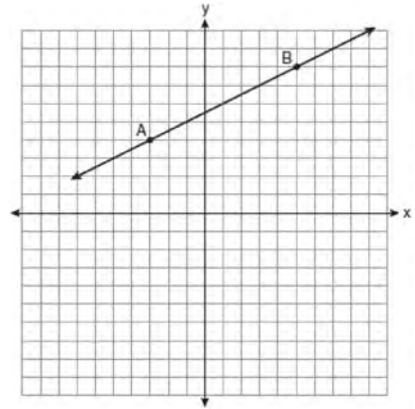
1) −2
2) 2
3) $-\frac{1}{2}$
4) $\frac{1}{2}$

203 Which phrase best describes the relationship between the number of miles driven and the amount of gasoline used?
1) causal, but not correlated
2) correlated, but not causal
3) both correlated and causal
4) neither correlated nor causal

204 The current student population of the Brentwood Student Center is 2,000. The enrollment at the center increases at a rate of 4% each year. To the *nearest whole number*, what will the student population be closest to in 3 years'?
1) 2,240
2) 2,250
3) 5,488
4) 6,240

34

205 The maximum height and speed of various roller coasters in North America are shown in the table below.

Maximum Speed, in mph, (x)	45	50	54	60	65	70
Maximum Height, in feet, (y)	63	80	105	118	141	107

Which graph represents a correct scatter plot of the data?

1)

2)

3)

4)
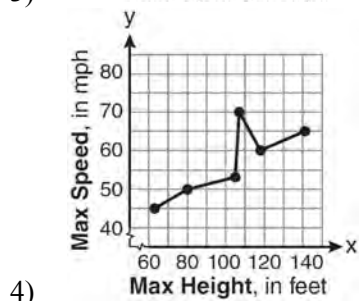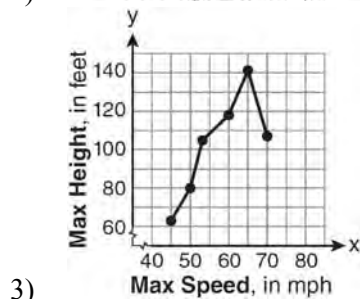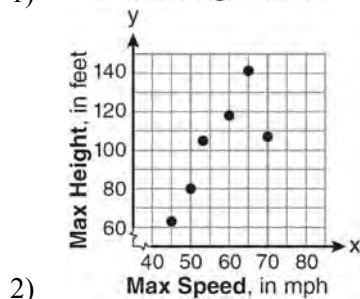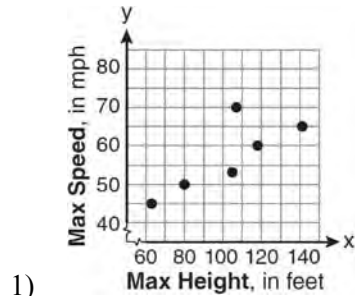
206 A formula used for calculating velocity is $v = \frac{1}{2}at^2$. What is a expressed in terms of v and t?
1) $a = \frac{2v}{t}$
2) $a = \frac{2v}{t^2}$
3) $a = \frac{v}{t}$
4) $a = \frac{v}{2t^2}$

207 Which equation illustrates the associative property?
1) $x + y + z = x + y + z$
2) $x(y + z) = xy + xz$
3) $x + y + z = z + y + x$
4) $(x + y) + z = x + (y + z)$

208 The sum of $4x^3 + 6x^2 + 2x - 3$ and $3x^3 + 3x^2 - 5x - 5$ is
1) $7x^3 + 3x^2 - 3x - 8$
2) $7x^3 + 3x^2 + 7x + 2$
3) $7x^3 + 9x^2 - 3x - 8$
4) $7x^6 + 9x^4 - 3x^2 - 8$

209 Which algebraic expression represents 15 less than x divided by 9?
1) $\frac{x}{9} - 15$
2) $9x - 15$
3) $15 - \frac{x}{9}$
4) $15 - 9x$

35

210 In $\triangle ABC$, the measure of $\angle B = 90°$, $AC = 50$, $AB = 48$, and $BC = 14$. Which ratio represents the tangent of $\angle A$?
1) $\frac{14}{50}$
2) $\frac{14}{48}$
3) $\frac{48}{50}$
4) $\frac{48}{14}$

214 Which expression represents $\frac{-14a^2c^8}{7a^3c^2}$ in simplest form?
1) $-2ac^4$
2) $-2ac^6$
3) $\frac{-2c^4}{a}$
4) $\frac{-2c^6}{a}$

211 Tim ate four more cookies than Alice. Bob ate twice as many cookies as Tim. If x represents the number of cookies Alice ate, which expression represents the number of cookies Bob ate?
1) $2 + (x + 4)$
2) $2x + 4$
3) $2(x + 4)$
4) $4(x + 2)$

215 Which data set describes a situation that could be classified as quantitative?
1) the phone numbers in a telephone book
2) the addresses for students at Hopkins High School
3) the zip codes of residents in the city of Buffalo, New York
4) the time it takes each of Mr. Harper's students to complete a test

212 What is the slope of the line that passes through the points $(3, 5)$ and $(-2, 2)$?
1) $\frac{1}{5}$
2) $\frac{3}{5}$
3) $\frac{5}{3}$
4) 5

216 Steve ran a distance of 150 meters in $1\frac{1}{2}$ minutes. What is his speed in meters per hour?
1) 6
2) 60
3) 100
4) 6,000

213 Which interval notation represents the set of all real numbers greater than 2 and less than or equal to 20?
1) $(2, 20)$
2) $(2, 20]$
3) $[2, 20)$
4) $[2, 20]$

217 What is the solution of the inequality $-6x - 17 \geq 8x + 25$?
1) $x \geq 3$
2) $x \leq 3$
3) $x \geq -3$
4) $x \leq -3$

218 Which expression represents $\dfrac{12x^3 - 6x^2 + 2x}{2x}$ in simplest form?

1) $6x^2 - 3x$
2) $10x^2 - 4x$
3) $6x^2 - 3x + 1$
4) $10x^2 - 4x + 1$

219 The value, y, of a \$15,000 investment over x years

is represented by the equation $y = 15000(1.2)^{\frac{x}{3}}$.
What is the profit (interest) on a 6-year investment?

1) \$6,600
2) \$10,799
3) \$21,600
4) \$25,799

220 What is the solution of the system of equations
$c + 3d = 8$ and $c = 4d - 6$?

1) $c = -14, d = -2$
2) $c = -2, d = 2$
3) $c = 2, d = 2$
4) $c = 14, d = -2$

221 Which set-builder notation describes
$\{-3, -2, -1, 0, 1, 2\}$?

1) $\{x \mid -3 \le x < 2, \text{ where } x \text{ is an integer}\}$
2) $\{x \mid -3 < x \le 2, \text{ where } x \text{ is an integer}\}$
3) $\{x \mid -3 < x < 2, \text{ where } x \text{ is an integer}\}$
4) $\{x \mid -3 \le x \le 2, \text{ where } x \text{ is an integer}\}$

222 Factored completely, the expression $3x^2 - 3x - 18$ is equivalent to

1) $3(x^2 - x - 6)$
2) $3(x - 3)(x + 2)$
3) $(3x - 9)(x + 2)$
4) $(3x + 6)(x - 3)$

223 How many square inches of wrapping paper are needed to entirely cover a box that is 2 inches by 3 inches by 4 inches?

1) 18
2) 24
3) 26
4) 52

224 Given: $X = \{1, 2, 3, 4\}$

$Y = \{2, 3, 4, 5\}$

$Z = \{3, 4, 5, 6\}$

What is the intersection of sets X, Y, and Z?

1) $\{3, 4\}$
2) $\{2, 3, 4\}$
3) $\{3, 4, 5\}$
4) $\{1, 2, 3, 4, 5, 6\}$

225 The length of a rectangle is 3 inches more than its width. The area of the rectangle is 40 square inches. What is the length, in inches, of the rectangle?

1) 5
2) 8
3) 8.5
4) 11.5

226 Corinne calculated the area of a paper plate to be 50.27 square inches. If the actual area of the plate is 55.42 square inches, what is the relative error in calculating the area, to the *nearest thousandth*?
1) 0.092
2) 0.093
3) 0.102
4) 0.103

227 A figure is made up of a rectangle and a semicircle as shown in the diagram below.

6 cm

5 cm
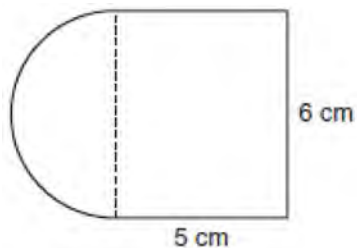
What is the area of the figure, to the *nearest tenth of a square centimeter*?
1) 39.4
2) 44.1
3) 48.8
4) 58.3

228 The probability that it will snow on Sunday is $\frac{3}{5}$. The probability that it will snow on both Sunday and Monday is $\frac{3}{10}$. What is the probability that it will snow on Monday, if it snowed on Sunday?
1) $\frac{9}{50}$
2) 2
3) $\frac{1}{2}$
4) $\frac{9}{10}$

229 In a science fiction novel, the main character found a mysterious rock that decreased in size each day. The table below shows the part of the rock that remained at noon on successive days.

Day	Fractional Part of the Rock Remaining
1	1
2	$\frac{1}{2}$
3	$\frac{1}{4}$
4	$\frac{1}{8}$

Which fractional part of the rock will remain at noon on day 7?
1) $\frac{1}{128}$
2) $\frac{1}{64}$
3) $\frac{1}{14}$
4) $\frac{1}{12}$

230 Which verbal expression can be represented by $2(x - 5)$?
1) 5 less than 2 times x
2) 2 multiplied by x less than 5
3) twice the difference of x and 5
4) the product of 2 and x, decreased by 5

231 What is the solution set of $\frac{x+2}{x-2} = \frac{-3}{x}$?
1) $\{-2, 3\}$
2) $\{-3, -2\}$
3) $\{-1, 6\}$
4) $\{-6, 1\}$

232 The end of a dog's leash is attached to the top of a 5-foot-tall fence post, as shown in the diagram below. The dog is 7 feet away from the base of the fence post.
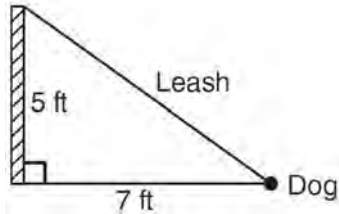
How long is the leash, to the *nearest tenth of a foot*?
1) 4.9
2) 8.6
3) 9.0
4) 12.0

233 If $\dfrac{ey}{n} + k = t$, what is y in terms of e, n, k, and t?

1) $y = \dfrac{tn + k}{e}$

2) $y = \dfrac{tn - k}{e}$

3) $y = \dfrac{n(t + k)}{e}$

4) $y = \dfrac{n(t - k)}{e}$

234 The value of a car purchased for $20,000 decreases at a rate of 12% per year. What will be the value of the car after 3 years?
1) $12,800.00
2) $13,629.44
3) $17,600.00
4) $28,098.56

235 Which graph represents a function?
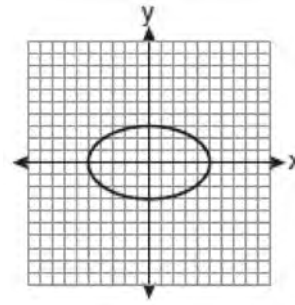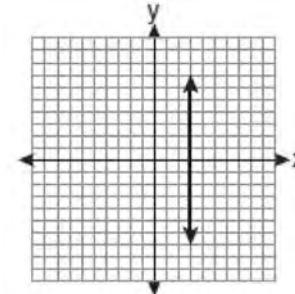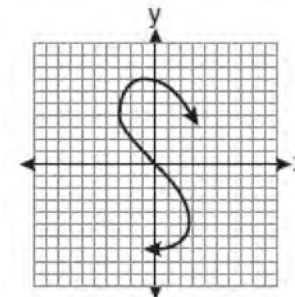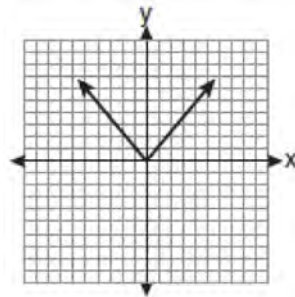
1)

2)

3)

4)

39

236 In right triangle *ABC* shown below, $AB = 18.3$ and $BC = 11.2$.
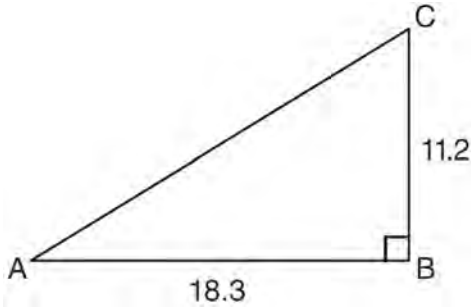
What is the measure of $\angle A$, to the *nearest tenth of a degree*?
1) 31.5
2) 37.7
3) 52.3
4) 58.5

237 Which equation represents the line that passes through the point $(1, 5)$ and has a slope of -2?
1) $y = -2x + 7$
2) $y = -2x + 11$
3) $y = 2x - 9$
4) $y = 2x + 3$

238 What are the factors of the expression $x^2 + x - 20$?
1) $(x + 5)$ and $(x + 4)$
2) $(x + 5)$ and $(x - 4)$
3) $(x - 5)$ and $(x + 4)$
4) $(x - 5)$ and $(x - 4)$

239 The expression $\sqrt{72} - 3\sqrt{2}$ written in simplest radical form is
1) $5\sqrt{2}$
2) $3\sqrt{6}$
3) $3\sqrt{2}$
4) $\sqrt{6}$

240 A study showed that a decrease in the cost of carrots led to an increase in the number of carrots sold. Which statement best describes this relationship?
1) positive correlation and a causal relationship
2) negative correlation and a causal relationship
3) positive correlation and not a causal relationship
4) negative correlation and not a causal relationship

241 A garden is in the shape of an isosceles trapezoid and a semicircle, as shown in the diagram below. A fence will be put around the perimeter of the entire garden.
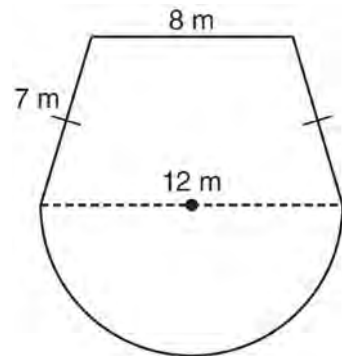
Which expression represents the length of fencing, in meters, that will be needed?
1) $22 + 6\pi$
2) $22 + 12\pi$
3) $15 + 6\pi$
4) $15 + 12\pi$

242 Given: $U = \{1,2,3,4,5,6,7,8\}$

$B = \{2,3,5,6\}$

Set B is a subset of set U. What is the complement of set B?
1) $\{\}$
2) $\{2,3,5,6\}$
3) $\{1,4,7,8\}$
4) $\{1,2,3,4,5,6,7,8\}$

243 Which situation does *not* describe a causal relationship?
1) The higher the volume on a radio, the louder the sound will be.
2) The faster a student types a research paper, the more pages the paper will have.
3) The shorter the distance driven, the less gasoline that will be used.
4) The slower the pace of a runner, the longer it will take the runner to finish the race.

244 Which equation has roots of −3 and 5?
1) $x^2 + 2x - 15 = 0$
2) $x^2 - 2x - 15 = 0$
3) $x^2 + 2x + 15 = 0$
4) $x^2 - 2x + 15 = 0$

245 Which relation is a function?
1) $\left\{\left(\frac{3}{4},0\right),(0,1),\left(\frac{3}{4},2\right)\right\}$
2) $\left\{(-2,2),\left(-\frac{1}{2},1\right),(-2,4)\right\}$
3) $\{(-1,4),(0,5),(0,4)\}$
4) $\{(2,1),(4,3),(6,5)\}$

246 Which table does *not* show bivariate data?

1)

Height (inches)	Weight (pounds)
39	50
48	70
60	90

2)

Gallons	Miles Driven
15	300
20	400
25	500

3)

Quiz Average	Frequency
70	12
80	15
90	6

4)

Speed (mph)	Distance (miles)
40	80
50	120
55	150

247 Which set of data describes a situation that could be classified as qualitative?
1) the colors of the birds at the city zoo
2) the shoe size of the zookeepers at the city zoo
3) the heights of the giraffes at the city zoo
4) the weights of the monkeys at the city zoo

248 An example of an algebraic expression is
1) $\frac{2x+3}{7} = \frac{13}{x}$
2) $(2x+1)(x-7)$
3) $4x - 1 = 4$
4) $x = 2$

249 Debbie solved the linear equation $3(x+4) - 2 = 16$ as follows:

[Line 1] $3(x+4) - 2 = 16$

[Line 2] $3(x+4) = 18$

[Line 3] $3x + 4 = 18$

[Line 4] $3x = 14$

[Line 5] $x = 4\frac{2}{3}$

She made an error between lines
1) 1 and 2
2) 2 and 3
3) 3 and 4
4) 4 and 5

250 What is the slope of the line passing through the points $(-2, 4)$ and $(3, 6)$?

1) $-\frac{5}{2}$

2) $-\frac{2}{5}$

3) $\frac{2}{5}$

4) $\frac{5}{2}$

251 Given: Set $U = \{S, O, P, H, I, A\}$

Set $B = \{A, I, O\}$

If set B is a subset of set U, what is the complement of set B?
1) $\{O, P, S\}$
2) $\{I, P, S\}$
3) $\{A, H, P\}$
4) $\{H, P, S\}$

252 Which expression represents $\dfrac{x^2 - x - 6}{x^2 - 5x + 6}$ in simplest form?

1) $\dfrac{x+2}{x-2}$

2) $\dfrac{-x-6}{-5x+6}$

3) $\dfrac{1}{5}$

4) -1

253 What is the slope of the line passing through the points A and B, as shown on the graph below?
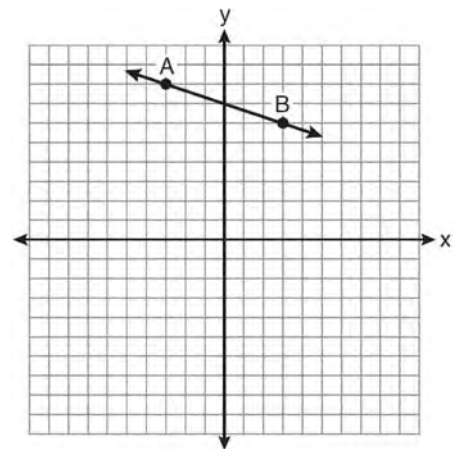
1) -3

2) $-\dfrac{1}{3}$

3) 3

4) $\dfrac{1}{3}$

42

254 The rectangle shown below has a diagonal of 18.4 cm and a width of 7 cm.
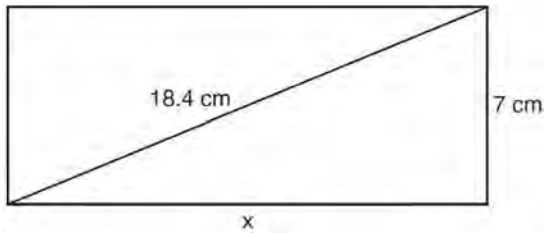
To the *nearest centimeter*, what is the length, x, of the rectangle?
1) 11
2) 17
3) 20
4) 25

255 What is the sum of $\dfrac{3x^2}{x-2}$ and $\dfrac{x^2}{x-2}$?

1) $\dfrac{3x^4}{(x-2)^2}$

2) $\dfrac{3x^4}{x-2}$

3) $\dfrac{4x^2}{(x-2)^2}$

4) $\dfrac{4x^2}{x-2}$

256 A right triangle contains a 38° angle whose adjacent side measures 10 centimeters. What is the length of the hypotenuse, to the *nearest hundredth of a centimeter*?
1) 7.88
2) 12.69
3) 12.80
4) 16.24

257 A student correctly graphed the parabola shown below to solve a given quadratic equation.
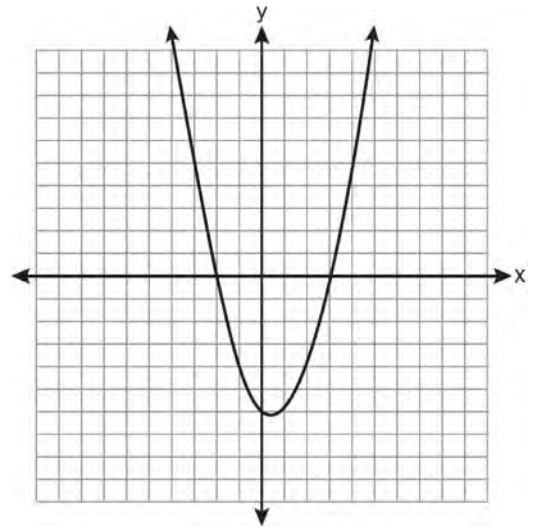
What are the roots of the quadratic equation associated with this graph?
1) −6 and 3
2) −6 and 0
3) −3 and 2
4) −2 and 3

258 Which verbal expression is represented by $\dfrac{1}{2}(n-3)$?
1) one-half n decreased by 3
2) one-half n subtracted from 3
3) the difference of one-half n and 3
4) one-half the difference of n and 3

259 The expression $6\sqrt{50}+6\sqrt{2}$ written in simplest radical form is
1) $6\sqrt{52}$
2) $12\sqrt{52}$
3) $17\sqrt{2}$
4) $36\sqrt{2}$

260 Which data table represents univariate data?

1)

Side Length of a Square	Area of Square
2	4
3	9
4	16
5	25

2)

Hours Worked	Pay
20	$160
25	$200
30	$240
35	$280

3)

Age Group	Frequency
20–29	9
30–39	7
40–49	10
50–59	4

4)

People	Number of Fingers
2	20
3	30
4	40
5	50

261 How many different sandwiches consisting of one type of cheese, one condiment, and one bread choice can be prepared from five types of cheese, two condiments, and three bread choices?
1) 10
2) 13
3) 15
4) 30

262 What is the equation of the axis of symmetry of the parabola shown in the diagram below?
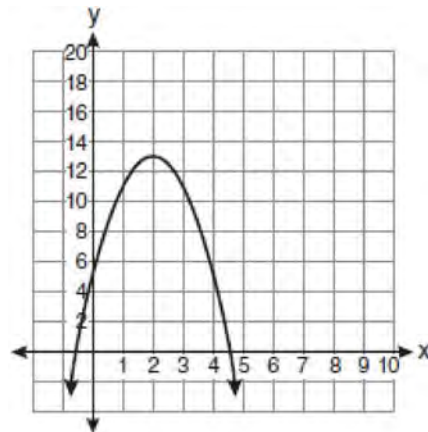
1) $x = -0.5$
2) $x = 2$
3) $x = 4.5$
4) $x = 13$

263 What is an equation of the axis of symmetry of the parabola represented by $y = -x^2 + 6x - 4$?
1) $x = 3$
2) $y = 3$
3) $x = 6$
4) $y = 6$

264 The ninth grade class at a local high school needs to purchase a park permit for $250.00 for their upcoming class picnic. Each ninth grader attending the picnic pays $0.75. Each guest pays $1.25. If 200 ninth graders attend the picnic, which inequality can be used to determine the number of guests, x, needed to cover the cost of the permit?
1) $0.75x - (1.25)(200) \geq 250.00$
2) $0.75x + (1.25)(200) \geq 250.00$
3) $(0.75)(200) - 1.25x \geq 250.00$
4) $(0.75)(200) + 1.25x \geq 250.00$

265 Which graph represents an exponential equation?

1)

2)

3)

4)
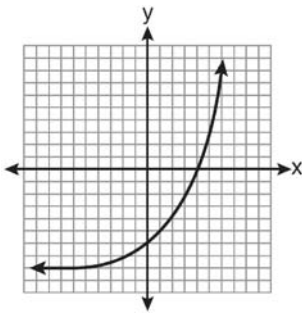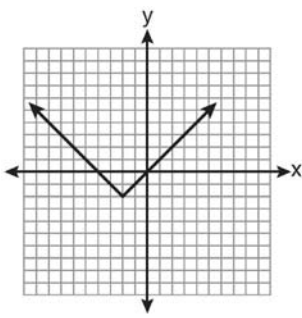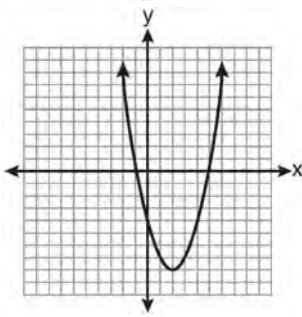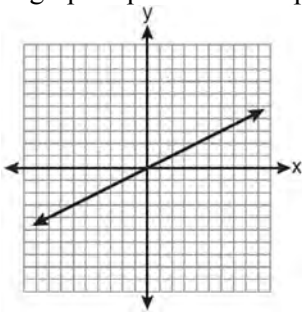
266 What is an equation of the line that passes through the points $(1, 3)$ and $(8, 5)$?

1) $y + 1 = \frac{2}{7}(x + 3)$

2) $y - 5 = \frac{2}{7}(x - 8)$

3) $y - 1 = \frac{2}{7}(x + 3)$

4) $y + 5 = \frac{2}{7}(x - 8)$

267 Which equation represents a line parallel to the graph of $2x - 4y = 16$?

1) $y = \frac{1}{2}x - 5$

2) $y = -\frac{1}{2}x + 4$

3) $y = -2x + 6$

4) $y = 2x + 8$

268 What is $\frac{2 + x}{5x} - \frac{x - 2}{5x}$ expressed in simplest form?

1) 0

2) $\frac{2}{5}$

3) $\frac{4}{5x}$

4) $\frac{2x + 4}{5x}$

269 The graph of the equation $y = |x|$ is shown in the diagram below.
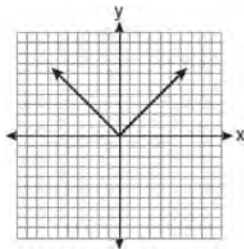
Which diagram could represent a graph of the equation $y = a|x|$ when $-1 < a < 0$?

1)

2)

3)

4)
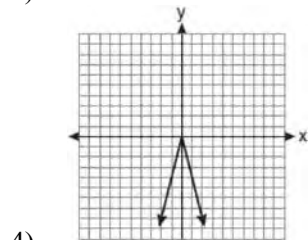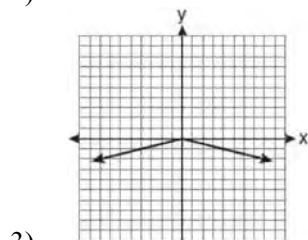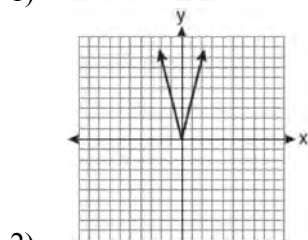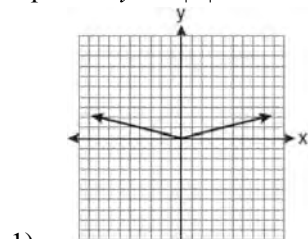
270 The members of the senior class are planning a dance. They use the equation $r = pn$ to determine the total receipts. What is n expressed in terms of r and p ?
1) $n = r + p$
2) $n = r - p$
3) $n = \dfrac{p}{r}$
4) $n = \dfrac{r}{p}$

271 If Ann correctly factors an expression that is the difference of two perfect squares, her factors could be
1) $(2x + y)(x - 2y)$
2) $(2x + 3y)(2x - 3y)$
3) $(x - 4)(x - 4)$
4) $(2y - 5)(y - 5)$

272 Melissa graphed the equation $y = x^2$ and Dave graphed the equation $y = -3x^2$ on the same coordinate grid. What is the relationship between the graphs that Melissa and Dave drew?
1)   Dave's graph is wider and opens in the opposite direction from Melissa's graph.
2)   Dave's graph is narrower and opens in the opposite direction from Melissa's graph.
3)   Dave's graph is wider and is three units below Melissa's graph.
4)   Dave's graph is narrower and is three units to the left of Melissa's graph.

273 Which ordered pair is in the solution set of the following system of linear inequalities?

$$y < 2x + 2$$

$$y \geq -x - 1$$

1) $(0, 3)$
2) $(2, 0)$
3) $(-1, 0)$
4) $(-1, -4)$

274 Which value of x is the solution of $\dfrac{x}{3} + \dfrac{x+1}{2} = x$?

1) 1
2) -1
3) 3
4) -3

275 The vertex of the parabola $y = x^2 + 8x + 10$ lies in Quadrant

1) I
2) II
3) III
4) IV

276 Which relation represents a function?

1) $\{(0, 3), (2, 4), (0, 6)\}$
2) $\{(-7, 5), (-7, 1), (-10, 3), (-4, 3)\}$
3) $\{(2, 0), (6, 2), (6, -2)\}$
4) $\{(-6, 5), (-3, 2), (1, 2), (6, 5)\}$

277 Which equation represents a line parallel to the y-axis?

1) $x = y$
2) $x = 4$
3) $y = 4$
4) $y = x + 4$

278 The scatter plot below represents the relationship between the number of peanuts a student eats and the student's bowling score.
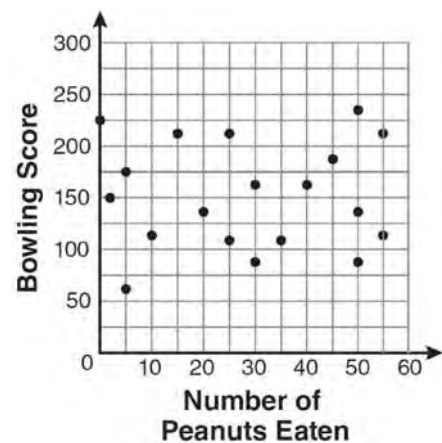
Which conclusion about the scatter plot is valid?

1) There is almost no relationship between eating peanuts and bowling score.
2) Students who eat more peanuts have higher bowling scores.
3) Students who eat more peanuts have lower bowling scores.
4) No bowlers eat peanuts.

279 How many different ways can five books be arranged on a shelf?

1) 5
2) 15
3) 25
4) 120

280 A bag contains eight green marbles, five white marbles, and two red marbles. What is the probability of drawing a red marble from the bag?

1) $\dfrac{1}{15}$

2) $\dfrac{2}{15}$

3) $\dfrac{2}{13}$

4) $\dfrac{13}{15}$

283 What is the sum of $\dfrac{3}{2x}$ and $\dfrac{7}{4x}$?

1) $\dfrac{21}{8x^2}$

2) $\dfrac{13}{4x}$

3) $\dfrac{10}{6x}$

4) $\dfrac{13}{8x}$

281 Which ordered pair is in the solution set of the system of inequalities shown in the graph below?

1) $(-2,-1)$
2) $(-2,2)$
3) $(-2,-4)$
4) $(2,-2)$

284 Which type of function is represented by the graph shown below?
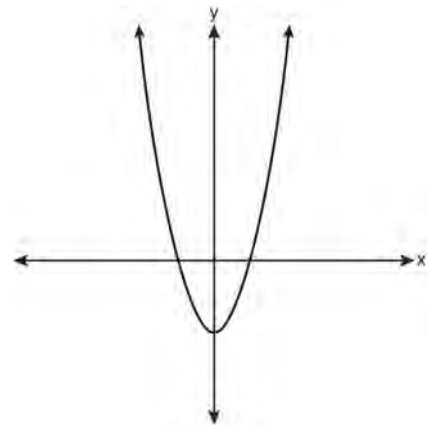
1) absolute value
2) exponential
3) linear
4) quadratic

285 What is $3\sqrt{250}$ expressed in simplest radical form?

1) $5\sqrt{10}$
2) $8\sqrt{10}$
3) $15\sqrt{10}$
4) $75\sqrt{10}$

282 What is the solution of $3(2m - 1) \le 4m + 7$?

1) $m \le 5$
2) $m \ge 5$
3) $m \le 4$
4) $m \ge 4$

286 Right triangle *ABC* has legs of 8 and 15 and a hypotenuse of 17, as shown in the diagram below.
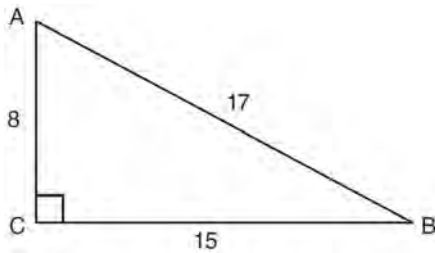
The value of the tangent of ∠*B* is
1) 0.4706
2) 0.5333
3) 0.8824
4) 1.8750

287 The spinner shown in the diagram below is divided into six equal sections.
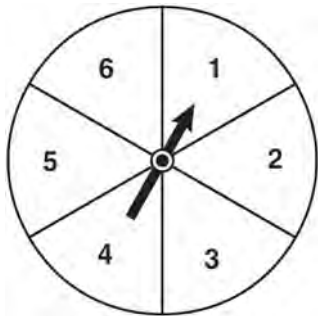
Which outcome is *least* likely to occur on a single spin?
1) an odd number
2) a prime number
3) a perfect square
4) a number divisible by 2

288 When $5x + 4y$ is subtracted from $5x - 4y$, the difference is
1) 0
2) $10x$
3) $8y$
4) $-8y$

289 Sam's grades on eleven chemistry tests were 90, 85, 76, 63, 94, 89, 81, 76, 78, 69, and 97. Which statement is true about the measures of central tendency?
1) mean > mode
2) mean < median
3) mode > median
4) median = mean

290 The width of a rectangle is 3 less than twice the length, *x*. If the area of the rectangle is 43 square feet, which equation can be used to find the length, in feet?
1) $2x(x - 3) = 43$
2) $x(3 - 2x) = 43$
3) $2x + 2(2x - 3) = 43$
4) $x(2x - 3) = 43$

291 When 36 is subtracted from the square of a number, the result is five times the number. What is the positive solution?
1) 9
2) 6
3) 3
4) 4

49

292 How many different three-letter arrangements can be formed using the letters in the word *ABSOLUTE* if each letter is used only once?
1) 56
2) 112
3) 168
4) 336

293 What is the sum of $\frac{-x+7}{2x+4}$ and $\frac{2x+5}{2x+4}$?

1) $\frac{x+12}{2x+4}$

2) $\frac{3x+12}{2x+4}$

3) $\frac{x+12}{4x+8}$

4) $\frac{3x+12}{4x+8}$

294 Which set represents the intersection of sets A, *B,* and C shown in the diagram below?
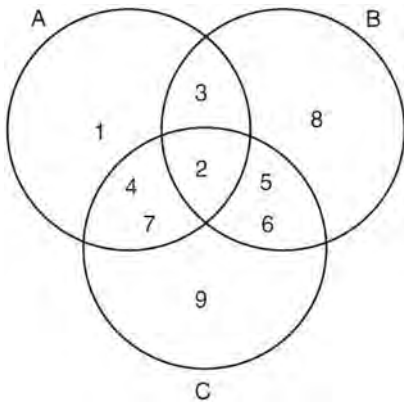
1) $\{3,4,5,6,7\}$
2) $\{2\}$
3) $\{2,3,4,5,6,7\}$
4) $\{1,2,3,4,5,6,7,8,9\}$

295 Which notation describes $\{1,2,3\}$?
1) $\{x|1 \le x < 3,$ where x is an integer$\}$
2) $\{x|0 < x \le 3,$ where x is an integer$\}$
3) $\{x|1 < x < 3,$ where x is an integer$\}$
4) $\{x|0 \le x \le 3,$ where x is an integer$\}$

296 The value of the expression $-|a-b|$ when $a = 7$ and $b = -3$ is
1) -10
2) 10
3) -4
4) 4

297 Which point lies on the line whose equation is $2x - 3y = 9$?
1) $(-1,-3)$
2) $(-1,3)$
3) $(0,3)$
4) $(0,-3)$

298 What is the result when $2x^2 + 3xy - 6$ is subtracted from $x^2 - 7xy + 2$?
1) $-x^2 - 10xy + 8$
2) $x^2 + 10xy - 8$
3) $-x^2 - 4xy - 4$
4) $x^2 - 4xy - 4$

299 The freshman class held a canned food drive for 12 weeks. The results are summarized in the table below.

Canned Food Drive Results

Week	1	2	3	4	5	6	7	8	9	10	11	12
Number of Cans	20	35	32	45	58	46	28	23	31	79	65	62

Which number represents the second quartile of the number of cans of food collected?
1) 29.5
2) 30.5
3) 40
4) 60

300 Which point is on the line $4y - 2x = 0$?
1) $(-2, -1)$
2) $(-2, 1)$
3) $(-1, -2)$
4) $(1, 2)$

301 The legs of an isosceles right triangle each measure 10 inches. What is the length of the hypotenuse of this triangle, to the *nearest tenth of an inch*?
1) 6.3
2) 7.1
3) 14.1
4) 17.1

302 If the universal set is {pennies, nickels, dimes, quarters}, what is the complement of the set {nickels}?
1) { }
2) {pennies, quarters}
3) {pennies, dimes, quarters}
4) {pennies, nickels, dimes, quarters}

303 Which ordered pair is a solution to the system of equations $y = x + 3$ and $y = x^2 - x$?
1) $(6, 9)$
2) $(3, 6)$
3) $(3, -1)$
4) $(2, 5)$

304 Which quadrant will be completely shaded in the graph of the inequality $y \leq 2x$?
1) Quadrant I
2) Quadrant II
3) Quadrant III
4) Quadrant IV

305 In a recent town election, 1,860 people voted for either candidate A or candidate B for the position of supervisor. If candidate A received 55% of the votes, how many votes did candidate B receive?
1) 186
2) 837
3) 1,023
4) 1,805

306 What is the solution of the system of equations $2x - 5y = 11$ and $-2x + 3y = -9$?
1) $(-3, -1)$
2) $(-1, 3)$
3) $(3, -1)$
4) $(3, 1)$

307 What is the value of the expression $(a^3 + b^0)^2$ when $a = -2$ and $b = 4$?
1) 64
2) 49
3) -49
4) -64

308 Which is the graph of $y = |x| + 2$?
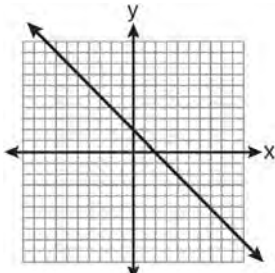
1)
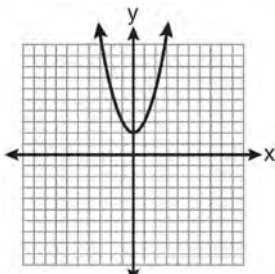
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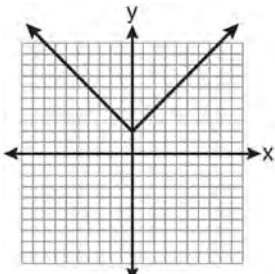
3)
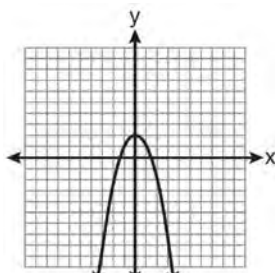
4)

309 What is $3\sqrt{2} + \sqrt{8}$ expressed in simplest radical form?
1) $3\sqrt{10}$
2) $3\sqrt{16}$
3) $5\sqrt{2}$
4) $7\sqrt{2}$

310 When $a^3 - 4a$ is factored completely, the result is
1) $(a - 2)(a + 2)$
2) $a(a - 2)(a + 2)$
3) $a^2(a - 4)$
4) $a(a - 2)^2$

311 Which expression is equivalent to $121 - x^2$?
1) $(x - 11)(x - 11)$
2) $(x + 11)(x - 11)$
3) $(11 - x)(11 + x)$
4) $(11 - x)(11 - x)$

312 Which situation describes a correlation that is *not* a causal relationship?
1) the length of the edge of a cube and the volume of the cube
2) the distance traveled and the time spent driving
3) the age of a child and the number of siblings the child has
4) the number of classes taught in a school and the number of teachers employed

52

313 Which value of x is the solution of the equation
$\frac{2}{3}x + \frac{1}{2} = \frac{5}{6}$?

1) $\frac{1}{2}$

2) 2

3) $\frac{2}{3}$

4) $\frac{3}{2}$

314 How many cubes with 5-inch sides will completely fill a cube that is 10 inches on a side?
1) 50
2) 25
3) 8
4) 4

315 What is the product of (6×10^3), (4.6×10^5), and (2×10^{-2}) expressed in scientific notation?
1) 55.2×10^6
2) 5.52×10^7
3) 55.2×10^7
4) 5.52×10^{10}

316 The expression $x^2 - 36y^2$ is equivalent to
1) $(x - 6y)(x - 6y)$
2) $(x - 18y)(x - 18y)$
3) $(x + 6y)(x - 6y)$
4) $(x + 18y)(x - 18y)$

317 Ben has four more than twice as many CDs as Jake. If they have a total of 31 CDs, how many CDs does Jake have?
1) 9
2) 13
3) 14
4) 22

318 Michael is 25 years younger than his father. The sum of their ages is 53. What is Michael's age?
1) 14
2) 25
3) 28
4) 39

319 Which ordered pair is a solution of the system of equations shown in the graph below?
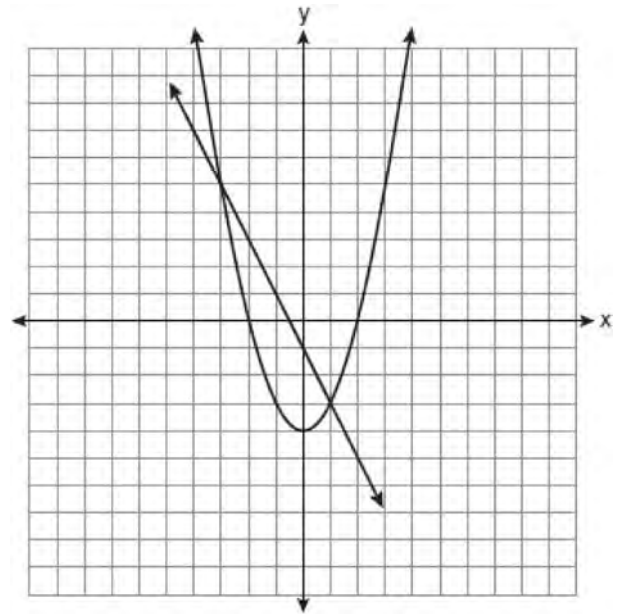
1) $(-3, 1)$
2) $(-3, 5)$
3) $(0, -1)$
4) $(0, -4)$

320 Which scatter plot shows the relationship between x and y if x represents a student score on a test and y represents the number of incorrect answers a student received on the same test?

1)

2)

3)

4)
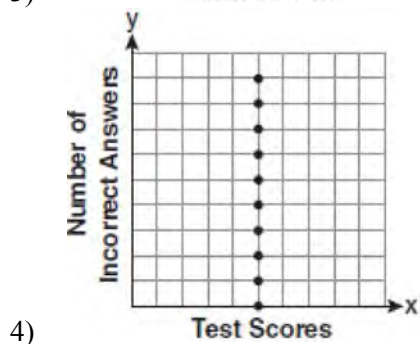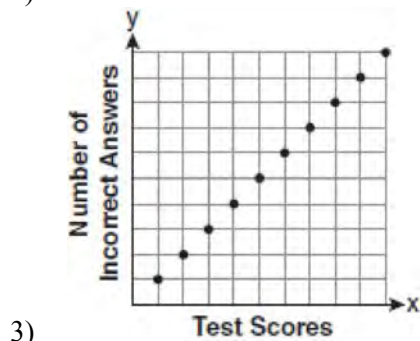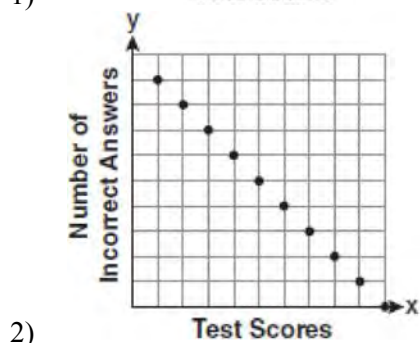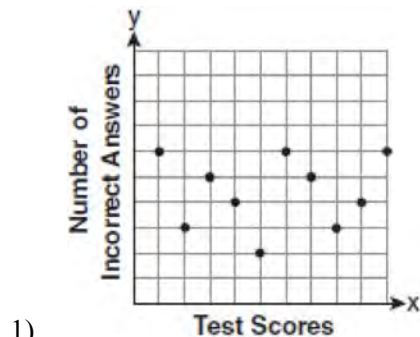
321 Josh and Mae work at a concession stand. They each earn $8 per hour. Josh worked three hours more than Mae. If Josh and Mae earned a total of $120, how many hours did Josh work?
1) 6
2) 9
3) 12
4) 15

322 Based on the box-and-whisker plot below, which statement is *false*?
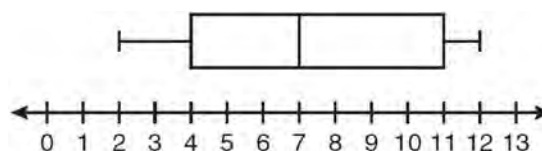
1) The median is 7.
2) The range is 12.
3) The first quartile is 4.
4) The third quartile is 11.

323 Which equation represents the line that passes through the points $(-3, 7)$ and $(3, 3)$?
1) $y = \frac{2}{3}x + 1$
2) $y = \frac{2}{3}x + 9$
3) $y = -\frac{2}{3}x + 5$
4) $y = -\frac{2}{3}x + 9$

324 The quotient of (9.2×10^6) and (2.3×10^2) expressed in scientific notation is
1) 4,000
2) 40,000
3) 4×10^3
4) 4×10^4
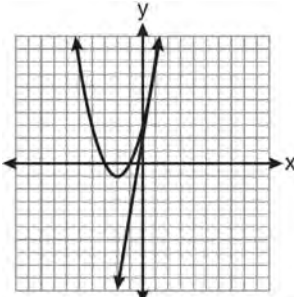
325 A spinner that is equally divided into eight numbered sectors is spun 20 times. The table below shows the number of times the arrow landed in each numbered sector.
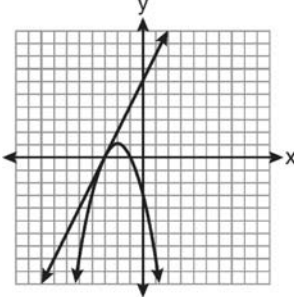
Spinner Sector	Number of Times
1	2
2	3
3	2
4	3
5	4
6	2
7	3
8	1
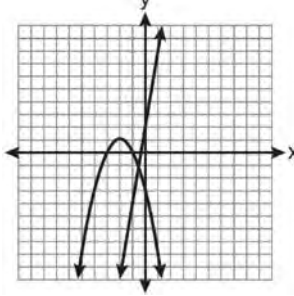
Based on the table, what is the empirical probability that the spinner will land on a prime number on the next spin?
1) $\frac{9}{20}$
2) $\frac{11}{20}$
3) $\frac{12}{20}$
4) $\frac{14}{20}$
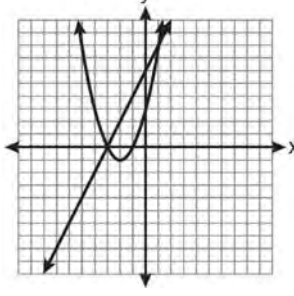
326 Which graph could be used to find the solution of the system of equations $y = 2x + 6$ and $y = x^2 + 4x + 3?$

1)

2)

3)

4)

327 The expression $\dfrac{12w^9y^3}{-3w^3y^3}$ is equivalent to

1) $-4w^6$
2) $-4w^3y$
3) $9w^6$
4) $9w^3y$

328 What is the perimeter of a regular pentagon with a side whose length is $x + 4$?

1) $x^2 + 16$
2) $4x + 16$
3) $5x + 4$
4) $5x + 20$

329 The diagram below shows right triangle ABC.
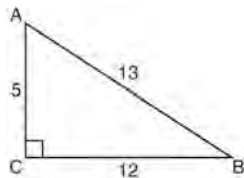
Which ratio represents the tangent of $\angle ABC$?

1) $\dfrac{5}{13}$
2) $\dfrac{5}{12}$
3) $\dfrac{12}{13}$
4) $\dfrac{12}{5}$

330 The diagram below shows the graph of $y = -x^2 - c$.
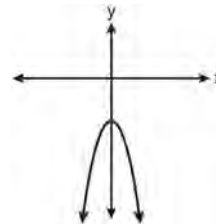
Which diagram shows the graph of $y = x^2 - c$?

1)

2)

3)

4)

331 An example of an algebraic expression is

1) $y = mx + b$
2) $3x + 4y - 7$
3) $2x + 3y \leq 18$
4) $(x + y)(x - y) = 25$

332 Which equation represents a line parallel to the y-axis?
1) $y = x$
2) $y = 3$
3) $x = -y$
4) $x = -4$

333 Which expression represents $36x^2 - 100y^6$ factored completely?
1) $2(9x + 25y^3)(9x - 25y^3)$
2) $4(3x + 5y^3)(3x - 5y^3)$
3) $(6x + 10y^3)(6x - 10y^3)$
4) $(18x + 50y^3)(18x - 50y^3)$

334 What is the relationship between the independent and dependent variables in the scatter plot shown below?
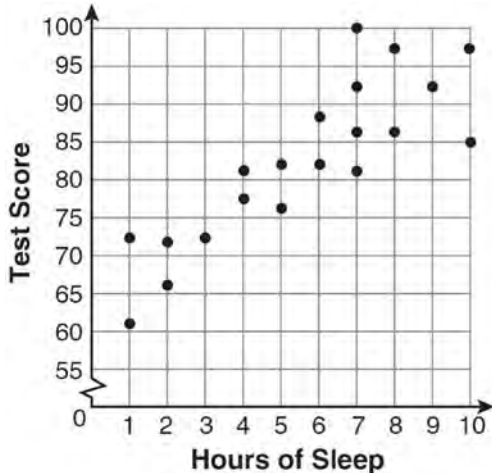
1) undefined correlation
2) negative correlation
3) positive correlation
4) no correlation

335 The dimensions of a rectangle are measured to be 12.2 inches by 11.8 inches. The actual dimensions are 12.3 inches by 11.9 inches. What is the relative error, to the *nearest ten-thousandth*, in calculating the area of the rectangle?
1) 0.0168
2) 0.0167
3) 0.0165
4) 0.0164

336 An 8-foot rope is tied from the top of a pole to a stake in the ground, as shown in the diagram below.
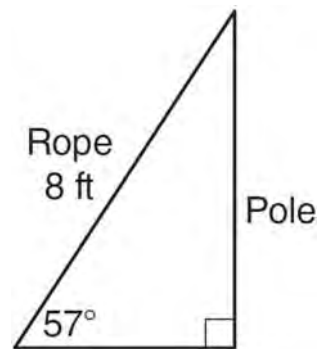
If the rope forms a 57° angle with the ground, what is the height of the pole, to the *nearest tenth of a foot*?
1) 4.4
2) 6.7
3) 9.5
4) 12.3

337 What is the value of x in the equation $2(x - 4) = 4(2x + 1)$?
1) -2
2) 2
3) $-\dfrac{1}{2}$
4) $\dfrac{1}{2}$
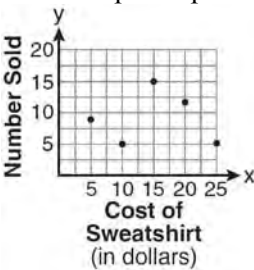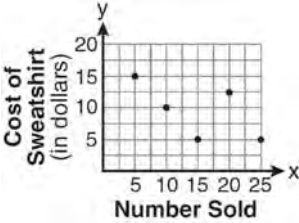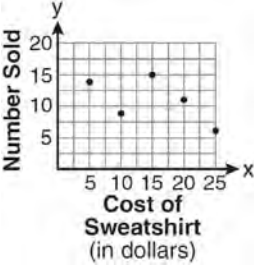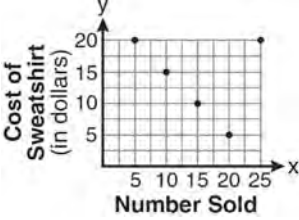
338 The school store did a study comparing the cost of a sweatshirt with the number of sweatshirts sold. The price was changed several times and the numbers of sweatshirts sold were recorded. The data are shown in the table below.

Cost of Sweatshirt	$10	$25	$15	$20	$5
Number Sold	9	6	15	11	14

Which scatter plot represents the data?

1)

2)

3)

4)

339 The expression $\frac{(10w^3)^2}{5w}$ is equivalent to
1) $2w^5$
2) $2w^8$
3) $20w^5$
4) $20w^8$

340 Julia went to the movies and bought one jumbo popcorn and two chocolate chip cookies for $5.00. Marvin went to the same movie and bought one jumbo popcorn and four chocolate chip cookies for $6.00. How much does one chocolate chip cookie cost?
1) $0.50
2) $0.75
3) $1.00
4) $2.00

341 In interval notation, the set of all real numbers greater than −6 and less than or equal to 14 is represented by
1) $(-6, 14)$
2) $[-6, 14)$
3) $(-6, 14]$
4) $[-6, 14]$

342 Given: $A = \{3, 6, 9, 12, 15\}$
$B = \{2, 4, 6, 8, 10, 12\}$
What is the union of sets A and B?
1) $\{6\}$
2) $\{6, 12\}$
3) $\{2, 3, 4, 8, 9, 10, 15\}$
4) $\{2, 3, 4, 6, 8, 9, 10, 12, 15\}$

343 Which equation shows a correct trigonometric ratio for angle A in the right triangle below?
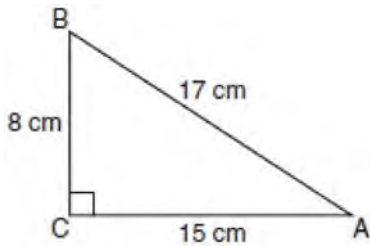
1) $\sin A = \dfrac{15}{17}$

2) $\tan A = \dfrac{8}{17}$

3) $\cos A = \dfrac{15}{17}$

4) $\tan A = \dfrac{5}{8}$

344 How many different four-letter arrangements are possible with the letters G, A, R, D, E, N if each letter may be used only once?
1) 15
2) 24
3) 360
4) 720

345 What is the quotient of $\dfrac{x}{x+4}$ divided by $\dfrac{2x}{x^2-16}$?

1) $\dfrac{2}{x-4}$

2) $\dfrac{2x^2}{x-4}$

3) $\dfrac{2x^2}{x^2-16}$

4) $\dfrac{x-4}{2}$

346 The graphs of the equations $y = 2x - 7$ and $y - kx = 7$ are parallel when k equals
1) −2
2) 2
3) −7
4) 7

347 What are the vertex and the axis of symmetry of the parabola shown in the graph below?
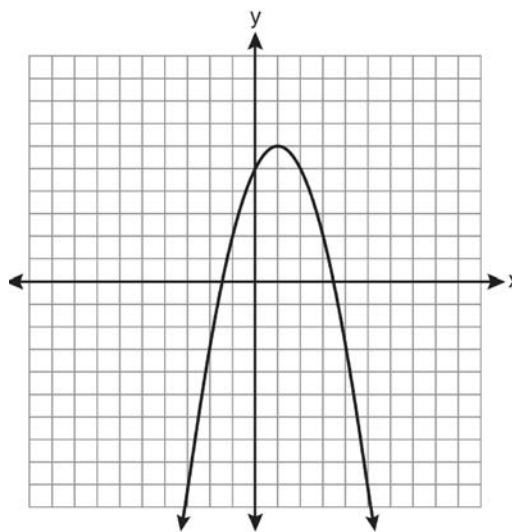
1) vertex: $(1, 6)$; axis of symmetry: $y = 1$
2) vertex: $(1, 6)$; axis of symmetry: $x = 1$
3) vertex: $(6, 1)$; axis of symmetry: $y = 1$
4) vertex: $(6, 1)$; axis of symmetry: $x = 1$

348 The algebraic expression $\dfrac{x-2}{x^2-9}$ is undefined when x is
1) 0
2) 2
3) 3
4) 9

59

349 Which linear equation represents a line containing the point $(1,3)$?
1) $x + 2y = 5$
2) $x - 2y = 5$
3) $2x + y = 5$
4) $2x - y = 5$

350 What are the roots of the equation $x^2 - 5x + 6 = 0$?
1) 1 and –6
2) 2 and 3
3) –1 and 6
4) –2 and –3

351 The height, y, of a ball tossed into the air can be represented by the equation $y = -x^2 + 10x + 3$, where x is the elapsed time. What is the equation of the axis of symmetry of this parabola?
1) $y = 5$
2) $y = -5$
3) $x = 5$
4) $x = -5$

352 Which set of ordered pairs represents a function?
1) $\{(0,4),(2,4),(2,5)\}$
2) $\{(6,0),(5,0),(4,0)\}$
3) $\{(4,1),(6,2),(6,3),(5,0)\}$
4) $\{(0,4),(1,4),(0,5),(1,5)\}$

353 A cylinder has a diameter of 10 inches and a height of 2.3 inches. What is the volume of this cylinder, to the *nearest tenth of a cubic inch*?
1) 72.3
2) 83.1
3) 180.6
4) 722.6

354 Which ordered pair is in the solution set of the system of linear inequalities graphed below?
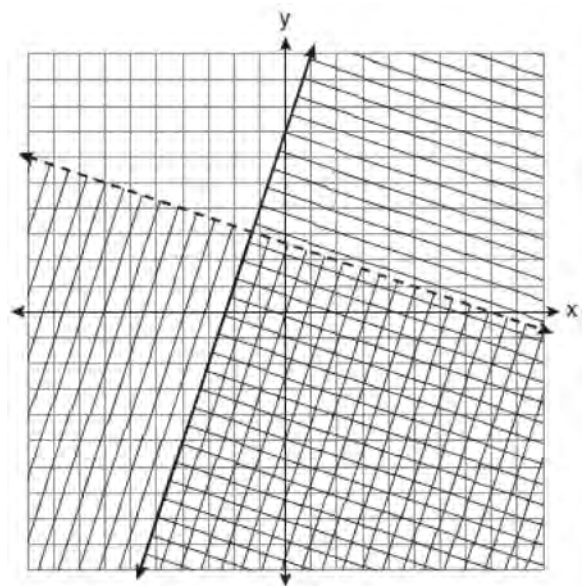
1) $(1,-4)$
2) $(-5,7)$
3) $(5,3)$
4) $(-7,-2)$

355 For which set of values of x is the algebraic

expression $\dfrac{x^2 - 16}{x^2 - 4x - 12}$ undefined?

1) $\{-6, 2\}$
2) $\{-4, 3\}$
3) $\{-4, 4\}$
4) $\{-2, 6\}$

356 What is the value of the expression $-3x^2y + 4x$
when $x = -4$ and $y = 2$?

1) -112
2) -80
3) 80
4) 272

357 The data in the table below are graphed, and the
slope is examined.

x	y
0.5	9.0
1	8.75
1.5	8.5
2	8.25
2.5	8.0

The rate of change represented in this table can be
described as
1) negative
2) positive
3) undefined
4) zero

358 What is the value of the y-coordinate of the
solution to the system of equations $2x + y = 8$ and
$x - 3y = -3$?

1) -2
2) 2
3) 3
4) -3

359 Which expression is equivalent to
$-3x(x - 4) - 2x(x + 3)$?

1) $-x^2 - 1$
2) $-x^2 + 18x$
3) $-5x^2 - 6x$
4) $-5x^2 + 6x$

360 Which interval notation represents the set of all
numbers greater than or equal to 5 and less than
12?

1) $[5, 12)$
2) $(5, 12]$
3) $(5, 12)$
4) $[5, 12]$

361 The ages of three brothers are consecutive even
integers. Three times the age of the youngest
brother exceeds the oldest brother's age by 48
years. What is the age of the youngest brother?

1) 14
2) 18
3) 22
4) 26

Integrated Algebra Multiple Choice Regents Exam Questions

362 To calculate the volume of a small wooden cube, Ezra measured an edge of the cube as 2 cm. The actual length of the edge of Ezra's cube is 2.1 cm. What is the relative error in his volume calculation to the *nearest hundredth*?
1) 0.13
2) 0.14
3) 0.15
4) 0.16

363 Mrs. Ayer is painting the outside of her son's toy box, including the top and bottom. The toy box measures 3 feet long, 1.5 feet wide, and 2 feet high. What is the total surface area she will paint?
1) 9.0 ft^2
2) 13.5 ft^2
3) 22.5 ft^2
4) 27.0 ft^2

364 Which value of x is in the solution set of the inequality $-2x + 5 > 17$?
1) -8
2) -6
3) -4
4) 12

365 Which interval notation represents the set of all numbers from 2 through 7, inclusive?
1) $(2, 7]$
2) $(2, 7)$
3) $[2, 7)$
4) $[2, 7]$

366 What is the slope of the line that passes through the points $(-6, 1)$ and $(4, -4)$?
1) -2
2) 2
3) $-\dfrac{1}{2}$
4) $\dfrac{1}{2}$

367 What is half of 2^6?
1) 1^3
2) 1^6
3) 2^3
4) 2^5

368 If the speed of sound is 344 meters per second, what is the approximate speed of sound, in meters per hour?

| 60 seconds = 1 minute |
| 60 minutes = 1 hour |

1) 20,640
2) 41,280
3) 123,840
4) 1,238,400

369 The data set 5, 6, 7, 8, 9, 9, 9, 10, 12, 14, 17, 17, 18, 19, 19 represents the number of hours spent on the Internet in a week by students in a mathematics class. Which box-and-whisker plot represents the data?

1)

2)

3)

4)
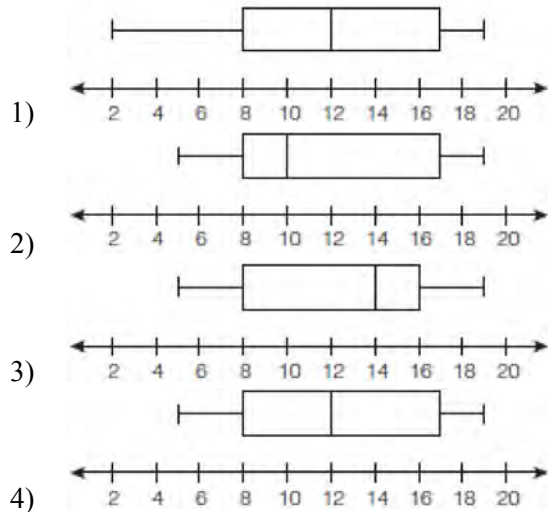
370 Lenny made a cube in technology class. Each edge measured 1.5 cm. What is the volume of the cube in cubic centimeters?
 1) 2.25
 2) 3.375
 3) 9.0
 4) 13.5

371 Which equation represents a line that is parallel to the line $y = 3 - 2x$?
 1) $4x + 2y = 5$
 2) $2x + 4y = 1$
 3) $y = 3 - 4x$
 4) $y = 4x - 2$

372 Which graph represents the solution of $3y - 9 \le 6x$?
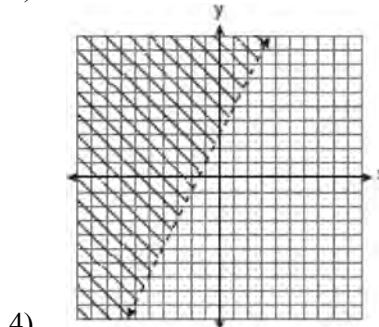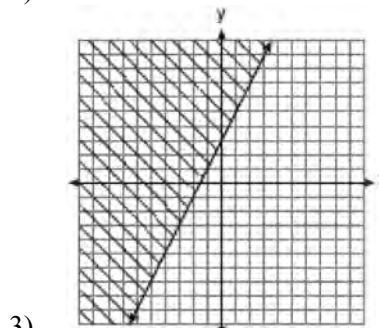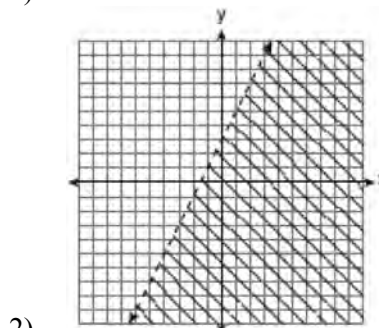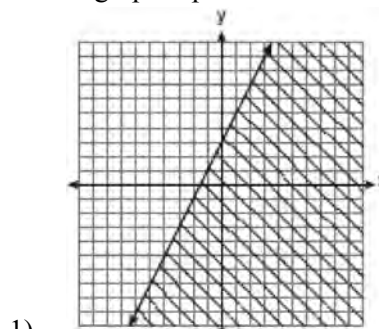
1)

2)

3)

4)

373 Which ordered pair is a solution of the system of equations $y = x^2 - x - 20$ and $y = 3x - 15$?
1) $(-5, -30)$
2) $(-1, -18)$
3) $(0, 5)$
4) $(5, -1)$

374 Which value of x is the solution of $\frac{2x}{5} + \frac{1}{3} = \frac{7x - 2}{15}$?
1) $\frac{3}{5}$
2) $\frac{31}{26}$
3) 3
4) 7

375 The local ice cream stand offers three flavors of soft-serve ice cream: vanilla, chocolate, and strawberry; two types of cone: sugar and wafer; and three toppings: sprinkles, nuts, and cookie crumbs. If Dawn does not order vanilla ice cream, how many different choices can she make that have one flavor of ice cream, one type of cone, and one topping?
1) 7
2) 8
3) 12
4) 18

376 Consider the set of integers greater than -2 and less than 6. A subset of this set is the positive factors of 5. What is the complement of this subset?
1) $\{0, 2, 3, 4\}$
2) $\{-1, 0, 2, 3, 4\}$
3) $\{-2, -1, 0, 2, 3, 4, 6\}$
4) $\{-2, -1, 0, 1, 2, 3, 4, 5, 6\}$

377 The spinner below is divided into eight equal regions and is spun once. What is the probability of *not* getting red?
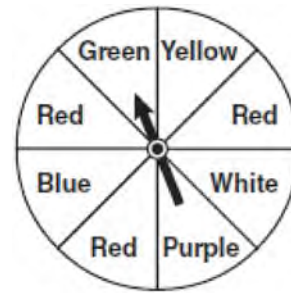
1) $\frac{3}{5}$
2) $\frac{3}{8}$
3) $\frac{5}{8}$
4) $\frac{7}{8}$

378 If $3ax + b = c$, then x equals
1) $c - b + 3a$
2) $c + b - 3a$
3) $\frac{c - b}{3a}$
4) $\frac{b - c}{3a}$

379 Tamara has a cell phone plan that charges $0.07 per minute plus a monthly fee of $19.00. She budgets $29.50 per month for total cell phone expenses without taxes. What is the maximum number of minutes Tamara could use her phone each month in order to stay within her budget?
1) 150
2) 271
3) 421
4) 692

380 Pam is playing with red and black marbles. The number of red marbles she has is three more than twice the number of black marbles she has. She has 42 marbles in all. How many red marbles does Pam have?
1) 13
2) 15
3) 29
4) 33

381 The expression $\dfrac{9x^4 - 27x^6}{3x^3}$ is equivalent to
1) $3x(1 - 3x)$
2) $3x(1 - 3x^2)$
3) $3x(1 - 9x^5)$
4) $9x^3(1 - x)$

382 What are the vertex and axis of symmetry of the parabola $y = x^2 - 16x + 63$?
1) vertex: $(8, -1)$; axis of symmetry: $x = 8$
2) vertex: $(8, 1)$; axis of symmetry: $x = 8$
3) vertex: $(-8, -1)$; axis of symmetry: $x = -8$
4) vertex: $(-8, 1)$; axis of symmetry: $x = -8$

383 Which expression represents $(3x^2y^4)(4xy^2)$ in simplest form?
1) $12x^2y^8$
2) $12x^2y^6$
3) $12x^3y^8$
4) $12x^3y^6$

384 Which graph represents a function?
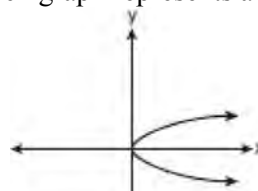
1)
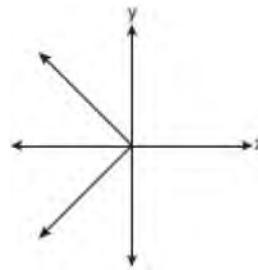
2)
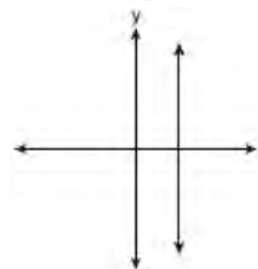
3)
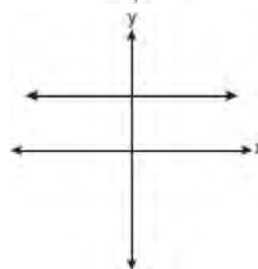
4)

385 Which expression represents $\dfrac{(2x^3)(8x^5)}{4x^6}$ in simplest form?
1) x^2
2) x^9
3) $4x^2$
4) $4x^9$

65

386 Which graph represents a linear function?

1)

2)

3)

4)
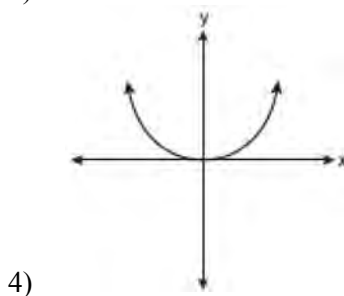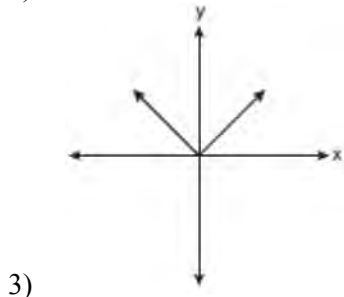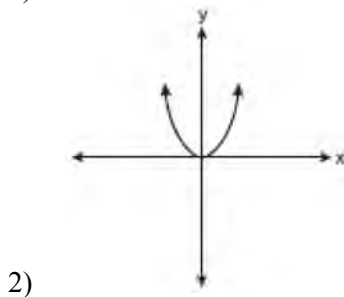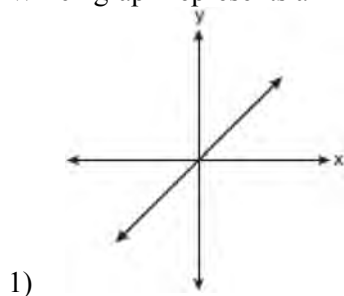
387 Consider the graph of the equation $y = ax^2 + bx + c$, when $a \neq 0$. If a is multiplied by 3, what is true of the graph of the resulting parabola?
1) The vertex is 3 units above the vertex of the original parabola.
2) The new parabola is 3 units to the right of the original parabola.
3) The new parabola is wider than the original parabola.
4) The new parabola is narrower than the original parabola.

388 Jack bought 3 slices of cheese pizza and 4 slices of mushroom pizza for a total cost of $12.50. Grace bought 3 slices of cheese pizza and 2 slices of mushroom pizza for a total cost of $8.50. What is the cost of one slice of mushroom pizza?
1) $1.50
2) $2.00
3) $3.00
4) $3.50

389 What is the speed, in meters per second, of a paper airplane that flies 24 meters in 6 seconds?
1) 144
2) 30
3) 18
4) 4

390 Carrie bought new carpet for her living room. She calculated the area of the living room to be 174.2 square feet. The actual area was 149.6 square feet. What is the relative error of the area to the *nearest ten-thousandth*?
1) 0.1412
2) 0.1644
3) 1.8588
4) 2.1644

391 Luis is going to paint a basketball court on his driveway, as shown in the diagram below. This basketball court consists of a rectangle and a semicircle.
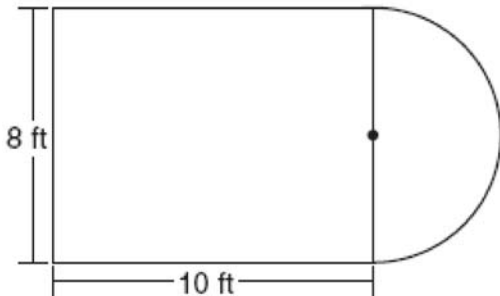
Which expression represents the area of this basketball court, in square feet?
1) 80
2) $80 + 8\pi$
3) $80 + 16\pi$
4) $80 + 64\pi$

392 What is $\dfrac{\sqrt{32}}{4}$ expressed in simplest radical form?
1) $\sqrt{2}$
2) $4\sqrt{2}$
3) $\sqrt{8}$
4) $\dfrac{\sqrt{8}}{2}$

393 What is an equation of the line that passes through the points $(3, -3)$ and $(-3, -3)$?
1) $y = 3$
2) $x = -3$
3) $y = -3$
4) $x = y$

394 In triangle MCT, the measure of $\angle T = 90°$, $MC = 85$ cm, $CT = 84$ cm, and $TM = 13$cm. Which ratio represents the sine of $\angle C$?
1) $\dfrac{13}{85}$
2) $\dfrac{84}{85}$
3) $\dfrac{13}{84}$
4) $\dfrac{84}{13}$

395 What are the vertex and the axis of symmetry of the parabola shown in the diagram below?
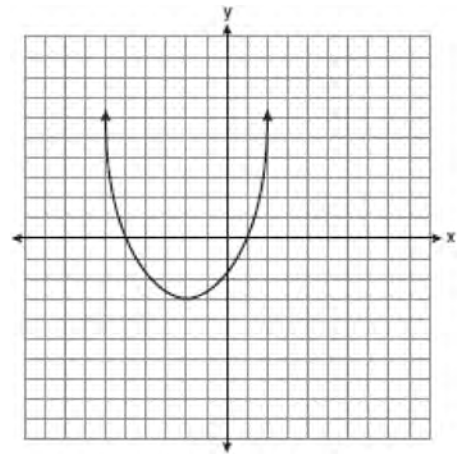
1) The vertex is $(-2, -3)$, and the axis of symmetry is $x = -2$.
2) The vertex is $(-2, -3)$, and the axis of symmetry is $y = -2$.
3) The vertex is $(-3, -2)$, and the axis of symmetry is $y = -2$.
4) The vertex is $(-3, -2)$, and the axis of symmetry is $x = -2$.

396 What is the value of the *y*-coordinate of the solution to the system of equations $x - 2y = 1$ and $x + 4y = 7$?
1) 1
2) −1
3) 3
4) 4

397 Keisha is playing a game using a wheel divided into eight equal sectors, as shown in the diagram below. Each time the spinner lands on orange, she will win a prize.
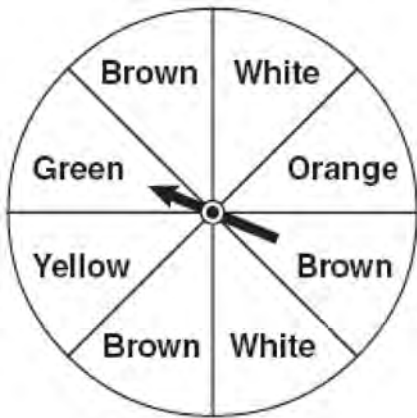
If Keisha spins this wheel twice, what is the probability she will win a prize on *both* spins?
1) $\frac{1}{64}$
2) $\frac{1}{56}$
3) $\frac{1}{16}$
4) $\frac{1}{4}$

398 Given:
A = {All even integers from 2 to 20, inclusive}
B = {10, 12, 14, 16, 18}
What is the complement of set B within the universe of set A?
1) {4, 6, 8}
2) {2, 4, 6, 8}
3) {4, 6, 8, 20}
4) {2, 4, 6, 8, 20}

399 Which data set describes a situation that could be classified as qualitative?
1) the ages of the students in Ms. Marshall's Spanish class
2) the test scores of the students in Ms. Fitzgerald's class
3) the favorite ice cream flavor of each of Mr. Hayden's students
4) the heights of the players on the East High School basketball team

400 What is the value of the expression $|-5x + 12|$ when $x = 5$?
1) −37
2) −13
3) 13
4) 37

401 The function $y = \dfrac{x}{x^2 - 9}$ is undefined when the value of x is
1) 0 or 3
2) 3 or −3
3) 3, only
4) −3, only

402 Which inequality is represented by the graph below?
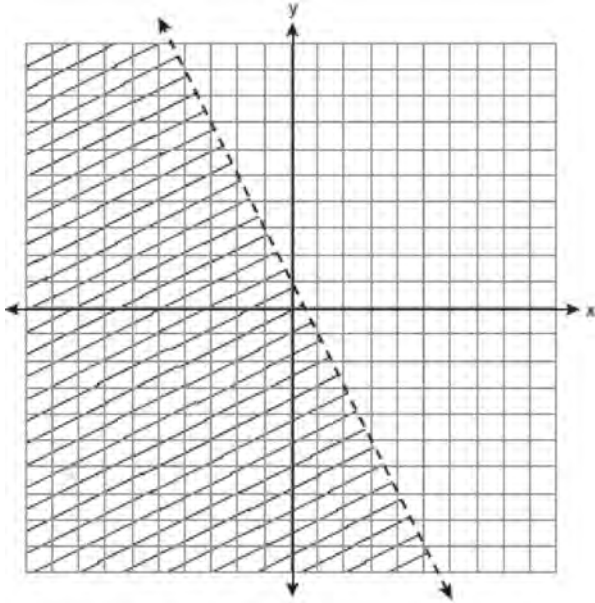
1) $y < 2x + 1$
2) $y < -2x + 1$
3) $y < \frac{1}{2}x + 1$
4) $y < -\frac{1}{2}x + 1$

403 Which expression represents $\dfrac{2x^2 - 12x}{x - 6}$ in simplest form?
1) 0
2) $2x$
3) $4x$
4) $2x + 2$

404 Tanya runs diagonally across a rectangular field that has a length of 40 yards and a width of 30 yards, as shown in the diagram below.
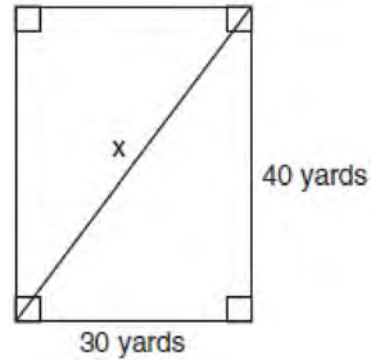
What is the length of the diagonal, in yards, that Tanya runs?
1) 50
2) 60
3) 70
4) 80

405 What is $\sqrt{32}$ expressed in simplest radical form?
1) $16\sqrt{2}$
2) $4\sqrt{2}$
3) $4\sqrt{8}$
4) $2\sqrt{8}$

406 It takes Tammy 45 minutes to ride her bike 5 miles. At this rate, how long will it take her to ride 8 miles?
1) 0.89 hour
2) 1.125 hours
3) 48 minutes
4) 72 minutes

407 Which expression is equivalent to $9x^2 - 16$?
1) $(3x + 4)(3x - 4)$
2) $(3x - 4)(3x - 4)$
3) $(3x + 8)(3x - 8)$
4) $(3x - 8)(3x - 8)$

408 Which equation represents a line parallel to the
x-axis?
1) $y = -5$
2) $y = -5x$
3) $x = 3$
4) $x = 3y$

409 What is the product of $-3x^2y$ and $(5xy^2 + xy)$?
1) $-15x^3y^3 - 3x^3y^2$
2) $-15x^3y^3 - 3x^3y$
3) $-15x^2y^2 - 3x^2y$
4) $-15x^3y^3 + xy$

410 The New York Volleyball Association invited 64
teams to compete in a tournament. After each
round, half of the teams were eliminated. Which
equation represents the number of teams, *t*, that
remained in the tournament after *r* rounds?
1) $t = 64(r)^{0.5}$
2) $t = 64(-0.5)^r$
3) $t = 64(1.5)^r$
4) $t = 64(0.5)^r$

411 What is the value of the third quartile shown on the
box-and-whisker plot below?
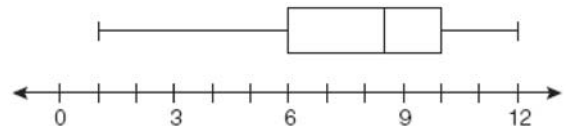
1) 6
2) 8.5
3) 10
4) 12

412 The expression $9x^2 - 100$ is equivalent to
1) $(9x - 10)(x + 10)$
2) $(3x - 10)(3x + 10)$
3) $(3x - 100)(3x - 1)$
4) $(9x - 100)(x + 1)$

413 What is the sum of $\dfrac{3}{2x}$ and $\dfrac{4}{3x}$ expressed in
simplest form?
1) $\dfrac{12}{6x^2}$
2) $\dfrac{17}{6x}$
3) $\dfrac{7}{5x}$
4) $\dfrac{17}{12x}$

70

414 The number of hours spent on math homework each week and the final exam grades for twelve students in Mr. Dylan's algebra class are plotted below.

Mr. Dylan's Class
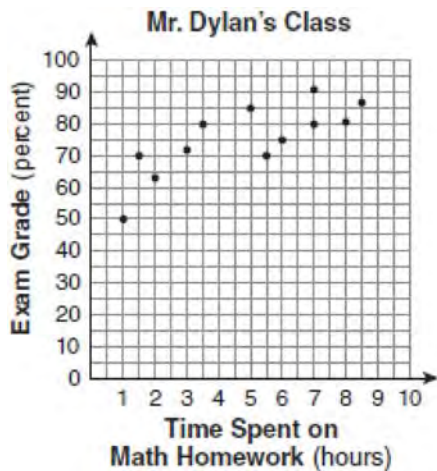
Based on a line of best fit, which exam grade is the best prediction for a student who spends about 4 hours on math homework each week?
1) 62
2) 72
3) 82
4) 92

415 Which situation should be analyzed using bivariate data?
1) Ms. Saleem keeps a list of the amount of time her daughter spends on her social studies homework.
2) Mr. Benjamin tries to see if his students' shoe sizes are directly related to their heights.
3) Mr. DeStefan records his customers' best video game scores during the summer.
4) Mr. Chan keeps track of his daughter's algebra grades for the quarter.

416 Which value of p is the solution of $5p - 1 = 2p + 20$?
1) $\dfrac{19}{7}$
2) $\dfrac{19}{3}$
3) 3
4) 7

417 What is the product of 8.4×10^8 and 4.2×10^3 written in scientific notation?
1) 2.0×10^5
2) 12.6×10^{11}
3) 35.28×10^{11}
4) 3.528×10^{12}

418 A tree casts a 25-foot shadow on a sunny day, as shown in the diagram below.
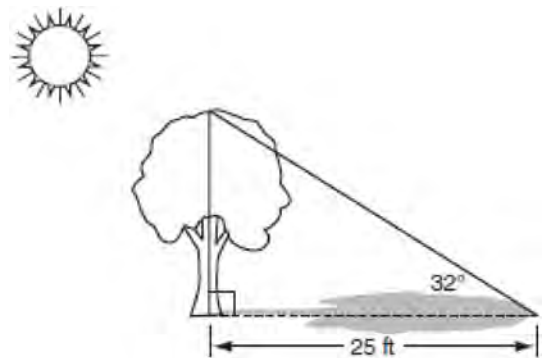
If the angle of elevation from the tip of the shadow to the top of the tree is 32°, what is the height of the tree to the *nearest tenth of a foot*?
1) 13.2
2) 15.6
3) 21.2
4) 40.0

71

419 For 10 days, Romero kept a record of the number of hours he spent listening to music. The information is shown in the table below.

Day	1	2	3	4	5	6	7	8	9	10
Hours	9	3	2	6	8	6	10	4	5	2

Which scatter plot shows Romero's data graphically?
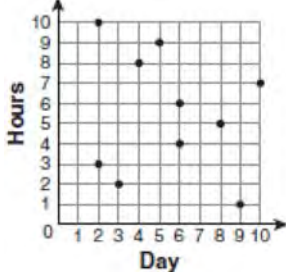
1)
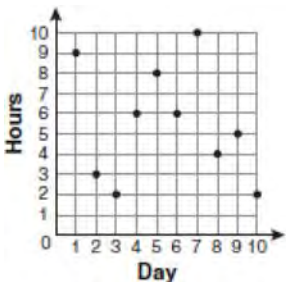
2)
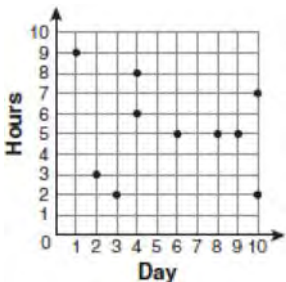
3)
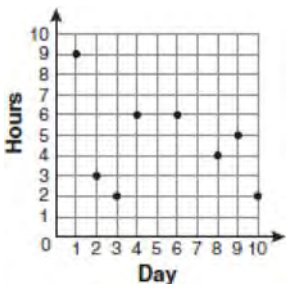
4)

420 Throughout history, many people have contributed to the development of mathematics. These mathematicians include Pythagoras, Euclid, Hypatia, Euler, Einstein, Agnesi, Fibonacci, and Pascal. What is the probability that a mathematician's name selected at random from those listed will start with either the letter E or the letter A?

1) $\frac{2}{8}$

2) $\frac{3}{8}$

3) $\frac{4}{8}$

4) $\frac{6}{8}$

421 When $3g^2 - 4g + 2$ is subtracted from $7g^2 + 5g - 1$, the difference is

1) $-4g^2 - 9g + 3$
2) $4g^2 + g + 1$
3) $4g^2 + 9g - 3$
4) $10g^2 + g + 1$

422 Which value of x makes the expression $\frac{x^2 - 9}{x^2 + 7x + 10}$ undefined?

1) -5
2) 2
3) 3
4) -3

72

423 There is a negative correlation between the number of hours a student watches television and his or her social studies test score. Which scatter plot below displays this correlation?

1)

Number of Hours

2)

Number of Hours

3)

Number of Hours

4)

Number of Hours
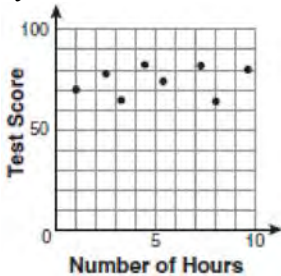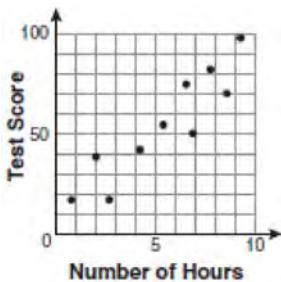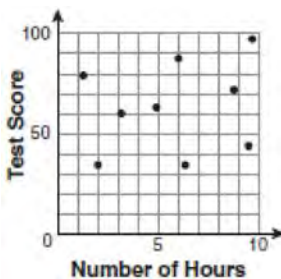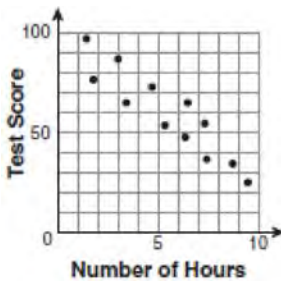
424 What is the additive inverse of the expression $a - b$?
1) $a + b$
2) $a - b$
3) $-a + b$
4) $-a - b$

425 Which value of n makes the expression $\dfrac{5n}{2n - 1}$ undefined?
1) 1
2) 0
3) $-\dfrac{1}{2}$
4) $\dfrac{1}{2}$

426 Which verbal expression represents $2(n - 6)$?
1) two times n minus six
2) two times six minus n
3) two times the quantity n less than six
4) two times the quantity six less than n

427 Which ordered pair is in the solution set of the system of equations $y = -x + 1$ and $y = x^2 + 5x + 6$?
1) $(-5, -1)$
2) $(-5, 6)$
3) $(5, -4)$
4) $(5, 2)$

428 What is $\sqrt{72}$ expressed in simplest radical form?
1) $2\sqrt{18}$
2) $3\sqrt{8}$
3) $6\sqrt{2}$
4) $8\sqrt{3}$

429 In the right triangle shown in the diagram below, what is the value of x to the *nearest whole number*?
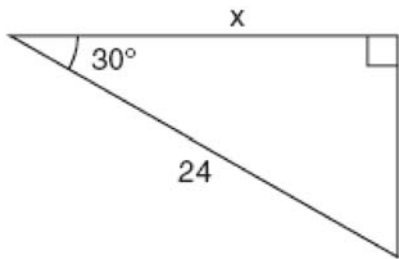
1) 12
2) 14
3) 21
4) 28

430 Which type of graph is shown in the diagram below?
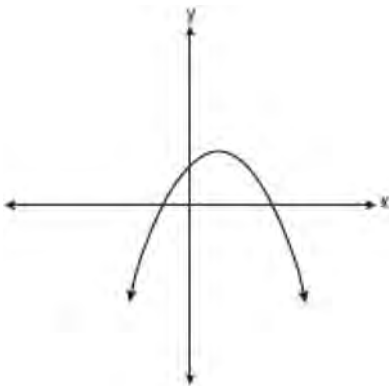
1) absolute value
2) exponential
3) linear
4) quadratic

431 The gas tank in a car holds a total of 16 gallons of gas. The car travels 75 miles on 4 gallons of gas. If the gas tank is full at the beginning of a trip, which graph represents the rate of change in the amount of gas in the tank?
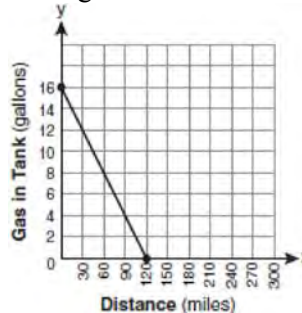
1)
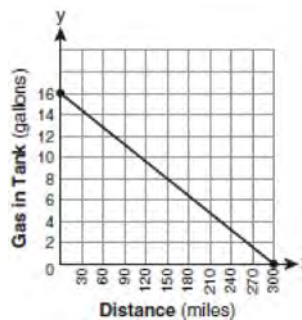
2)
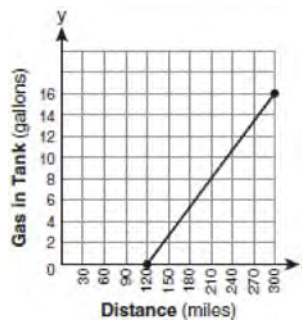
3)
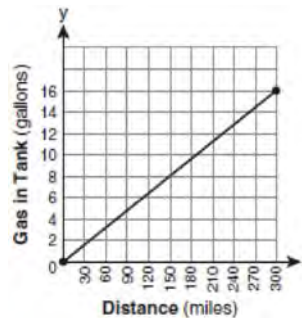
4)

432 Which statement is true about the relation shown on the graph below?
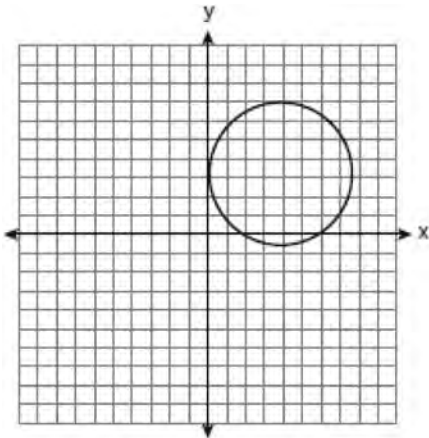
1) It is a function because there exists one x-coordinate for each y-coordinate.
2) It is a function because there exists one y-coordinate for each x-coordinate.
3) It is *not* a function because there are multiple y-values for a given x-value.
4) It is *not* a function because there are multiple x-values for a given y-value.

433 Nancy's rectangular garden is represented in the diagram below.
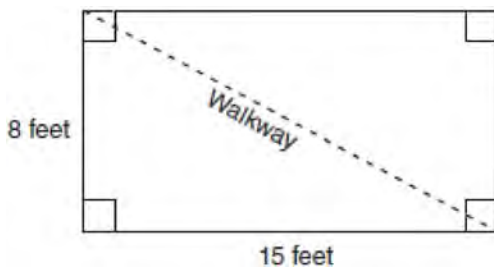
If a diagonal walkway crosses her garden, what is its length, in feet?
1) 17
2) 22
3) $\sqrt{161}$
4) $\sqrt{529}$

434 What is an equation of the line that passes through the point $(4,-6)$ and has a slope of -3?
1) $y = -3x + 6$
2) $y = -3x - 6$
3) $y = -3x + 10$
4) $y = -3x + 14$

435 Rhonda has \$1.35 in nickels and dimes in her pocket. If she has six more dimes than nickels, which equation can be used to determine x, the number of nickels she has?
1) $0.05(x + 6) + 0.10x = 1.35$
2) $0.05x + 0.10(x + 6) = 1.35$
3) $0.05 + 0.10(6x) = 1.35$
4) $0.15(x + 6) = 1.35$

436 Which equation is represented by the graph below?
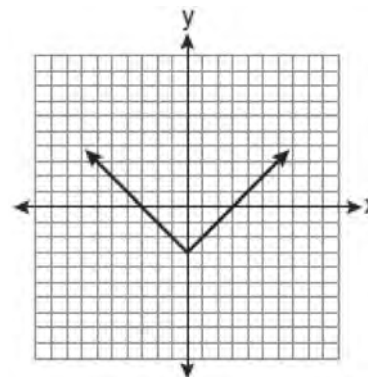
1) $y = x^2 - 3$
2) $y = (x - 3)^2$
3) $y = |x| - 3$
4) $y = |x - 3|$

75

437 Which equation could be used to find the measure of one acute angle in the right triangle shown below?
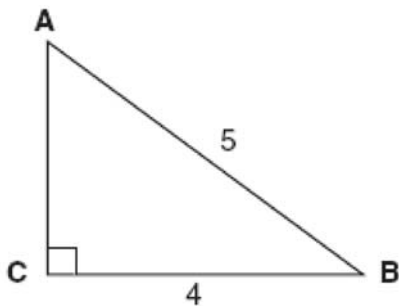
1) $\sin A = \dfrac{4}{5}$

2) $\tan A = \dfrac{5}{4}$

3) $\cos B = \dfrac{5}{4}$

4) $\tan B = \dfrac{4}{5}$

438 The expression $x^2 - 16$ is equivalent to
1) $(x + 2)(x - 8)$
2) $(x - 2)(x + 8)$
3) $(x + 4)(x - 4)$
4) $(x + 8)(x - 8)$

439 Which data set describes a situation that could be classified as qualitative?
1) the elevations of the five highest mountains in the world
2) the ages of presidents at the time of their inauguration
3) the opinions of students regarding school lunches
4) the shoe sizes of players on the basketball team

440 The equation $y = x^2 + 3x - 18$ is graphed on the set of axes below.
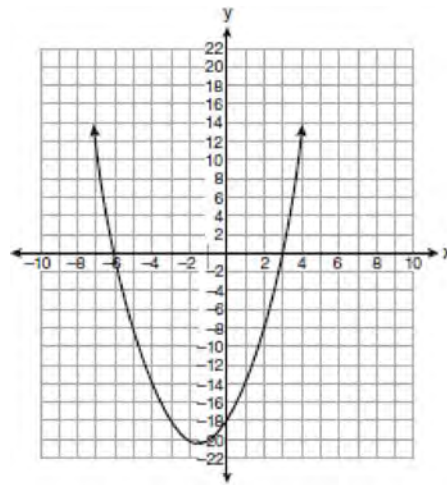
Based on this graph, what are the roots of the equation $x^2 + 3x - 18 = 0$?
1) −3 and 6
2) 0 and −18
3) 3 and −6
4) 3 and −18

441 Which value of x makes the expression $\dfrac{x + 4}{x - 3}$ undefined?
1) −4
2) −3
3) 3
4) 0

442 What is the solution of $\dfrac{k + 4}{2} = \dfrac{k + 9}{3}$?
1) 1
2) 5
3) 6
4) 14

76

443 A spinner is divided into eight equal regions as shown in the diagram below.
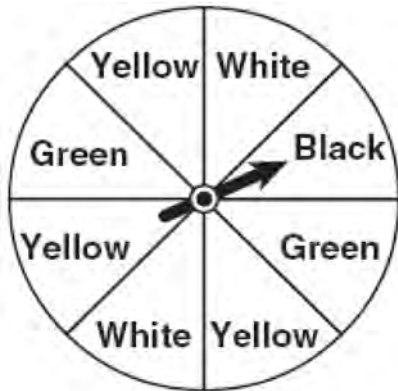
Which event is most likely to occur in one spin?
1) The arrow will land in a green or white area.
2) The arrow will land in a green or black area.
3) The arrow will land in a yellow or black area.
4) The arrow will land in a yellow or green area.

444 The table below shows a cumulative frequency distribution of runners' ages.

Cumulative Frequency Distribution
of Runners' Ages

Age Group	Total
20–29	8
20–39	18
20–49	25
20–59	31
20–69	35

According to the table, how many runners are in their forties?
1) 25
2) 10
3) 7
4) 6

445 What is $\dfrac{6}{4a} - \dfrac{2}{3a}$ expressed in simplest form?
1) $\dfrac{4}{a}$
2) $\dfrac{5}{6a}$
3) $\dfrac{8}{7a}$
4) $\dfrac{10}{12a}$

446 Which expression represents $\dfrac{27x^{18}y^5}{9x^6y}$ in simplest form?
1) $3x^{12}y^4$
2) $3x^3y^5$
3) $18x^{12}y^4$
4) $18x^3y^5$

447 When $5\sqrt{20}$ is written in simplest radical form, the result is $k\sqrt{5}$. What is the value of k?
1) 20
2) 10
3) 7
4) 4

448 Factored, the expression $16x^2 - 25y^2$ is equivalent to
1) $(4x - 5y)(4x + 5y)$
2) $(4x - 5y)(4x - 5y)$
3) $(8x - 5y)(8x + 5y)$
4) $(8x - 5y)(8x - 5y)$

449 Kathy plans to purchase a car that depreciates (loses value) at a rate of 14% per year. The initial cost of the car is $21,000. Which equation represents the value, v, of the car after 3 years?
1) $v = 21,000(0.14)^3$
2) $v = 21,000(0.86)^3$
3) $v = 21,000(1.14)^3$
4) $v = 21,000(0.86)(3)$

450 The faces of a cube are numbered from 1 to 6. If the cube is rolled once, which outcome is *least* likely to occur?
1) rolling an odd number
2) rolling an even number
3) rolling a number less than 6
4) rolling a number greater than 4

451 Which statement is true about the data set 3, 4, 5, 6, 7, 7, 10?
1) mean = mode
2) mean > mode
3) mean = median
4) mean < median

452 Which value of x is in the solution set of the inequality $-4x + 2 > 10$?
1) -2
2) 2
3) 3
4) -4

453 The solution to the equation $x^2 - 6x = 0$ is
1) 0, only
2) 6, only
3) 0 and 6
4) $\pm\sqrt{6}$

454 Students in Ms. Nazzeer's mathematics class tossed a six-sided number cube whose faces are numbered 1 to 6. The results are recorded in the table below.

Result	Frequency
1	3
2	6
3	4
4	6
5	4
6	7

Based on these data, what is the empirical probability of tossing a 4?
1) $\dfrac{8}{30}$
2) $\dfrac{6}{30}$
3) $\dfrac{5}{30}$
4) $\dfrac{1}{30}$

455 What is the value of the y-coordinate of the solution to the system of equations $x + 2y = 9$ and $x - y = 3$?
1) 6
2) 2
3) 3
4) 5

78

456 What is the product of $\dfrac{4x}{x-1}$ and $\dfrac{x^2-1}{3x+3}$ expressed in simplest form?

1) $\dfrac{4x}{3}$

2) $\dfrac{4x^2}{3}$

3) $\dfrac{4x^2}{3(x+1)}$

4) $\dfrac{4(x+1)}{3}$

457 Cassandra bought an antique dresser for $500. If the value of her dresser increases 6% annually, what will be the value of Cassandra's dresser at the end of 3 years to the *nearest dollar*?
1) $415
2) $590
3) $596
4) $770

458 Which ordered pair is in the solution set of the following system of inequalities?
$$y < \frac{1}{2}x + 4$$
$$y \geq -x + 1$$
1) $(-5, 3)$
2) $(0, 4)$
3) $(3, -5)$
4) $(4, 0)$

459 What are the roots of the equation $x^2 - 7x + 6 = 0$?
1) 1 and 7
2) −1 and 7
3) −1 and −6
4) 1 and 6

460 A swim team member performs a dive from a 14-foot-high springboard. The parabola below shows the path of her dive.
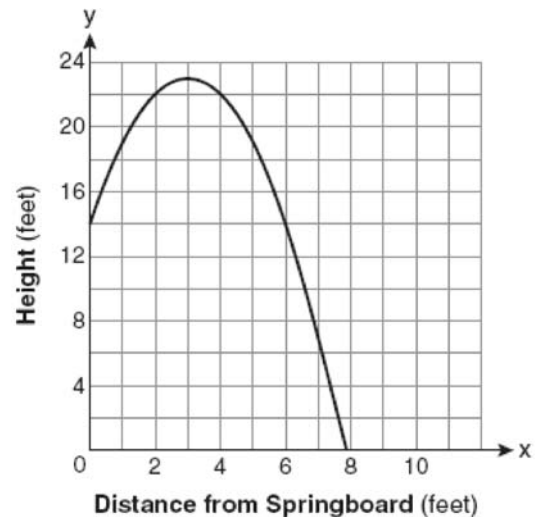
Which equation represents the axis of symmetry?
1) $x = 3$
2) $y = 3$
3) $x = 23$
4) $y = 23$

461 The length of a rectangular room is 7 less than three times the width, w, of the room. Which expression represents the area of the room?
1) $3w - 4$
2) $3w - 7$
3) $3w^2 - 4w$
4) $3w^2 - 7w$

462 The sum of two numbers is 47, and their difference is 15. What is the larger number?
1) 16
2) 31
3) 32
4) 36

463 Erica is conducting a survey about the proposed increase in the sports budget in the Hometown School District. Which survey method would likely contain the most bias?
1) Erica asks every third person entering the Hometown Grocery Store.
2) Erica asks every third person leaving the Hometown Shopping Mall this weekend.
3) Erica asks every fifth student entering Hometown High School on Monday morning.
4) Erica asks every fifth person leaving Saturday's Hometown High School football game.

464 Mrs. Smith wrote "Eight less than three times a number is greater than fifteen" on the board. If x represents the number, which inequality is a correct translation of this statement?
1) $3x - 8 > 15$
2) $3x - 8 < 15$
3) $8 - 3x > 15$
4) $8 - 3x < 15$

465 The set $\{1, 2, 3, 4\}$ is equivalent to
1) $\{x | 1 < x < 4, \text{ where } x \text{ is a whole number}\}$
2) $\{x | 0 < x < 4, \text{ where } x \text{ is a whole number}\}$
3) $\{x | 0 < x \leq 4, \text{ where } x \text{ is a whole number}\}$
4) $\{x | 1 < x \leq 4, \text{ where } x \text{ is a whole number}\}$

466 Daniel's Print Shop purchased a new printer for $35,000. Each year it depreciates (loses value) at a rate of 5%. What will its approximate value be at the end of the fourth year?
1) $33,250.00
2) $30,008.13
3) $28,507.72
4) $27,082.33

467 Which equation most closely represents the line of best fit for the scatter plot below?

Money Earned from Babysitting
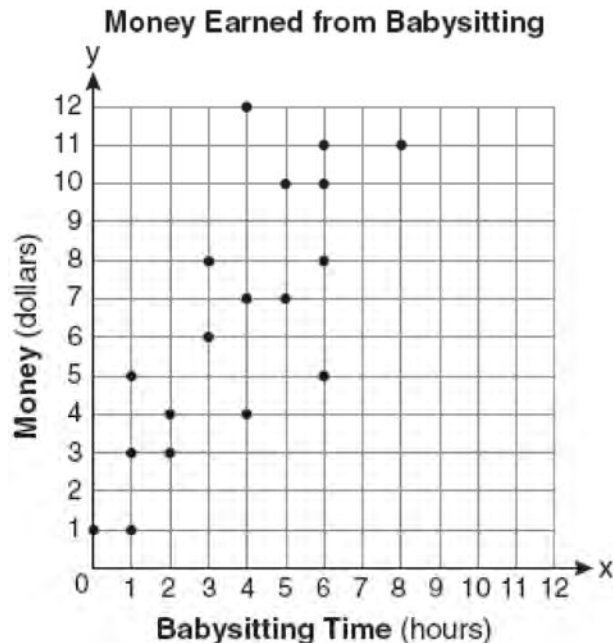
1) $y = x$
2) $y = \dfrac{2}{3}x + 1$
3) $y = \dfrac{3}{2}x + 4$
4) $y = \dfrac{3}{2}x + 1$

468 Marie currently has a collection of 58 stamps. If she buys s stamps each week for w weeks, which expression represents the total number of stamps she will have?
1) $58sw$
2) $58 + sw$
3) $58s + w$
4) $58 + s + w$

80

469 What is the slope of the line that passes through the points $(-5, 4)$ and $(15, -4)$?
1) $-\dfrac{2}{5}$
2) 0
3) $-\dfrac{5}{2}$
4) undefined

470 For which value of x is $\dfrac{x-3}{x^2-4}$ undefined?
1) -2
2) 0
3) 3
4) 4

471 Which ordered pair is a solution to the system of equations $y = x$ and $y = x^2 - 2$?
1) $(-2, -2)$
2) $(-1, 1)$
3) $(0, 0)$
4) $(2, 2)$

472 What is the quotient of 8.05×10^6 and 3.5×10^2?
1) 2.3×10^3
2) 2.3×10^4
3) 2.3×10^8
4) 2.3×10^{12}

473 Nicole's aerobics class exercises to fast-paced music. If the rate of the music is 120 beats per minute, how many beats would there be in a class that is 0.75 hour long?
1) 90
2) 160
3) 5,400
4) 7,200

474 A cylindrical container has a diameter of 12 inches and a height of 15 inches, as illustrated in the diagram below.

15 in

12 in
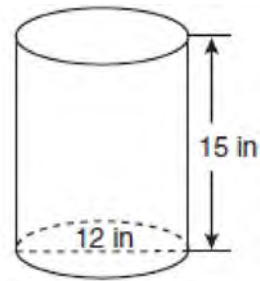
(Not drawn to scale)

What is the volume of this container to the *nearest tenth* of a cubic inch?
1) 6,785.8
2) 4,241.2
3) 2,160.0
4) 1,696.5

475 In a linear equation, the independent variable increases at a constant rate while the dependent variable decreases at a constant rate. The slope of this line is
1) zero
2) negative
3) positive
4) undefined

476 Which equation represents a line that is parallel to the line $y = -4x + 5$?
1) $y = -4x + 3$
2) $y = -\frac{1}{4}x + 5$
3) $y = \frac{1}{4}x + 3$
4) $y = 4x + 5$

477 A playground in a local community consists of a rectangle and two semicircles, as shown in the diagram below.
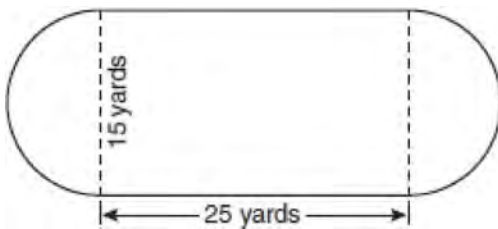
Which expression represents the amount of fencing, in yards, that would be needed to completely enclose the playground?
1) $15\pi + 50$
2) $15\pi + 80$
3) $30\pi + 50$
4) $30\pi + 80$

478 If $a + ar = b + r$, the value of a in terms of b and r can be expressed as
1) $\frac{b}{r} + 1$
2) $\frac{1 + b}{r}$
3) $\frac{b + r}{1 + r}$
4) $\frac{1 + b}{r + b}$

479 The sign shown below is posted in front of a roller coaster ride at the Wadsworth County Fairgrounds.

All riders **MUST** be at least 48 inches tall.
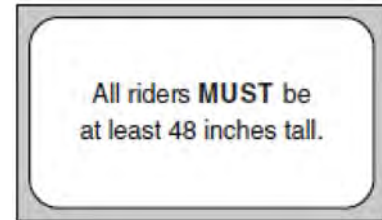
If h represents the height of a rider in inches, what is a correct translation of the statement on this sign?
1) $h < 48$
2) $h > 48$
3) $h \leq 48$
4) $h \geq 48$

480 Which value of x is in the solution set of $\frac{4}{3}x + 5 < 17$?
1) 8
2) 9
3) 12
4) 16

481 What are the roots of the equation $x^2 - 10x + 21 = 0$?
1) 1 and 21
2) -5 and -5
3) 3 and 7
4) -3 and -7

482 The diagram below shows the graph of $y = |x - 3|$.

Which diagram shows the graph of $y = -|x - 3|$?

1)

2)

3)

4)
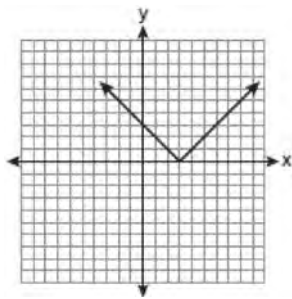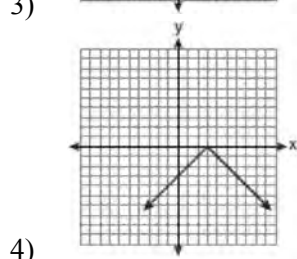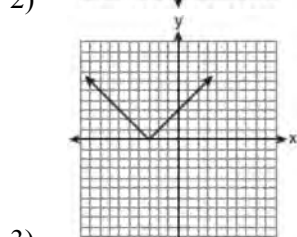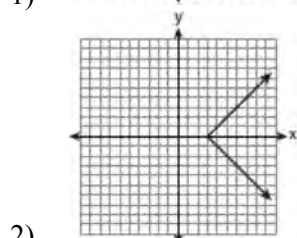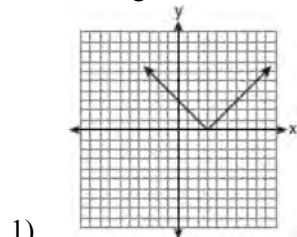
483 If h represents a number, which equation is a correct translation of "Sixty more than 9 times a number is 375"?
1) $9h = 375$
2) $9h + 60 = 375$
3) $9h - 60 = 375$
4) $60h + 9 = 375$

484 Which value of x is the solution of the equation $\frac{2x}{3} + \frac{x}{6} = 5$?
1) 6
2) 10
3) 15
4) 30

485 What is the product of $\frac{x^2 - 1}{x + 1}$ and $\frac{x + 3}{3x - 3}$ expressed in simplest form?
1) x
2) $\frac{x}{3}$
3) $x + 3$
4) $\frac{x + 3}{3}$

486 Which expression represents $\frac{25x - 125}{x^2 - 25}$ in simplest form?
1) $\frac{5}{x}$
2) $\frac{-5}{x}$
3) $\frac{25}{x - 5}$
4) $\frac{25}{x + 5}$

487 The equations $5x + 2y = 48$ and $3x + 2y = 32$ represent the money collected from school concert ticket sales during two class periods. If x represents the cost for each adult ticket and y represents the cost for each student ticket, what is the cost for each adult ticket?
1) $20
2) $10
3) $8
4) $4

488 On a certain day in Toronto, Canada, the temperature was 15° Celsius (C). Using the formula $F = \frac{9}{5}C + 32$, Peter converts this temperature to degrees Fahrenheit (F). Which temperature represents 15°C in degrees Fahrenheit?
1) −9
2) 35
3) 59
4) 85

489 What is $\frac{6}{5x} - \frac{2}{3x}$ in simplest form?
1) $\frac{8}{15x^2}$
2) $\frac{8}{15x}$
3) $\frac{4}{15x}$
4) $\frac{4}{2x}$

490 A survey is being conducted to determine which types of television programs people watch. Which survey and location combination would likely contain the most bias?
1) surveying 10 people who work in a sporting goods store
2) surveying the first 25 people who enter a grocery store
3) randomly surveying 50 people during the day in a mall
4) randomly surveying 75 people during the day in a clothing store

491 The set $\{11, 12\}$ is equivalent to
1) $\{x \mid 11 < x < 12,$ where x is an integer$\}$
2) $\{x \mid 11 < x \le 12,$ where x is an integer$\}$
3) $\{x \mid 10 \le x < 12,$ where x is an integer$\}$
4) $\{x \mid 10 < x \le 12,$ where x is an integer$\}$

492 At Genesee High School, the sophomore class has 60 more students than the freshman class. The junior class has 50 fewer students than twice the students in the freshman class. The senior class is three times as large as the freshman class. If there are a total of 1,424 students at Genesee High School, how many students are in the freshman class?
1) 202
2) 205
3) 235
4) 236

493 Solve for x: $\frac{3}{5}(x + 2) = x - 4$
1) 8
2) 13
3) 15
4) 23

494 Students in a ninth grade class measured their heights, *h*, in centimeters. The height of the shortest student was 155 cm, and the height of the tallest student was 190 cm. Which inequality represents the range of heights?
1) $155 < h < 190$
2) $155 \leq h \leq 190$
3) $h \geq 155$ or $h \leq 190$
4) $h > 155$ or $h < 190$

495 John is going to line up his four golf trophies on a shelf in his bedroom. How many different possible arrangements can he make?
1) 24
2) 16
3) 10
4) 4

496 The groundskeeper is replacing the turf on a football field. His measurements of the field are 130 yards by 60 yards. The actual measurements are 120 yards by 54 yards. Which expression represents the relative error in the measurement?
1) $\dfrac{(130)(60) - (120)(54)}{(120)(54)}$

2) $\dfrac{(120)(54)}{(130)(60) - (120)(54)}$

3) $\dfrac{(130)(60) - (120)(54)}{(130)(60)}$

4) $\dfrac{(130)(60)}{(130)(60) - (120)(54)}$

497 Which property is illustrated by the equation $ax + ay = a(x + y)$?
1) associative
2) commutative
3) distributive
4) identity

498 Which situation describes a correlation that is *not* a causal relationship?
1) The rooster crows, and the Sun rises.
2) The more miles driven, the more gasoline needed
3) The more powerful the microwave, the faster the food cooks.
4) The faster the pace of a runner, the quicker the runner finishes.

499 The center pole of a tent is 8 feet long, and a side of the tent is 12 feet long as shown in the diagram below.
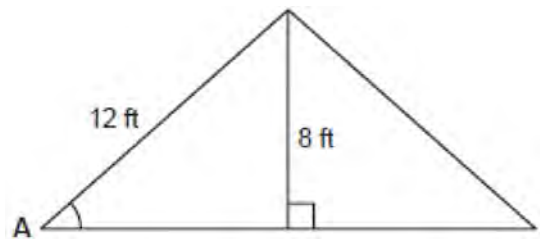
If a right angle is formed where the center pole meets the ground, what is the measure of angle *A* to the *nearest degree*?
1) 34
2) 42
3) 48
4) 56

500 Which relationship can best be described as causal?
1) height and intelligence
2) shoe size and running speed
3) number of correct answers on a test and test score
4) number of students in a class and number of students with brown hair

501 The length of a rectangular window is 5 feet more than its width, w. The area of the window is 36 square feet. Which equation could be used to find the dimensions of the window?
1) $w^2 + 5w + 36 = 0$
2) $w^2 - 5w - 36 = 0$
3) $w^2 - 5w + 36 = 0$
4) $w^2 + 5w - 36 = 0$

502 A rectangle has an area of 24 square units. The width is 5 units less than the length. What is the length, in units, of the rectangle?
1) 6
2) 8
3) 3
4) 19

503 The length of the hypotenuse of a right triangle is 34 inches and the length of one of its legs is 16 inches. What is the length, in inches, of the other leg of this right triangle?
1) 16
2) 18
3) 25
4) 30

504 Antwaan leaves a cup of hot chocolate on the counter in his kitchen. Which graph is the best representation of the change in temperature of his hot chocolate over time?
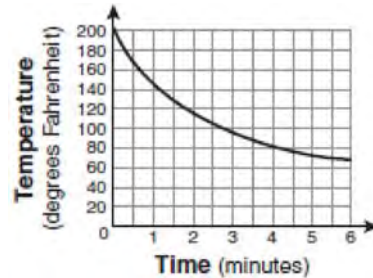
1)

2)
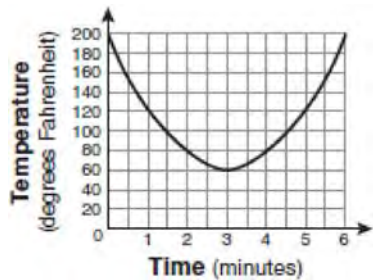
3)
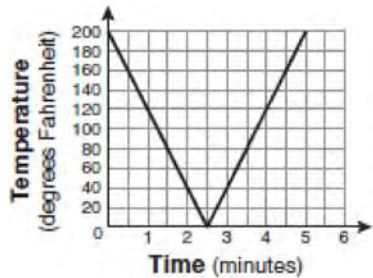
4)

505 The statement $2 + 0 = 2$ is an example of the use of which property of real numbers?
1) associative
2) additive identity
3) additive inverse
4) distributive

506 Alex earned scores of 60, 74, 82, 87, 87, and 94 on his first six algebra tests. What is the relationship between the measures of central tendency of these scores?
1) median < mode < mean
2) mean < mode < median
3) mode < median < mean
4) mean < median < mode

507 Factored completely, the expression $2x^2 + 10x - 12$ is equivalent to
1) $2(x - 6)(x + 1)$
2) $2(x + 6)(x - 1)$
3) $2(x + 2)(x + 3)$
4) $2(x - 2)(x - 3)$

508 When $4x^2 + 7x - 5$ is subtracted from $9x^2 - 2x + 3$, the result is
1) $5x^2 + 5x - 2$
2) $5x^2 - 9x + 8$
3) $-5x^2 + 5x - 2$
4) $-5x^2 + 9x - 8$

509 What is the value of x, in inches, in the right triangle below?
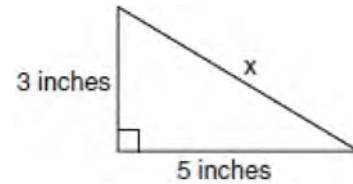
1) $\sqrt{15}$
2) 8
3) $\sqrt{34}$
4) 4

510 Which equation represents a line parallel to the x-axis?
1) $x = 5$
2) $y = 10$
3) $x = \dfrac{1}{3}y$
4) $y = 5x + 17$

511 Given:
Set $A = \{(-2,-1),(-1,0),(1,8)\}$
Set $B = \{(-3,-4),(-2,-1),(-1,2),(1,8)\}$.
What is the intersection of sets A and B?
1) $\{(1,8)\}$
2) $\{(-2,-1)\}$
3) $\{(-2,-1),(1,8)\}$
4) $\{(-3,-4),(-2,-1),(-1,2),(-1,0),(1,8)\}$

512 The equation $y = -x^2 - 2x + 8$ is graphed on the set of axes below.

Based on this graph, what are the roots of the equation $-x^2 - 2x + 8 = 0$?
1) 8 and 0
2) 2 and −4
3) 9 and −1
4) 4 and −2
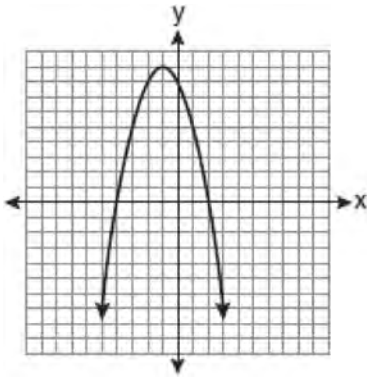
513 Which expression represents $\dfrac{x^2 - 2x - 15}{x^2 + 3x}$ in simplest form?
1) −5
2) $\dfrac{x - 5}{x}$
3) $\dfrac{-2x - 5}{x}$
4) $\dfrac{-2x - 15}{3x}$

514 The diagram below shows right triangle UPC.
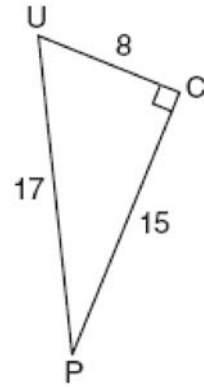
Which ratio represents the sine of $\angle U$?
1) $\dfrac{15}{8}$
2) $\dfrac{15}{17}$
3) $\dfrac{8}{15}$
4) $\dfrac{8}{17}$

515 The bowling team at Lincoln High School must choose a president, vice president, and secretary. If the team has 10 members, which expression could be used to determine the number of ways the officers could be chosen?
1) $_3P_{10}$
2) $_7P_3$
3) $_{10}P_3$
4) $_{10}P_7$

516 What is the slope of the line containing the points $(3,4)$ and $(-6,10)$?

1) $\dfrac{1}{2}$

2) 2

3) $-\dfrac{2}{3}$

4) $-\dfrac{3}{2}$

517 Don placed a ladder against the side of his house as shown in the diagram below.

Ladder
20 ft

19.5 ft

X
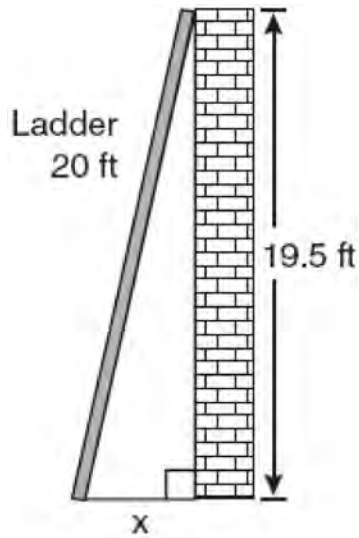
Which equation could be used to find the distance, x, from the foot of the ladder to the base of the house?

1) $x = 20 - 19.5$

2) $x = 20^2 - 19.5^2$

3) $x = \sqrt{20^2 - 19.5^2}$

4) $x = \sqrt{20^2 + 19.5^2}$

518 Which value of x is in the solution set of the inequality $-2(x - 5) < 4$?

1) 0
2) 2
3) 3
4) 5

519 Sam and Odel have been selling frozen pizzas for a class fundraiser. Sam has sold half as many pizzas as Odel. Together they have sold a total of 126 pizzas. How many pizzas did Sam sell?

1) 21
2) 42
3) 63
4) 84

520 A movie theater recorded the number of tickets sold daily for a popular movie during the month of June. The box-and-whisker plot shown below represents the data for the number of tickets sold, in hundreds.
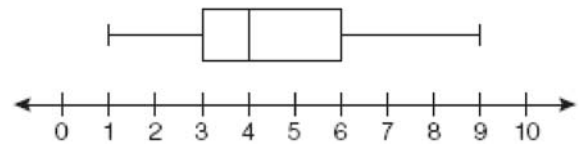
Which conclusion can be made using this plot?

1) The second quartile is 600.
2) The mean of the attendance is 400.
3) The range of the attendance is 300 to 600.
4) Twenty-five percent of the attendance is between 300 and 400.

521 What is the product of 12 and 4.2×10^6 expressed in scientific notation?
1) 50.4×10^6
2) 50.4×10^7
3) 5.04×10^6
4) 5.04×10^7

522 The box-and-whisker plot below represents students' scores on a recent English test.

Student Scores
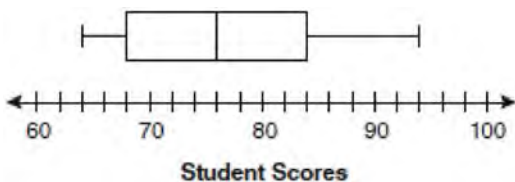
What is the value of the upper quartile?
1) 68
2) 76
3) 84
4) 94

523 Mr. Turner bought x boxes of pencils. Each box holds 25 pencils. He left 3 boxes of pencils at home and took the rest to school. Which expression represents the total number of pencils he took to school?
1) $22x$
2) $25x - 3$
3) $25 - 3x$
4) $25x - 75$

524 Which relation is *not* a function?
1) $\{(1,5),(2,6),(3,6),(4,7)\}$
2) $\{(4,7),(2,1),(-3,6),(3,4)\}$
3) $\{(-1,6),(1,3),(2,5),(1,7)\}$
4) $\{(-1,2),(0,5),(5,0),(2,-1)\}$

525 Which graph represents a function?

1)

2)

3)

4)
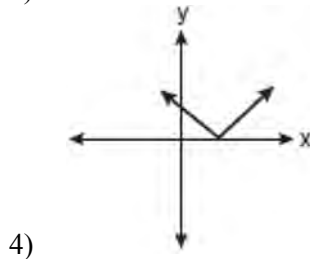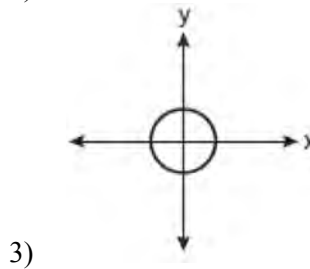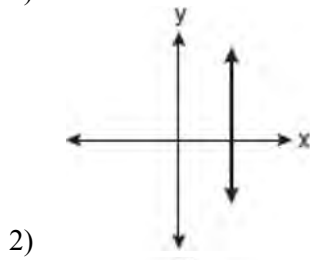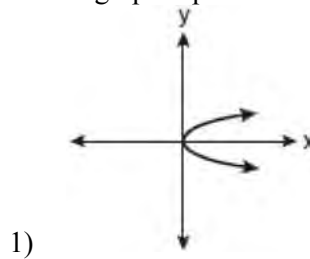
526 Which expression is equivalent to $(3x^2)^3$?
1) $9x^5$
2) $9x^6$
3) $27x^5$
4) $27x^6$

527 An online music club has a one-time registration fee of $13.95 and charges $0.49 to buy each song. If Emma has $50.00 to join the club and buy songs, what is the maximum number of songs she can buy?
1) 73
2) 74
3) 130
4) 131

528 What is the sum of $\frac{d}{2}$ and $\frac{2d}{3}$ expressed in simplest form?
1) $\frac{3d}{5}$
2) $\frac{3d}{6}$
3) $\frac{7d}{5}$
4) $\frac{7d}{6}$

529 What is an equation of the line that passes through the point $(3,-1)$ and has a slope of 2?
1) $y = 2x + 5$
2) $y = 2x - 1$
3) $y = 2x - 4$
4) $y = 2x - 7$

530 Which value of x is a solution of $\frac{5}{x} = \frac{x+13}{6}$?
1) -2
2) -3
3) -10
4) -15

531 If the formula for the perimeter of a rectangle is $P = 2l + 2w$, then w can be expressed as
1) $w = \frac{2l - P}{2}$
2) $w = \frac{P - 2l}{2}$
3) $w = \frac{P - l}{2}$
4) $w = \frac{P - 2w}{2l}$

532 A school wants to add a coed soccer program. To determine student interest in the program, a survey will be taken. In order to get an unbiased sample, which group should the school survey?
1) every third student entering the building
2) every member of the varsity football team
3) every member in Ms. Zimmer's drama classes
4) every student having a second-period French class

533 In the diagram of $\triangle ABC$ shown below, $BC = 10$ and $AB = 16$.
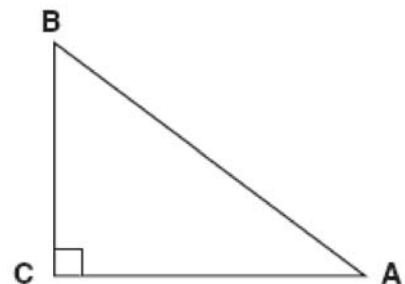
To the *nearest tenth of a degree*, what is the measure of the largest acute angle in the triangle?
1) 32.0
2) 38.7
3) 51.3
4) 90.0

534 The faces of a cube are numbered from 1 to 6. If the cube is tossed once, what is the probability that a prime number or a number divisible by 2 is obtained?

1) $\frac{6}{6}$

2) $\frac{5}{6}$

3) $\frac{4}{6}$

4) $\frac{1}{6}$

535 What is an equation for the line that passes through the coordinates $(2,0)$ and $(0,3)$?

1) $y = -\frac{3}{2}x + 3$

2) $y = -\frac{3}{2}x - 3$

3) $y = -\frac{2}{3}x + 2$

4) $y = -\frac{2}{3}x - 2$

536 An electronics store sells DVD players and cordless telephones. The store makes a $75 profit on the sale of each DVD player (d) and a $30 profit on the sale of each cordless telephone (c). The store wants to make a profit of at least $255.00 from its sales of DVD players and cordless phones. Which inequality describes this situation?

1) $75d + 30c < 255$
2) $75d + 30c \leq 255$
3) $75d + 30c > 255$
4) $75d + 30c \geq 255$

537 Which equation represents the axis of symmetry of the graph of the parabola below?
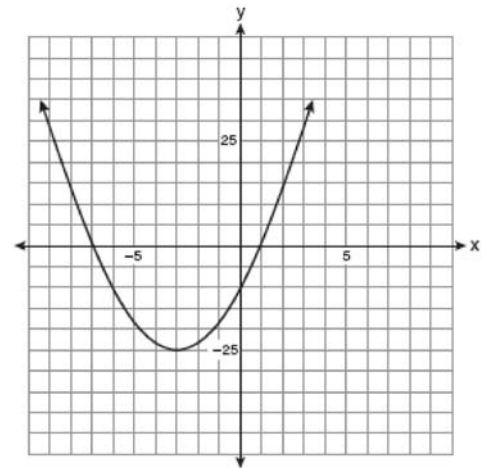
1) $y = -3$
2) $x = -3$
3) $y = -25$
4) $x = -25$

538 What is the slope of the line that passes through the points $(2,5)$ and $(7,3)$?

1) $-\frac{5}{2}$

2) $-\frac{2}{5}$

3) $\frac{8}{9}$

4) $\frac{9}{8}$

539 Ryan estimates the measurement of the volume of a popcorn container to be 282 cubic inches. The actual volume of the popcorn container is 289 cubic inches. What is the relative error of Ryan's measurement to the *nearest thousandth*?
1) 0.024
2) 0.025
3) 0.096
4) 1.025

540 What is the value of x in the equation
$$\frac{2}{x} - 3 = \frac{26}{x}?$$
1) -8
2) $-\frac{1}{8}$
3) $\frac{1}{8}$
4) 8

Integrated Algebra 2 Point Regents Exam Questions

541 Clayton has three fair coins. Find the probability that he gets two tails and one head when he flips the three coins.

542 Solve for c in terms of a and b: $bc + ac = ab$

543 The table below represents the number of hours a student worked and the amount of money the student earned.

Number of Hours (h)	Dollars Earned (d)
8	$50.00
15	$93.75
19	$118.75
30	$187.50

Write an equation that represents the number of dollars, d, earned in terms of the number of hours, h, worked. Using this equation, determine the number of dollars the student would earn for working 40 hours.

544 Express in simplest form: $\dfrac{x^2 - 1}{x^2 + 3x + 2}$

545 Factor completely: $5x^3 - 20x^2 - 60x$

546 Alexis calculates the surface area of a gift box as 600 square inches. The actual surface area of the gift box is 592 square inches. Find the relative error of Alexis' calculation expressed as a decimal to the *nearest thousandth.*

547 Students calculated the area of a playing field to be 8,100 square feet. The actual area of the field is 7,678.5 square feet. Find the relative error in the area, to the *nearest thousandth*.

548 Mrs. Chen owns two pieces of property. The areas of the properties are 77,120 square feet and 33,500 square feet.

> 43,560 square feet = 1 acre

Find the total number of acres Mrs. Chen owns, to the *nearest hundredth of an acre*.

549 A jogger ran at a rate of 5.4 miles per hour. Find the jogger's *exact* rate, in feet per minute.

> 1 mile = 5,280 feet

550 Roberta needs ribbon for a craft project. The ribbon sells for $3.75 per yard. Find the cost, in dollars, for 48 inches of the ribbon.

551 Simplify: $\dfrac{27k^5 m^8}{(4k^3)(9m^2)}$

552 Solve for g: $3 + 2g = 5g - 9$

553 State the value of the expression
$\dfrac{(4.1 \times 10^2)(2.4 \times 10^3)}{(1.5 \times 10^7)}$ in scientific notation.

554 A window is made up of a single piece of glass in the shape of a semicircle and a rectangle, as shown in the diagram below. Tess is decorating for a party and wants to put a string of lights all the way around the outside edge of the window.

Window

12 ft

10 ft
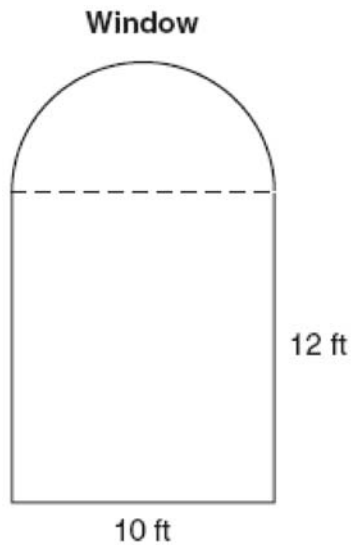
To the *nearest foot*, what is the length of the string of lights that Tess will need to decorate the window?

555 Express $-3\sqrt{48}$ in simplest radical form.

556 As shown in the diagram below, a ladder 5 feet long leans against a wall and makes an angle of 65° with the ground. Find, to the *nearest tenth of a foot*, the distance from the wall to the base of the ladder.

5 feet

65°
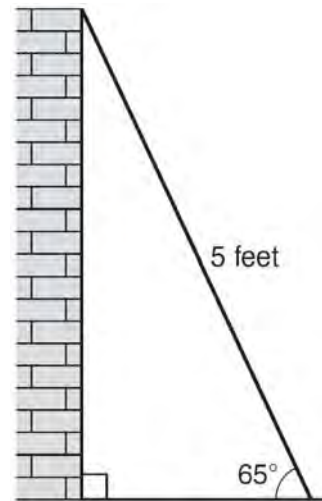
557 Determine how many three-letter arrangements are possible with the letters A, N, G, L, and E if no letter may be repeated.

558 Casey purchased a pack of assorted flower seeds and planted them in her garden. When the first 25 flowers bloomed, 11 were white, 5 were red, 3 were blue, and the rest were yellow. Find the empirical probability that a flower that blooms will be yellow.

559 The area of a rectangle is represented by $x^2 - 5x - 24$. If the width of the rectangle is represented by $x - 8$, express the length of the rectangle as a binomial.

560 A method for solving $5(x - 2) - 2(x - 5) = 9$ is shown below. Identify the property used to obtain each of the two indicated steps.

$5(x - 2) - 2(x - 5) = 9$

(1) $5x - 10 - 2x + 10 = 9$ (1) _____

(2) $5x - 2x - 10 + 10 = 9$ (2) _____

$3x + 0 = 9$

$3x = 9$

$x = 3$

561 Express the product of $\dfrac{x + 2}{2}$ and $\dfrac{4x + 20}{x^2 + 6x + 8}$ in simplest form.

562 In a game of ice hockey, the hockey puck took 0.8 second to travel 89 feet to the goal line. Determine the average speed of the puck in feet per second.

563 Solve the inequality $-5(x - 7) < 15$ algebraically for x.

564 Express $5\sqrt{72}$ in simplest radical form.

565 The square dart board shown below has a side that measures 40 inches. The shaded portion in the center is a square whose side is 15 inches. A dart thrown at the board is equally likely to land on any point on the dartboard.
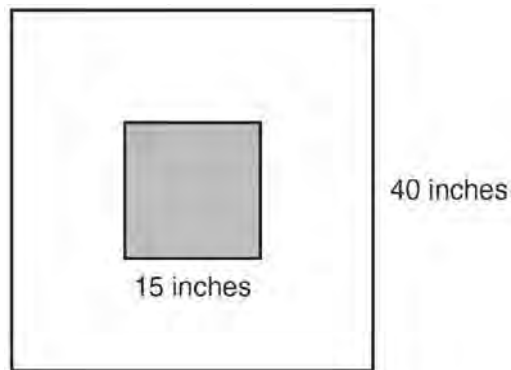
Find the probability that a dart hitting the board will *not* land in the shaded area.

566 On the set of axes below, graph $y = 3^x$ over the interval $-1 \le x \le 2$.
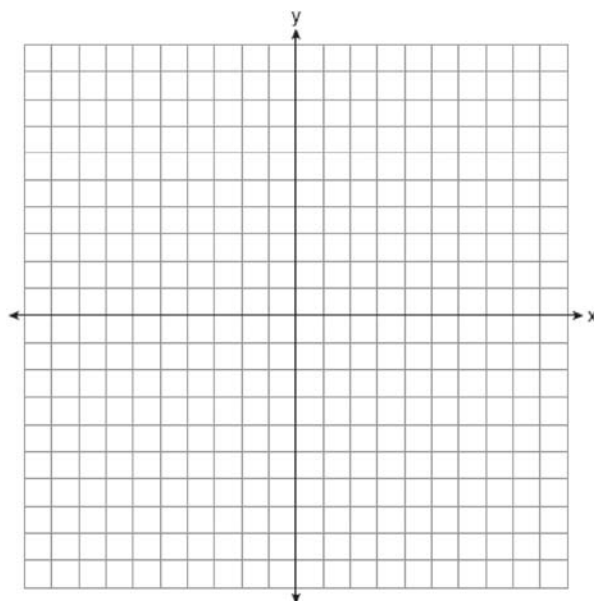
567 Maureen tracks the range of outdoor temperatures over three days. She records the following information.
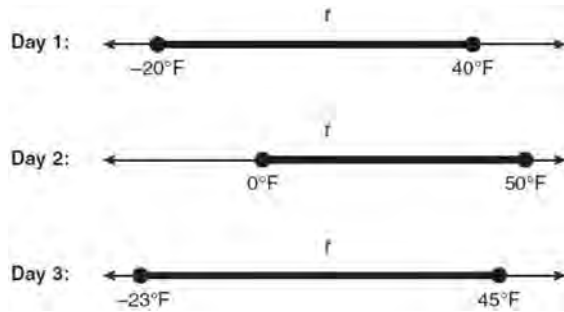
Express the intersection of the three sets as an inequality in terms of temperature, t.

568 A designer created the logo shown below. The logo consists of a square and four quarter-circles of equal size.
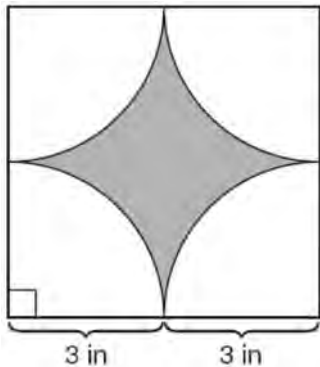
Express, in terms of π, the exact area, in square inches, of the shaded region.

569 Express in simplest form: $\dfrac{45a^4b^3 - 90a^3b}{15a^2b}$

570 Brianna is using the two spinners shown below to play her new board game. She spins the arrow on each spinner once. Brianna uses the first spinner to determine how many spaces to move. She uses the second spinner to determine whether her move from the first spinner will be forward or backward.

Find the probability that Brianna will move *fewer than* four spaces and *backward*.

571 Chad complained to his friend that he had five equations to solve for homework. Are all of the homework problems equations? Justify your answer.

Math Homework

1. $3x^2 \cdot 2x^4$

2. $5 - 2x = 3x$

3. $3(2x + 7)$

4. $7x^2 + 2x - 3x^2 - 9$

5. $\frac{2}{3} = \frac{x+2}{6}$

Name ___Chad___

94

572 Serena's garden is a rectangle joined with a semicircle, as shown in the diagram below. Line segment *AB* is the diameter of semicircle *P*. Serena wants to put a fence around her garden.
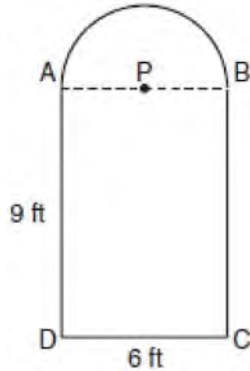
Calculate the length of fence Serena needs to the *nearest tenth of a foot*.

573 Express $2\sqrt{108}$ in simplest radical form.

574 Jon is buying tickets for himself for two concerts. For the jazz concert, 4 tickets are available in the front row, and 32 tickets are available in the other rows. For the orchestra concert, 3 tickets are available in the front row, and 23 tickets are available in the other rows. Jon is randomly assigned one ticket for each concert. Determine the concert for which he is more likely to get a front-row ticket. Justify your answer.

575 The distance from Earth to Mars is 136,000,000 miles. A spaceship travels at 31,000 miles per hour. Determine, to the *nearest day*, how long it will take the spaceship to reach Mars.

576 Angela wants to purchase carpeting for her living room. The dimensions of her living room are 12 feet by 12 feet. If carpeting is sold by the square yard, determine how many square yards of carpeting she must purchase.

3 feet = 1 yard
9 square feet = 1 square yard

577 Three storage bins contain colored blocks. Bin 1 contains 15 red and 14 blue blocks. Bin 2 contains 16 white and 15 blue blocks. Bin 3 contains 15 red and 15 white blocks. All of the blocks from the three bins are placed into one box. If one block is randomly selected from the box, which color block would most likely be picked? Justify your answer.

578 Twelve players make up a high school basketball team. The team jerseys are numbered 1 through 12. The players wearing the jerseys numbered 3, 6, 7, 8, and 11 are the only players who start a game. Using set notation, list the complement of this subset.

579 The length and width of the base of a rectangular prism are 5.5 cm and 3 cm. The height of the prism is 6.75 cm. Find the *exact* value of the surface area of the prism, in square centimeters.

580 In right triangle *ABC*, $AB = 20$, $AC = 12$, $BC = 16$, and $m\angle C = 90$. Find, to the *nearest degree*, the measure of $\angle A$.

581 Oatmeal is packaged in a cylindrical container, as shown in the diagram below.
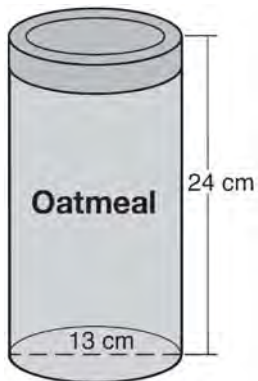
The diameter of the container is 13 centimeters and its height is 24 centimeters. Determine, in terms of π, the volume of the cylinder, in cubic centimeters.

582 Joseph typed a 1,200-word essay in 25 minutes. At this rate, determine how many words he can type in 45 minutes.

583 Perform the indicated operation: $-6(a - 7)$
State the name of the property used.

584 Some books are laid on a desk. Two are English, three are mathematics, one is French, and four are social studies. Theresa selects an English book and Isabelle then selects a social studies book. Both girls take their selections to the library to read. If Truman then selects a book at random, what is the probability that he selects an English book?

585 A communications company is building a 30-foot antenna to carry cell phone transmissions. As shown in the diagram below, a 50-foot wire from the top of the antenna to the ground is used to stabilize the antenna.
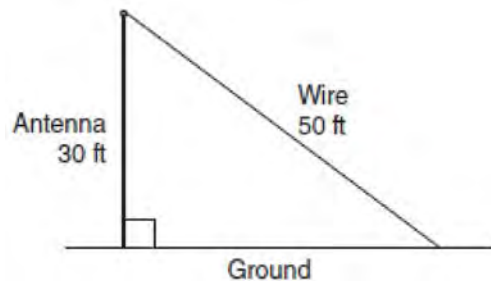
Find, to the *nearest degree,* the measure of the angle that the wire makes with the ground.

586 On the set of axes below, graph $y = 2|x + 3|$. Include the interval $-7 \le x \le 1$.
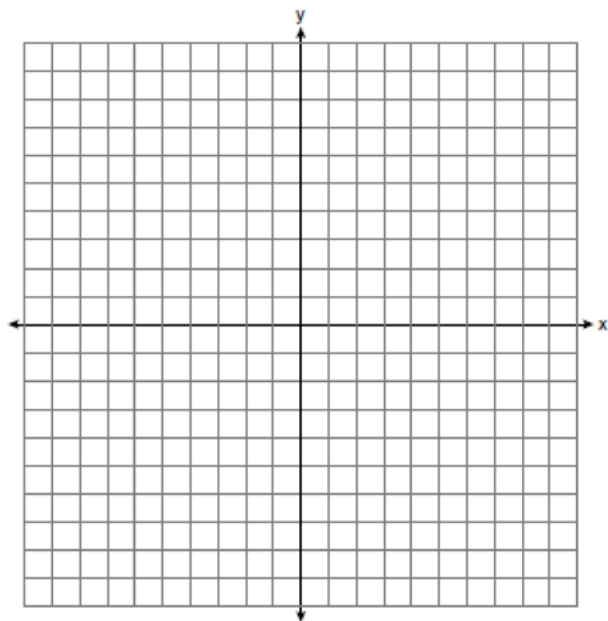
587 Ms. Hopkins recorded her students' final exam scores in the frequency table below.

Interval	Tally	Frequency
61–70	⊬⊬	5
71–80	IIII	4
81–90	⊬⊬ IIII	9
91–100	⊬⊬ I	6

On the grid below, construct a frequency histogram based on the table.
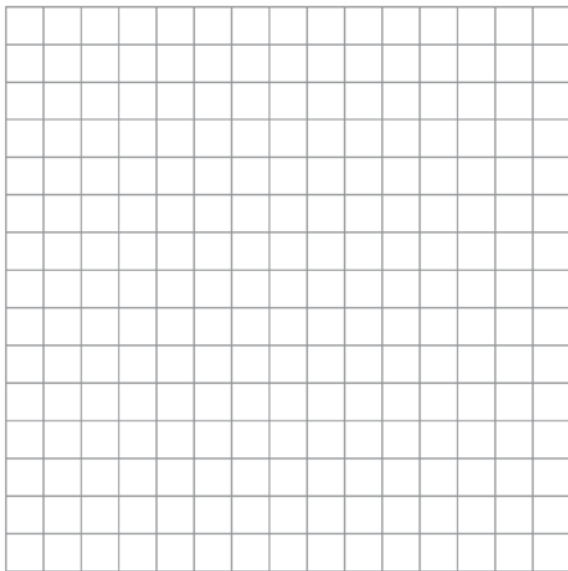
588 The diagram below represents Joe's two fish tanks.
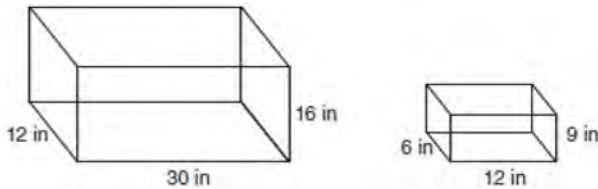
Joe's larger tank is completely filled with water. He takes water from it to completely fill the small tank. Determine how many cubic inches of water will remain in the larger tank.

589 Solve the following system of equations algebraically for y:

$$2x + 2y = 9$$
$$2x - y = 3$$

590 Factor completely: $4x^3 - 36x$

591 Tom drove 290 miles from his college to home and used 23.2 gallons of gasoline. His sister, Ann, drove 225 miles from her college to home and used 15 gallons of gasoline. Whose vehicle had better gas mileage? Justify your answer.

592 State the equation of the axis of symmetry and the coordinates of the vertex of the parabola graphed below.
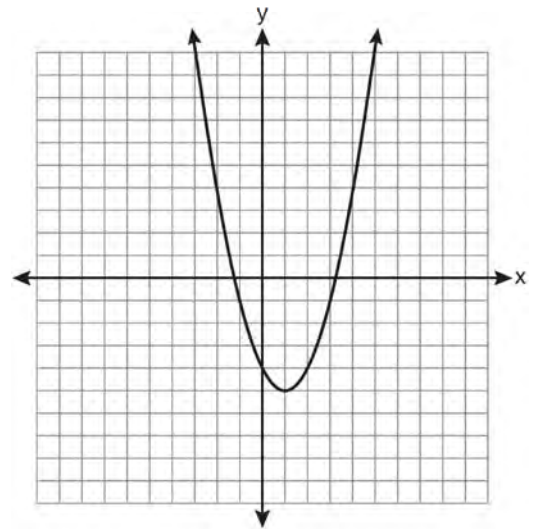
593 Express $4\sqrt{75}$ in simplest radical form.

594 Adrianne invested $2000 in an account at a 3.5%
interest rate compounded annually. She made no
deposits or withdrawals on the account for 4 years.
Determine, to the *nearest dollar*, the balance in the
account after the 4 years.

Integrated Algebra 3 Point Regents Exam Questions

595 The chart below compares two runners.

Runner	Distance, in miles	Time, in hours
Greg	11	2
Dave	16	3

Based on the information in this chart, state which runner has the faster rate. Justify your answer.

596 On the set of axes below, graph and label the equations $y = |x|$ and $y = 3|x|$ for the interval $-3 \le x \le 3$.
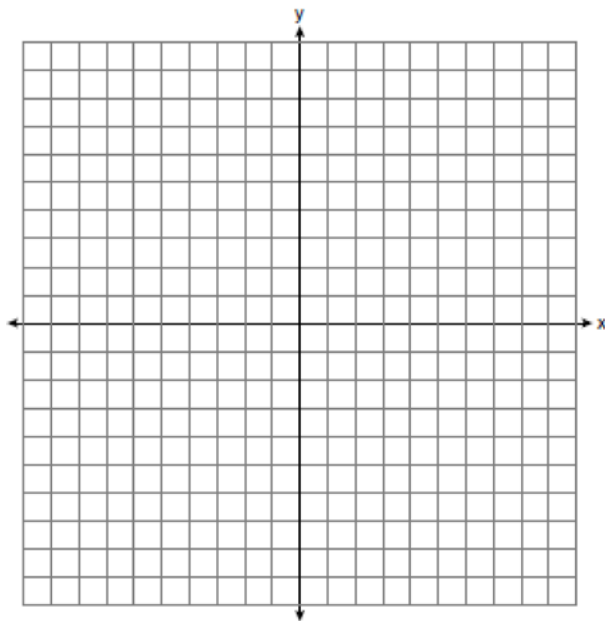
Explain how changing the coefficient of the absolute value from 1 to 3 affects the graph.

597 A turtle and a rabbit are in a race to see who is first to reach a point 100 feet away. The turtle travels at a constant speed of 20 feet per minute for the entire 100 feet. The rabbit travels at a constant speed of 40 feet per minute for the first 50 feet, stops for 3 minutes, and then continues at a constant speed of 40 feet per minute for the last 50 feet. Determine which animal won the race and by how much time.

598 Given: $A = \{18, 6, -3, -12\}$
Determine all elements of set A that are in the solution of the inequality $\frac{2}{3}x + 3 < -2x - 7$.

599 Express $\dfrac{3\sqrt{75} + \sqrt{27}}{3}$ in simplest radical form.

600 A soup can is in the shape of a cylinder. The can has a volume of 342 cm^3 and a diameter of 6 cm. Express the height of the can in terms of π. Determine the maximum number of soup cans that can be stacked on their base between two shelves if the distance between the shelves is exactly 36 cm. Explain your answer.

601 Express $\dfrac{16\sqrt{21}}{2\sqrt{7}} - 5\sqrt{12}$ in simplest radical form.

99

602 The difference between two numbers is 28. The larger number is 8 less than twice the smaller number. Find *both* numbers. [Only an algebraic solution can receive full credit.]

603 A line having a slope of $\frac{3}{4}$ passes through the point $(-8, 4)$. Write the equation of this line in slope-intercept form.

604 Perform the indicated operation and simplify:

$$\frac{3x + 6}{4x + 12} \div \frac{x^2 - 4}{x + 3}$$

605 A prom ticket at Smith High School is $120. Tom is going to save money for the ticket by walking his neighbor's dog for $15 per week. If Tom already has saved $22, what is the minimum number of weeks Tom must walk the dog to earn enough to pay for the prom ticket?

606 Sarah measures her rectangular bedroom window for a new shade. Her measurements are 36 inches by 42 inches. The actual measurements of the window are 36.5 inches and 42.5 inches. Using the measurements that Sarah took, determine the number of square inches in the area of the window. Determine the number of square inches in the actual area of the window. Determine the relative error in calculating the area. Express your answer as a decimal to the *nearest thousandth*.

607 The following cumulative frequency histogram shows the distances swimmers completed in a recent swim test.
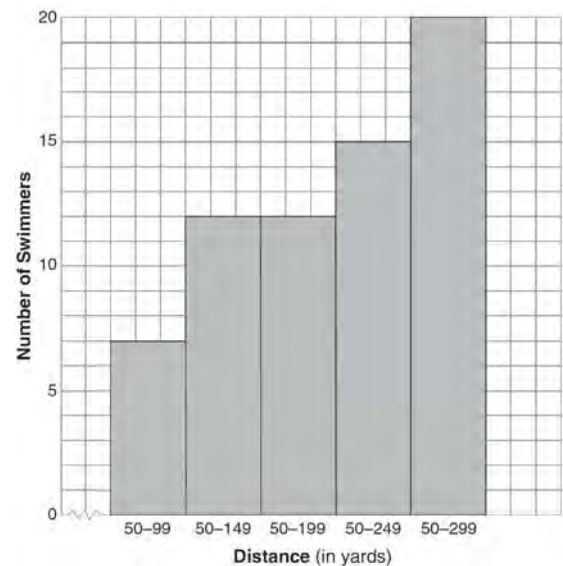
Based on the cumulative frequency histogram, determine the number of swimmers who swam between 200 and 249 yards. Determine the number of swimmers who swam between 150 and 199 yards. Determine the number of swimmers who took the swim test.

608 Find the roots of the equation $x^2 = 30 - 13x$ algebraically.

609 Solve algebraically for x: $\frac{x + 2}{6} = \frac{3}{x - 1}$

100

610 In the diagram below, the circumference of circle O is 16π inches. The length of $\overline{BC}$ is three-quarters of the length of diameter $\overline{AD}$ and $CE = 4$ inches. Calculate the area, in square inches, of trapezoid $ABCD$.
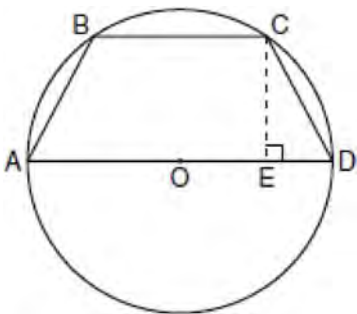
611 On the set of axes below, solve the following system of equations graphically. State the coordinates of the solution.

$$y = 4x - 1$$

$$2x + y = 5$$
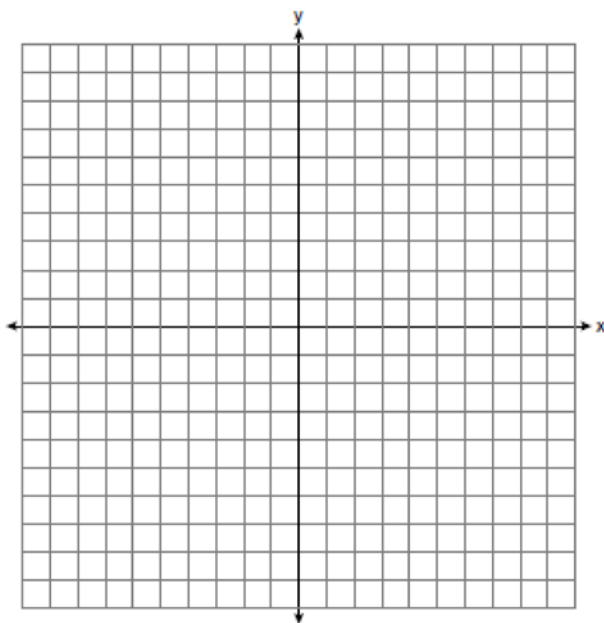
612 Given the following list of students' scores on a quiz:

5, 12, 7, 15, 20, 14, 7

Determine the median of these scores. Determine the mode of these scores. The teacher decides to adjust these scores by adding three points to each score. Explain the effect, if any, that this will have on the median and mode of these scores.

613 Chelsea has $45 to spend at the fair. She spends $20 on admission and $15 on snacks. She wants to play a game that costs $0.65 per game. Write an inequality to find the maximum number of times, x, Chelsea can play the game. Using this inequality, determine the maximum number of times she can play the game.

614 Ashley measured the dimensions of a rectangular prism to be 6 cm by 10 cm by 1.5 cm. The actual dimensions are 5.9 cm by 10.3 cm by 1.7 cm. Determine the relative error, to the *nearest thousandth*, in calculating the volume of the prism.

615 Express the product of $3\sqrt{20}\,(2\sqrt{5} - 7)$ in simplest radical form.

616 A man standing on level ground is 1000 feet away from the base of a 350-foot-tall building. Find, to the *nearest degree*, the measure of the angle of elevation to the top of the building from the point on the ground where the man is standing.

617 The test scores for 18 students in Ms. Mosher's class are listed below:

86, 81, 79, 71, 58, 87, 52, 71, 87,
87, 93, 64, 94, 81, 76, 98, 94, 68

Complete the frequency table below.

Interval	Tally	Frequency
51–60		
61–70		
71–80		
81–90		
91–100		

Draw and label a frequency histogram on the grid below.
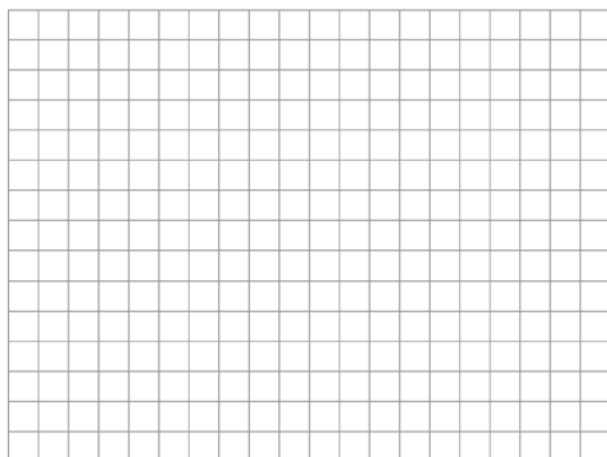
618 The cost of three notebooks and four pencils is $8.50. The cost of five notebooks and eight pencils is $14.50. Determine the cost of one notebook and the cost of one pencil. [Only an algebraic solution can receive full credit.]

619 A trapezoid is shown below.

28 feet

x

12 feet

36 feet
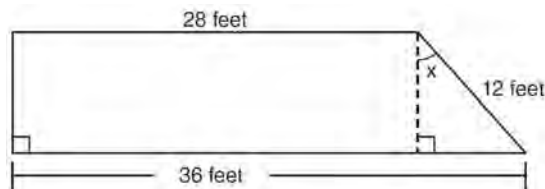
Calculate the measure of angle x, to the *nearest tenth of a degree*.

620 Solve the following system of equations algebraically for *all* values of x and y.

$$y = x^2 + 2x - 8$$
$$y = 2x + 1$$

621 Graph the equation $y = x^2 - 2x - 3$ on the accompanying set of axes. Using the graph, determine the roots of the equation $x^2 - 2x - 3 = 0$.
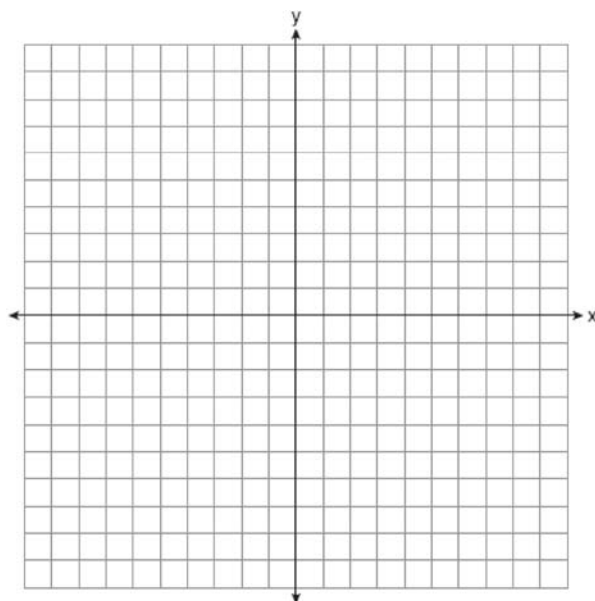
622 The Hudson Record Store is having a going-out-of-business sale. CDs normally sell for $18.00. During the first week of the sale, all CDs will sell for $15.00. Written as a fraction, what is the rate of discount? What is this rate expressed as a percent? Round your answer to the *nearest hundredth of a percent*. During the second week of the sale, the same CDs will be on sale for 25% off the *original* price. What is the price of a CD during the second week of the sale?

623 The number of songs fifteen students have on their MP3 players is:

120, 124, 132, 145, 200, 255, 260, 292,
308, 314, 342, 407, 421, 435, 452

State the values of the minimum, 1st quartile, median, 3rd quartile, and maximum. Using these values, construct a box-and-whisker plot using an appropriate scale on the line below.

624 On the set of axes below, draw the graph of $y = 2^x$ over the interval $-1 \leq x \leq 3$. Will this graph ever intersect the *x*-axis? Justify your answer.
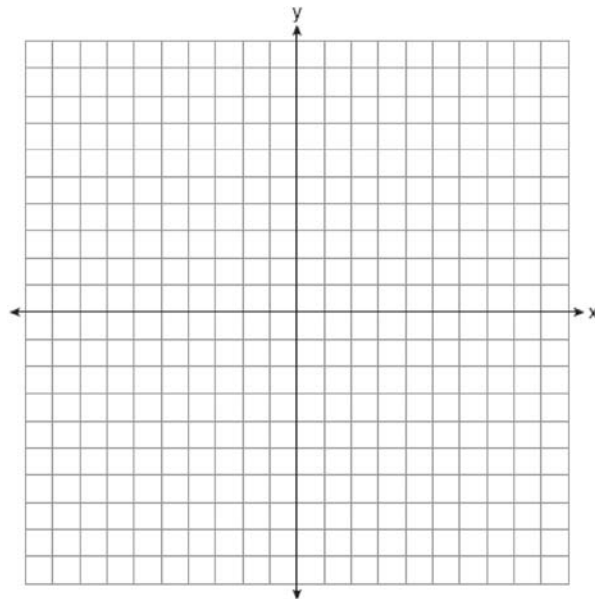
625 Find algebraically the equation of the axis of symmetry and the coordinates of the vertex of the parabola whose equation is $y = -2x^2 - 8x + 3$.

626 Mr. Laub has three children: two girls (Sue and Karen) and one boy (David). After each meal, one child is chosen at random to wash dishes. If the same child can be chosen for both lunch and dinner, construct a tree diagram or list a sample space of all the possible outcomes of who will wash dishes after lunch and dinner on Saturday. Determine the probability that one boy and one girl will wash dishes after lunch and dinner on Saturday.

627 Janis measures the dimensions of the floor in her rectangular classroom for a rug. Her measurements are 10.50 feet by 12.25 feet. The actual measurements of the floor are 10.75 feet by 12.50 feet. Determine the relative error in calculating the area, to the *nearest thousandth*.

628 Using his ruler, Howell measured the sides of a rectangular prism to be 5 cm by 8 cm by 4 cm. The actual measurements are 5.3 cm by 8.2 cm by 4.1 cm. Find Howell's relative error in calculating the volume of the prism, to the *nearest thousandth.*

629 Find the roots of the equation $x^2 - x = 6$ algebraically.

630 A 28-foot ladder is leaning against a house. The bottom of the ladder is 6 feet from the base of the house. Find the measure of the angle formed by the ladder and the ground, to the *nearest degree.*

631 Write an equation that represents the line that passes through the points $(5,4)$ and $(-5,0)$.

632 Miller's Department Store is having a sale with a 25% discount on mattresses. If the sales tax rate is 8%, how much change will Frank receive from $800 if he purchases a mattress regularly priced at $895 during this sale?

633 Solve algebraically for x: $2(x-4) \ge \frac{1}{2}(5-3x)$

634 Ms. Mosher recorded the math test scores of six students in the table below.

Student	Student Score
Andrew	72
John	80
George	85
Amber	93
Betty	78
Roberto	80

Determine the mean of the student scores, to the *nearest tenth.* Determine the median of the student scores. Describe the effect on the mean and the median if Ms. Mosher adds 5 bonus points to each of the six students' scores.

635 Express $\sqrt{25} - 2\sqrt{3} + \sqrt{27} + 2\sqrt{9}$ in simplest radical form.

636 Find the volume, in cubic centimeters, *and* the surface area, in square centimeters, of the rectangular prism shown below.

104
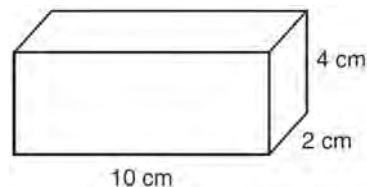
637 Graph and label the following equations on the set of axes below.

$$y = |x|$$

$$y = \left| \frac{1}{2} x \right|$$

Explain how *decreasing* the coefficient of x affects the graph of the equation $y = |x|$.
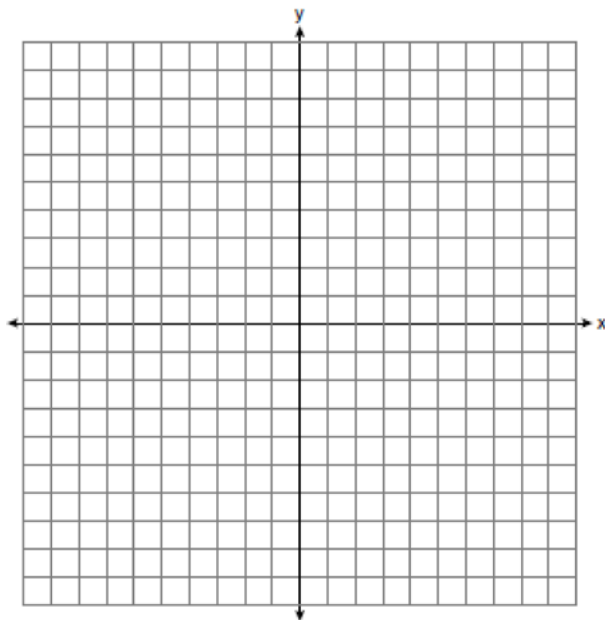
638 Hannah took a trip to visit her cousin. She drove 120 miles to reach her cousin's house and the same distance back home. It took her 1.2 hours to get halfway to her cousin's house. What was her average speed, in miles per hour, for the first 1.2 hours of the trip? Hannah's average speed for the remainder of the trip to her cousin's house was 40 miles per hour. How long, in hours, did it take her to drive the remaining distance? Traveling home along the same route, Hannah drove at an average rate of 55 miles per hour. After 2 hours her car broke down. How many miles was she from home?

639 Megan and Bryce opened a new store called the Donut Pit. Their goal is to reach a profit of $20,000 in their 18th month of business. The table and scatter plot below represent the profit, P, in thousands of dollars, that they made during the first 12 months.

t (months)	P (profit, in thousands of dollars)
1	3.0
2	2.5
3	4.0
4	5.0
5	6.5
6	5.5
7	7.0
8	6.0
9	7.5
10	7.0
11	9.0
12	9.5
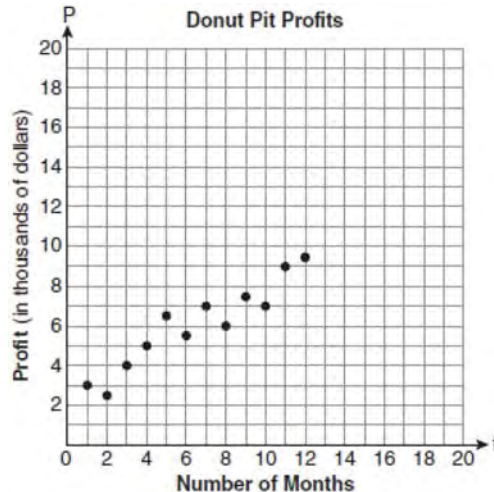
Draw a reasonable line of best fit. Using the line of best fit, predict whether Megan and Bryce will reach their goal in the 18th month of their business. Justify your answer.

640 The table below shows the number of prom tickets sold over a ten-day period.

Prom Ticket Sales

Day (x)	1	2	5	7	10
Number of Prom Tickets Sold (y)	30	35	55	60	70

Plot these data points on the coordinate grid below. Use a consistent and appropriate scale. Draw a reasonable line of best fit and write its equation.

642 The menu for the high school cafeteria is shown below.

Main Course	Vegetable	Dessert	Beverage
veggie burger	corn	gelatin	milk
pizza	green beans	fruit salad	juice
tuna sandwich	carrots	yogurt	bottled water
frankfurter		cookie	
chicken tenders		ice cream cup	

Determine the number of possible meals consisting of a main course, a vegetable, a dessert, and a beverage that can be selected from the menu. Determine how many of these meals will include chicken tenders. If a student chooses pizza, corn or carrots, a dessert, and a beverage from the menu, determine the number of possible meals that can be selected.

643 On the set of axes below, graph the equation $y = x^2 + 2x - 8$. Using the graph, determine and state the roots of the equation $x^2 + 2x - 8 = 0$.

641 Peter begins his kindergarten year able to spell 10 words. He is going to learn to spell 2 new words every day. Write an inequality that can be used to determine how many days, d, it takes Peter to be able to spell *at least* 75 words. Use this inequality to determine the minimum number of whole days it will take for him to be able to spell *at least* 75 words.
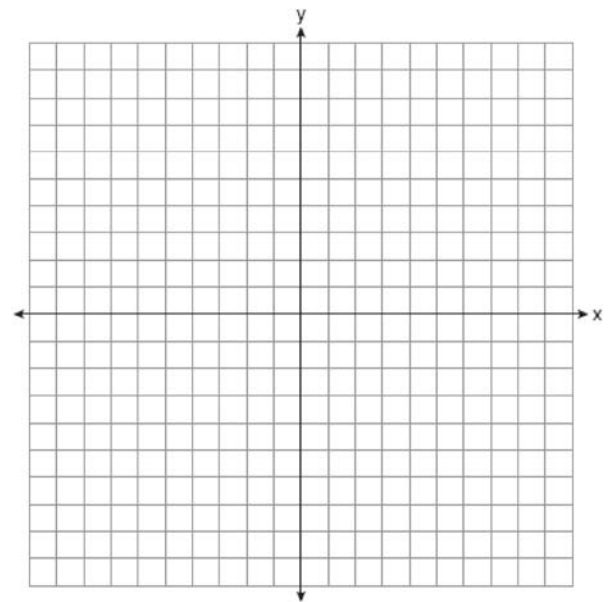
644 At the end of week one, a stock had increased in value from $5.75 a share to $7.50 a share. Find the percent of increase at the end of week one to the *nearest tenth of a percent*. At the end of week two, the same stock had decreased in value from $7.50 to $5.75. Is the percent of decrease at the end of week two the same as the percent of increase at the end of week one? Justify your answer.

645 A bank is advertising that new customers can open a savings account with a $3\frac{3}{4}\%$ interest rate compounded annually. Robert invests $5,000 in an account at this rate. If he makes no additional deposits or withdrawals on his account, find the amount of money he will have, to the *nearest cent*, after three years.

646 A plastic storage box in the shape of a rectangular prism has a length of $x + 3$, a width of $x - 4$, and a height of 5. Represent the surface area of the box as a trinomial in terms of x.

647 In a game, a player must spin each spinner shown in the diagram below once.
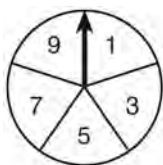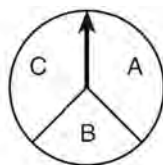
Spinner 1   Spinner 2

Draw a tree diagram or list a sample space showing all possible outcomes. Determine the number of outcomes that consist of a prime number and a letter in the word "CAT."

648 Wendy measures the floor in her rectangular bedroom for new carpeting. Her measurements are 24 feet by 14 feet. The actual measurements are 24.2 feet by 14.1 feet. Determine the relative error in calculating the area of her bedroom. Express your answer as a decimal to the *nearest thousandth*.

Integrated Algebra 4 Point Regents Exam Questions

649 The test scores from Mrs. Gray's math class are shown below.

   72, 73, 66, 71, 82, 85, 95, 85, 86, 89, 91, 92

Construct a box-and-whisker plot to display these data.
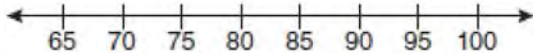
650 Vince buys a box of candy that consists of six chocolate pieces, four fruit-flavored pieces, and two mint pieces. He selects three pieces of candy at random, without replacement. Calculate the probability that the first piece selected will be fruit flavored and the other two will be mint. Calculate the probability that all three pieces selected will be the same type of candy.

651 Shana wants to buy a new bicycle that has a retail price of $259.99. She knows that it will be on sale next week for 30% off the retail price. If the tax rate is 7%, find the total amount, to the *nearest cent*, that she will save by waiting until next week.

652 Express in simplest form:

$$\frac{x^2 + 9x + 14}{x^2 - 49} \div \frac{3x + 6}{x^2 + x - 56}$$

653 A large company must chose between two types of passwords to log on to a computer. The first type is a four-letter password using any of the 26 letters of the alphabet, without repetition of letters. The second type is a six-digit password using the digits 0 through 9, with repetition of digits allowed. Determine the number of possible four-letter passwords. Determine the number of possible six-digit passwords. The company has 500,000 employees and needs a different password for each employee. State which type of password the company should choose. Explain your answer.

654 A restaurant sells kids' meals consisting of one main course, one side dish, and one drink, as shown in the table below.

Kids' Meal Choices

Main Course	Side Dish	Drink
hamburger	French fries	milk
chicken nuggets	applesauce	juice
turkey sandwich		soda

Draw a tree diagram or list the sample space showing all possible kids' meals. How many different kids' meals can a person order? Jose does not drink juice. Determine the number of different kids' meals that do *not* include juice. Jose's sister will eat *only* chicken nuggets for her main course. Determine the number of different kids' meals that include chicken nuggets.

655 Solve for *m*: $\dfrac{m}{5} + \dfrac{3(m-1)}{2} = 2(m-3)$

656 On the set of axes below, graph the following system of equations. Using the graph, determine and state *all* solutions of the system of equations.

$$y = -x^2 - 2x + 3$$

$$y + 1 = -2x$$

657 An oil company distributes oil in a metal can shaped like a cylinder that has an actual radius of 5.1 cm and a height of 15.1 cm. A worker incorrectly measured the radius as 5 cm and the height as 15 cm. Determine the relative error in calculating the surface area, to the *nearest thousandth*.

658 Solve the following system of equations algebraically:

$$3x + 2y = 4$$

$$4x + 3y = 7$$

[Only an algebraic solution can receive full credit.]

659 On the set of axes below, graph the following system of inequalities and state the coordinates of a point in the solution set.

$$2x - y \geq 6$$

$$x > 2$$

660 A metal pipe is used to hold up a 9-foot fence, as shown in the diagram below. The pipe makes an angle of 48° with the ground.
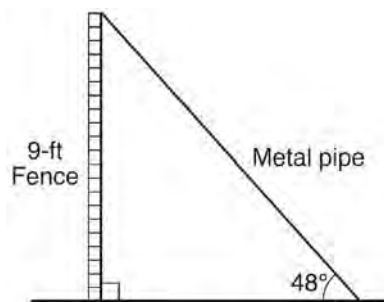
Determine, to the *nearest foot*, how far the bottom of the pipe is from the base of the fence. Determine, to the *nearest foot*, the length of the metal pipe.

661 Solve the following systems of equations graphically, on the set of axes below, and state the coordinates of the point(s) in the solution set.

$$y = x^2 - 6x + 5$$

$$2x + y = 5$$

663 A hot-air balloon is tied to the ground with two taut (straight) ropes, as shown in the diagram below. One rope is directly under the balloon and makes a right angle with the ground. The other rope forms an angle of 50º with the ground.
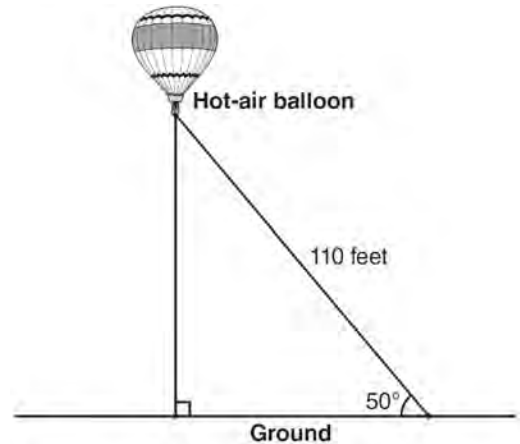
Determine the height, to the *nearest foot,* of the balloon directly above the ground. Determine the distance, to the *nearest foot,* on the ground between the two ropes.

662 A company is running a contest and offering a first, second, and third prize. First prize is a choice of a car or $15,000 cash. Second prize is a choice of a motorbike, a trip to New York City, or $2,000 cash. Third prize is a choice of a television or $500 cash. If each prize is equally likely to be selected, list the sample space or draw a tree diagram of *all* possible different outcomes of first, second, and third prizes. Determine the number of ways that *all* three prizes selected could be cash. Determine the number of ways that *none* of the three prizes selected could be cash.

664 An outfit Jennifer wears to school consists of a top, a bottom, and shoes. Possible choices are listed below.

Tops: T-shirt, blouse, sweater
Bottoms: jeans, skirt, capris
Shoes: flip-flops, sneakers

List the sample space or draw a tree diagram to represent all possible outfits consisting of one type of top, one type of bottom, and one pair of shoes. Determine how many different outfits contain jeans and flip-flops. Determine how many different outfits do *not* include a sweater.

665 A stake is to be driven into the ground away from the base of a 50-foot pole, as shown in the diagram below. A wire from the stake on the ground to the top of the pole is to be installed at an angle of elevation of 52°.
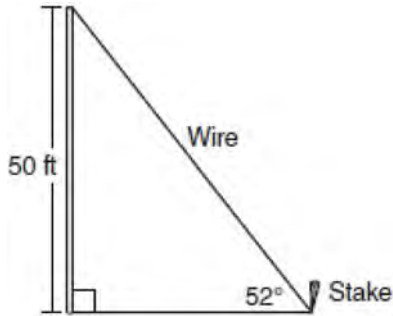
How far away from the base of the pole should the stake be driven in, to the *nearest foot*? What will be the length of the wire from the stake to the top of the pole, to the *nearest foot*?

666 A sandwich consists of one type of bread, one type of meat, and one type of cheese. The possible choices are listed below.

Bread: white, rye
Meat: ham, turkey, beef
Cheese: American, Swiss

Draw a tree diagram or list a sample space of all the possible different sandwiches consisting of one type of bread, one type of meat, and one type of cheese. Determine the number of sandwiches that will *not* include turkey. Determine the number of sandwiches that will include rye bread and Swiss cheese.

667 Solve algebraically for x: $\dfrac{3}{4} = \dfrac{-(x+11)}{4x} + \dfrac{1}{2x}$

668 In right triangle ABC shown below, $AC = 29$ inches, $AB = 17$ inches, and m$\angle ABC = 90$. Find the number of degrees in the measure of angle BAC, to the *nearest degree*.
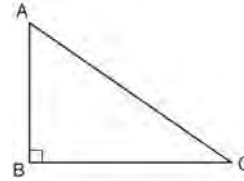
Find the length of $\overline{BC}$ to the *nearest inch*.

669 The cost of 3 markers and 2 pencils is $1.80. The cost of 4 markers and 6 pencils is $2.90. What is the cost of *each* item? Include appropriate units in your answer.

670 Solve algebraically: $\dfrac{2}{3x} + \dfrac{4}{x} = \dfrac{7}{x+1}$
[Only an algebraic solution can receive full credit.]

671 The Booster Club raised $30,000 for a sports fund. No more money will be placed into the fund. Each year the fund will decrease by 5%. Determine the amount of money, to the *nearest cent*, that will be left in the sports fund after 4 years.

672 A password consists of three digits, 0 through 9, followed by three letters from an alphabet having 26 letters. If repetition of digits is allowed, but repetition of letters is not allowed, determine the number of different passwords that can be made. If repetition is not allowed for digits or letters, determine how many fewer different passwords can be made.

673 Twenty students were surveyed about the number of days they played outside in one week. The results of this survey are shown below.

{6,5,4,3,0,7,1,5,4,4,3,2,2,3,2,4,3,4,0,7}

Complete the frequency table below for these data.

Interval	Tally	Frequency
0–1		
2–3		
4–5		
6–7		

Complete the cumulative frequency table below using these data.

Number of Days Outside

Interval	Cumulative Frequency
0–1	
0–3	
0–5	
0–7	

On the grid below, create a cumulative frequency histogram based on the table you made.
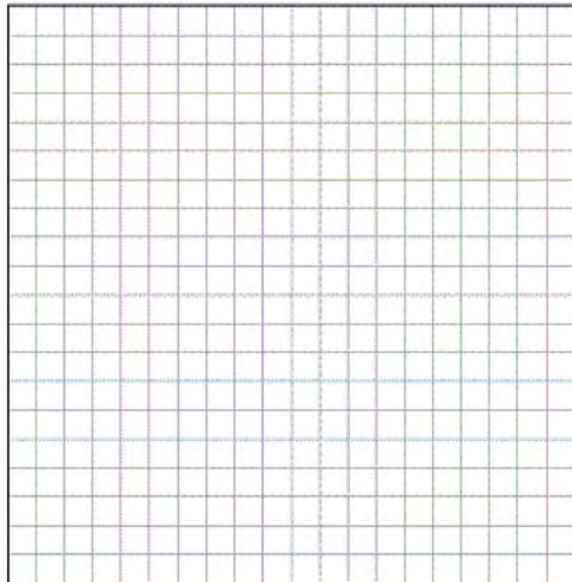
674 On the set of axes below, solve the following system of equations graphically and state the coordinates of *all* points in the solution set.

$$y = -x^2 + 6x - 3$$

$$x + y = 7$$
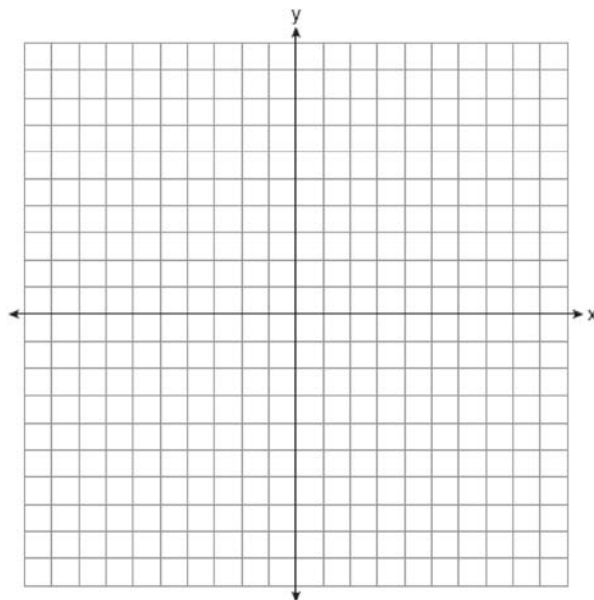
675 On the set of axes below, graph the following system of inequalities.

$$y + x \geq 3$$

$$5x - 2y > 10$$

State the coordinates of *one* point that satisfies $y + x \geq 3$, but does *not* satisfy $5x - 2y > 10$.
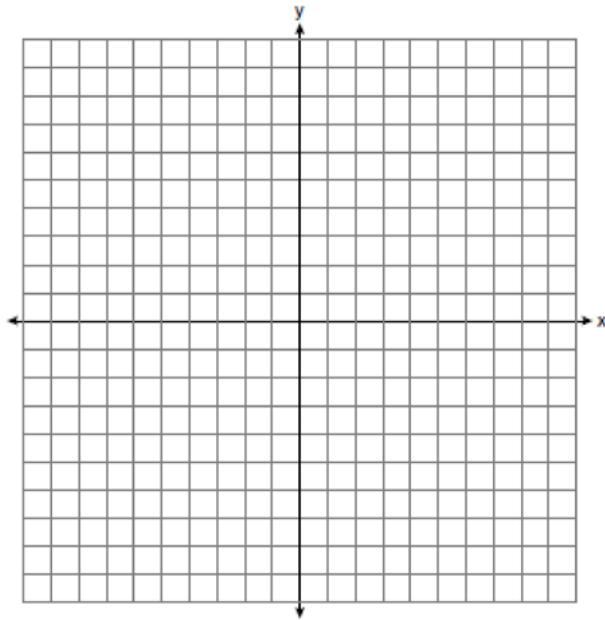
676 Sophie measured a piece of paper to be 21.7 cm by 28.5 cm. The piece of paper is actually 21.6 cm by 28.4 cm. Determine the number of square centimeters in the area of the piece of paper using Sophie's measurements. Determine the number of square centimeters in the actual area of the piece of paper. Determine the relative error in calculating the area. Express your answer as a decimal to the *nearest thousandth*. Sophie does not think there is a significant amount of error. Do you agree or disagree? Justify your answer.

677 The prices of seven race cars sold last week are listed in the table below.

Price per Race Car	Number of Race Cars
$126,000	1
$140,000	2
$180,000	1
$400,000	2
$819,000	1

What is the mean value of these race cars, in dollars? What is the median value of these race cars, in dollars? State which of these measures of central tendency best represents the value of the seven race cars. Justify your answer.

678 The values of 11 houses on Washington St. are shown in the table below.

Value per House	Number of Houses
$100,000	1
$175,000	5
$200,000	4
$700,000	1

Find the mean value of these houses in dollars. Find the median value of these houses in dollars. State which measure of central tendency, the mean or the median, *best* represents the values of these 11 houses. Justify your answer.

113

679 Graph the following systems of inequalities on the set of axes shown below and label the solution set S:

$$y > -x + 2$$

$$y \le \frac{2}{3}x + 5$$
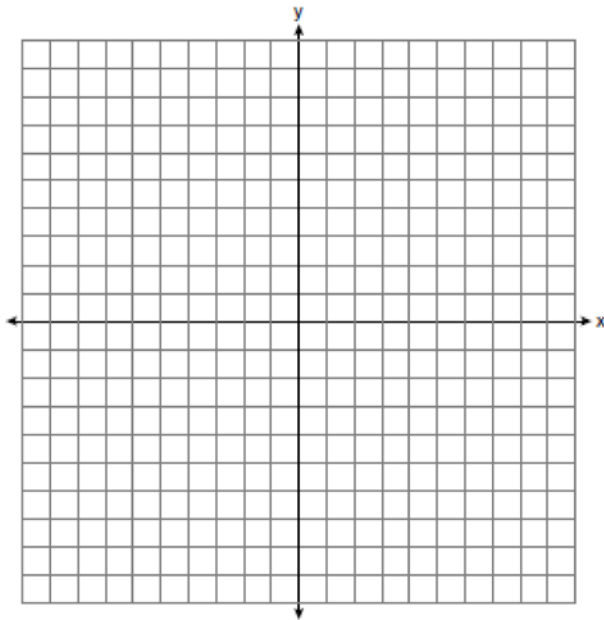
680 Solve for x: $\dfrac{x+1}{x} = \dfrac{-7}{x-12}$

681 Express $\dfrac{3x^2 + 9x}{x^2 + 5x + 6} \div \dfrac{x^2 - 9}{x^2 - x - 6}$ in simplest form.

682 Find three consecutive positive even integers such that the product of the second and third integers is twenty more than ten times the first integer. [Only an algebraic solution can receive full credit.]

683 Express in simplest form: $\dfrac{2x^2 - 8x - 42}{6x^2} \div \dfrac{x^2 - 9}{x^2 - 3x}$

684 Solve algebraically for x:
$3(x + 1) - 5x = 12 - (6x - 7)$

685 On the set of axes below, solve the following system of equations graphically and state the coordinates of all points in the solution set.

$$y = x^2 + 4x - 5$$

$$y = x - 1$$
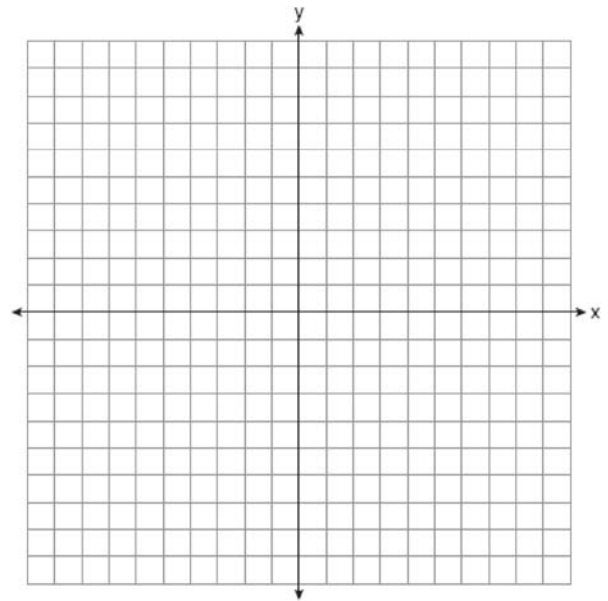
686 The sum of three consecutive odd integers is 18 less than five times the middle number. Find the three integers. [Only an algebraic solution can receive full credit.]

687 A jar contains five red marbles and three green marbles. A marble is drawn at random and not replaced. A second marble is then drawn from the jar. Find the probability that the first marble is red and the second marble is green. Find the probability that both marbles are red. Find the probability that both marbles are the same color.

688 Each of the hats shown below has colored marbles placed inside. Hat A contains five green marbles and four red marbles. Hat B contains six blue marbles and five red marbles. Hat C contains five green marbles and five blue marbles.

Hat A   Hat B   Hat C

If a student were to randomly pick one marble from each of these three hats, determine from which hat the student would most likely pick a green marble. Justify your answer. Determine the fewest number of marbles, if any, and the color of these marbles that could be added to *each* hat so that the probability of picking a green marble will be one-half in each of the three hats.

689 In the diagram below of rectangle $AFEB$ and a semicircle with diameter $\overline{CD}$, $AB = 5$ inches, $AB = BC = DE = FE$, and $CD = 6$ inches. Find the area of the shaded region, to the *nearest hundredth of a square inch*.
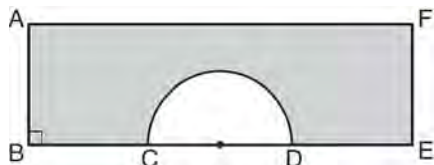
690 Graph the solution set for the inequality $4x - 3y > 9$ on the set of axes below. Determine if the point $(1, -3)$ is in the solution set. Justify your answer.
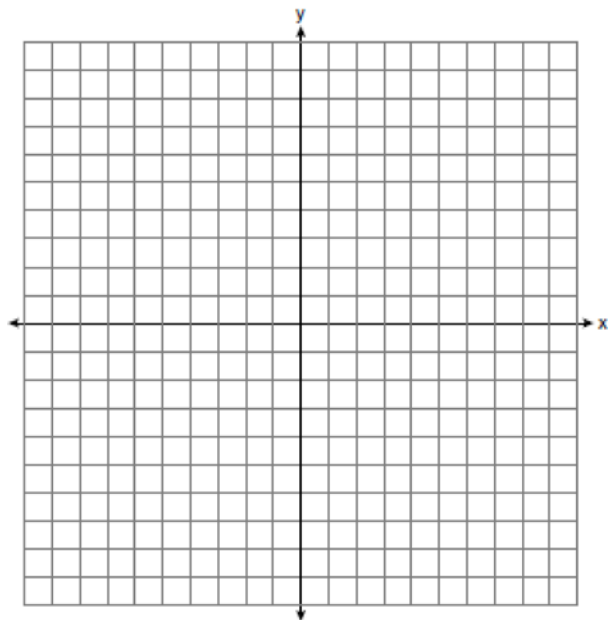
691 A contractor needs 54 square feet of brick to construct a rectangular walkway. The length of the walkway is 15 feet more than the width. Write an equation that could be used to determine the dimensions of the walkway. Solve this equation to find the length and width, in feet, of the walkway.

692 Mike buys his ice cream packed in a rectangular prism-shaped carton, while Carol buys hers in a cylindrical-shaped carton. The dimensions of the prism are 5 inches by 3.5 inches by 7 inches. The cylinder has a diameter of 5 inches and a height of 7 inches. Which container holds more ice cream? Justify your answer. Determine, to the *nearest tenth of a cubic inch*, how much more ice cream the larger container holds.

693 On the set of axes below, solve the following system of inequalities graphically.

$$y < 2x + 1$$

$$y \geq -\frac{1}{3}x + 4$$

State the coordinates of a point in the solution set.

695 A bottle contains 12 red marbles and 8 blue marbles. A marble is chosen at random and not replaced. Then, a second marble is chosen at random. Determine the probability that the two marbles are *not* the same color. Determine the probability that *at least* one of the marbles is red.

696 The diagram below shows a cumulative frequency histogram of the students' test scores in Ms. Wedow's algebra class.

Ms. Wedow's Algebra Class Test Scores

694 Using the line provided, construct a box-and-whisker plot for the 12 scores below.
26, 32, 19, 65, 57, 16, 28, 42, 40, 21, 38, 10

Determine the number of scores that lie above the 75th percentile.
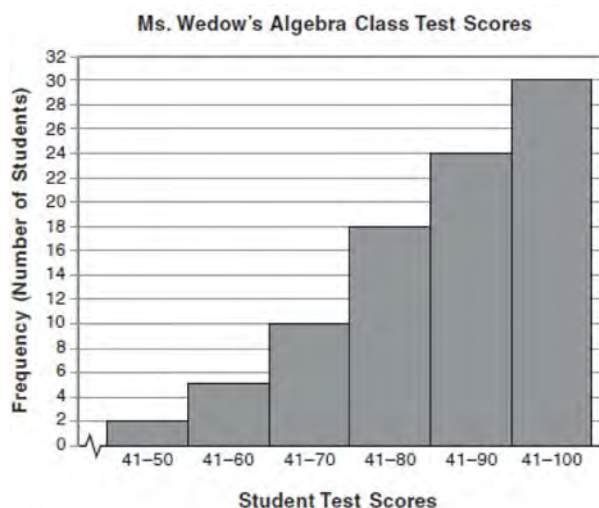
Determine the total number of students in the class. Determine how many students scored higher than 70. State which *ten-point interval* contains the median. State which *two ten-point* intervals contain the same frequency.

116

697 On the set of axes below, solve the following system of equations graphically for all values of x and y.

$$y = -x^2 - 4x + 12$$
$$y = -2x + 4$$
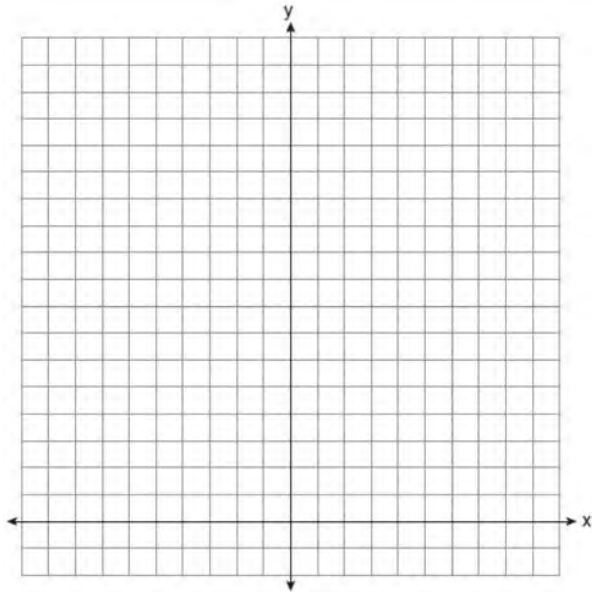
698 On the set of axes below, solve the following system of equations graphically for all values of x and y.

$$y = x^2 - 6x + 1$$
$$y + 2x = 6$$
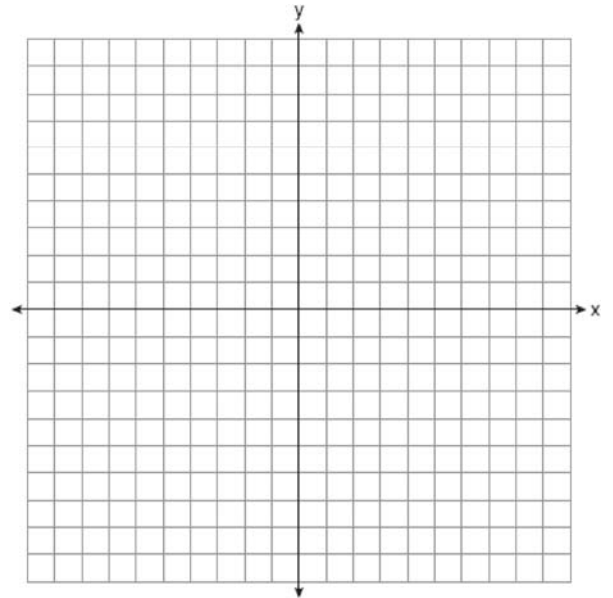
699   On the set of axes below, graph the following system of equations.

$$y + 2x = x^2 + 4$$

$$y - x = 4$$

Using the graph, determine and state the coordinates of *all* points in the solution set for the system of equations.
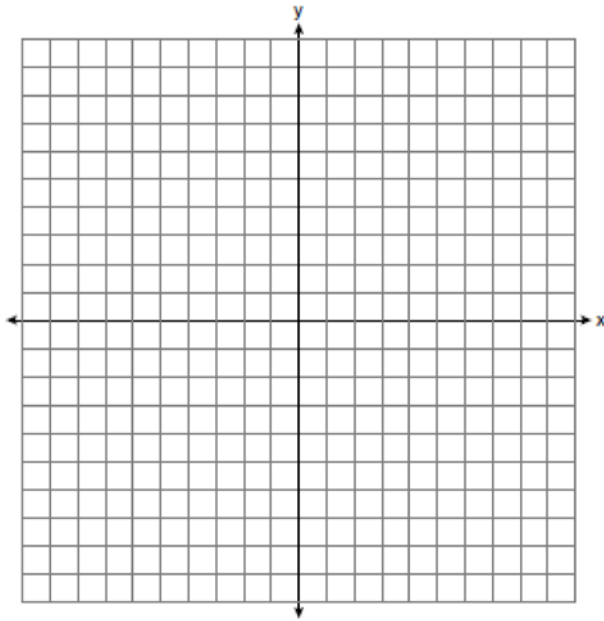
700   On the grid below, solve the system of equations graphically for *x* and *y*.

$$4x - 2y = 10$$

$$y = -2x - 1$$
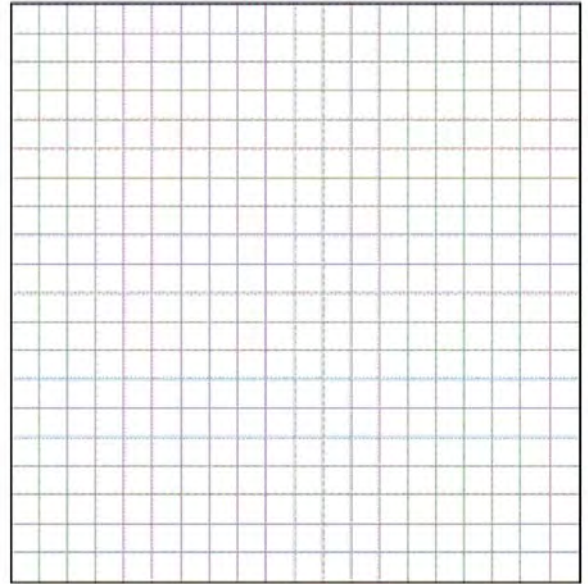
701 The Fahrenheit temperature readings on 30 April mornings in Stormville, New York, are shown below.

41°, 58°, 61°, 54°, 49°, 46°, 52°, 58°, 67°, 43°,
47°, 60°, 52°, 58°, 48°, 44°, 59°, 66°, 62°, 55°,
44°, 49°, 62°, 61°, 59°, 54°, 57°, 58°, 63°, 60°

Using the data, complete the frequency table below.

Interval	Tally	Frequency
40–44		
45–49		
50–54		
55–59		
60–64		
65–69		

On the grid below, construct and label a frequency histogram based on the table.
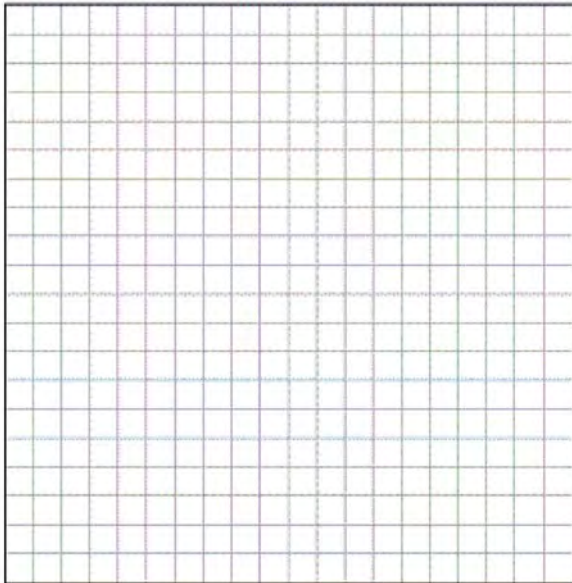
702 Solve the following system of inequalities graphically on the set of axes below.

$$3x + y < 7$$

$$y \geq \frac{2}{3}x - 4$$

State the coordinates of a point in the solution set.
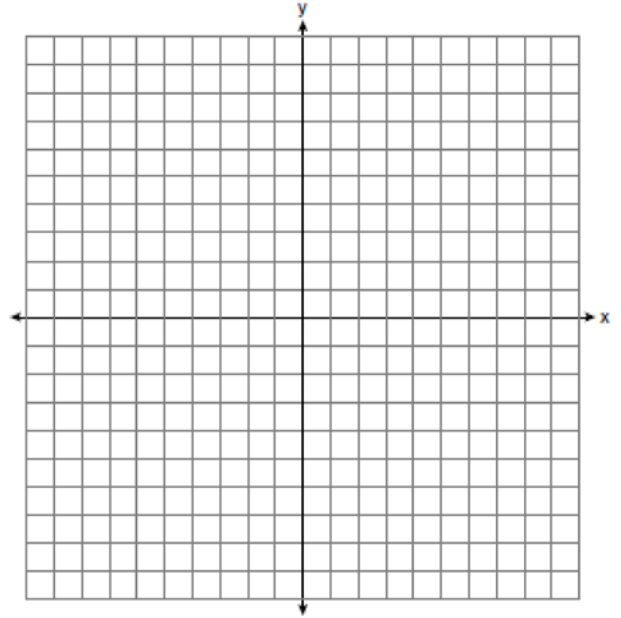
Integrated Algebra Multiple Choice Regents Exam Questions
Answer Section

1 ANS: 2   REF: 061314ia   STA: A.S.6   TOP: Box-and-Whisker Plots
2 ANS: 1

$4(5 + 5) + 10\pi = 40 + 10\pi$

REF: 081326ia   STA: A.G.1   TOP: Compositions of Polygons and Circles
KEY: perimeter
3 ANS: 4   REF: 081303ia   STA: A.S.22   TOP: Theoretical Probability
4 ANS: 3   REF: 061218ia   STA: A.S.20   TOP: Geometric Probability
5 ANS: 1   REF: 081209ia   STA: A.N.1   TOP: Properties of Reals
6 ANS: 1   REF: 011207ia   STA: A.G.9   TOP: Quadratic-Linear Systems
7 ANS: 4   REF: 081322ia   STA: A.G.10
  TOP: Identifying the Vertex of a Quadratic Given Graph
8 ANS: 3   REF: 081317ia   STA: A.A.21   TOP: Interpreting Solutions
9 ANS: 3   REF: 011324ia   STA: A.A.36   TOP: Parallel and Perpendicular Lines
10 ANS: 2   REF: 061229ia   STA: A.A.9   TOP: Exponential Functions
11 ANS: 4   REF: 011318ia   STA: A.A.29   TOP: Set Theory
12 ANS: 2   REF: 011316ia   STA: A.A.14   TOP: Division of Polynomials
13 ANS: 1

$$\frac{2x^2 + 10x - 28}{4x + 28} = \frac{2(x^2 + 5x - 14)}{4x + 28} = \frac{2(x + 7)(x - 2)}{4(x + 7)} = \frac{x - 2}{2}$$

REF: 011327ia   STA: A.A.16   TOP: Rational Expressions
KEY: $a > 0$
14 ANS: 1

Using $m = -\dfrac{A}{B}$, the slope of $2x - 3y = 9$ is $\dfrac{2}{3}$.

REF: 011322ia   STA: A.A.38   TOP: Parallel and Perpendicular Lines
15 ANS: 3   REF: 011310ia   STA: A.A.9   TOP: Exponential Functions
16 ANS: 4

$\dfrac{95000}{125000} = .76$

REF: 061207ia   STA: A.S.11   TOP: Quartiles and Percentiles
17 ANS: 4

$3y + 2x = 8$

$3(-2) + 2(7) = 8$

$-6 + 14 = 8$

REF: 011218ia   STA: A.A.39   TOP: Identifying Points on a Line
18 ANS: 4   REF: 081229ia   STA: A.S.23   TOP: Theoretical Probability
  KEY: independent events

19 ANS: 3   REF: 011224ia   STA: A.N.1   TOP: Properties of Reals
20 ANS: 1   REF: 061204ia   STA: A.A.1   TOP: Expressions
21 ANS: 1   REF: 011301ia   STA: A.S.12   TOP: Scatter Plots
22 ANS: 3

$2(5) + k = 9$

$10 + k = 9$

$k = -1$

   REF: 061304ia   STA: A.A.39   TOP: Identifying Points on a Line
23 ANS: 4

$$m = \frac{-A}{B} = \frac{-(-3)}{2} = \frac{3}{2}$$

   REF: 061212ia   STA: A.A.37   TOP: Slope
24 ANS: 4   REF: 061221ia   STA: A.G.4   TOP: Identifying the Equation of a Graph
25 ANS: 3   REF: 081201ia   STA: A.G.7   TOP: Solving Linear Systems
26 ANS: 4

$3x^3 - 33x^2 + 90x = 3x(x^2 - 11x + 30) = 3x(x - 5)(x - 6)$

   REF: 061227ia   STA: A.A.20   TOP: Factoring Polynomials
27 ANS: 1

$3x^2 - 27x = 0$

$3x(x - 9) = 0$

$x = 0, 9$

   REF: 011223ia   STA: A.A.28   TOP: Roots of Quadratics
28 ANS: 3   REF: 081308ia   STA: A.G.3   TOP: Defining Functions
   KEY: graphs
29 ANS: 4
   $3 + 2 - 1 = 4$

   REF: 081320ia   STA: A.A.6   TOP: Venn Diagrams
30 ANS: 1

   If the area of the square is 36, a side is 6, the diameter of the circle is 6, and its radius is 3. $A = \pi r^2 = 3^2 \pi = 9\pi$

   REF: 011217ia   STA: A.G.1   TOP: Compositions of Polygons and Circles
   KEY: area
31 ANS: 3

$$\sqrt{8^2 - 6^2} = \sqrt{28} = \sqrt{4}\sqrt{7} = 2\sqrt{7}$$

   REF: 061329ia   STA: A.A.45   TOP: Pythagorean Theorem

32 ANS: 3

$b = 3 + d$ $(3 + d)d = 40$

$bd = 40$ $d^2 + 3d - 40 = 0$

$(d + 8)(d - 5) = 0$

$d = 5$

REF: 011208ia   STA: A.A.8   TOP: Writing Quadratics

33 ANS: 3

$\sqrt{13^2 - 7^2} = \sqrt{120}$

REF: 081323ia   STA: A.A.45   TOP: Pythagorean Theorem

34 ANS: 3   REF: 011220ia   STA: A.S.6   TOP: Box-and-Whisker Plots

35 ANS: 4

$x^2 - 2x - 15 = 0$

$(x + 3)(x - 5) = 0$

$x = -3, 5$

REF: 081316ia   STA: A.A.15   TOP: Undefined Rationals

36 ANS: 2   REF: 011227ia   STA: A.A.3   TOP: Expressions

37 ANS: 2

$|-3 - 4| - (-3)^2 = 7 - 9 = -2$

REF: 011321ia   STA: A.N.6   TOP: Evaluating Expressions

38 ANS: 2

$2y + 2w = x$

$2w = x - 2y$

$w = \dfrac{x - 2y}{2}$

REF: 081330ia   STA: A.A.23   TOP: Transforming Formulas

39 ANS: 3

$6! + \dfrac{5!(3!)}{4!} - 10 = 720 + 5(6) - 10 = 740$

REF: 061309ia   STA: A.N.6   TOP: Evaluating Expressions

40 ANS: 3   REF: 011315ia   STA: A.G.1   TOP: Compositions of Polygons and Circles
    KEY: area

41 ANS: 4   REF: 061320ia   STA: A.G.6   TOP: Linear Inequalities

42 ANS: 2

$s^3 = 8.$ $6 \times (2 \times 2) = 24$

$s = 2$

REF: 081325ia   STA: A.G.2   TOP: Surface Area

43 ANS: 1

$x^2 + 5x - 6 = 0$

$(x + 6)(x - 1) = 0$

$x = -6, 1$

REF: 011214ia STA: A.A.15 TOP: Undefined Rationals

44 ANS: 3 REF: 061306ia STA: A.G.8 TOP: Solving Quadratics by Graphing

45 ANS: 4

$$\frac{2x^2(x^4 - 9x^2 + 1)}{2x^2}$$

REF: 081222ia STA: A.A.16 TOP: Rational Expressions

KEY: $a > 0$

46 ANS: 3

Due to lack of specificity in the wording, this 13th question was removed from the June, 2013 Regents Exam.

REF: 061313ia STA: A.S.2 TOP: Analysis of Data

47 ANS: 2

$13^2 + 13^2 = x^2$

$338 = x^2$

$\sqrt{338} = x$

$18 \approx x$

REF: 061223ia STA: A.A.45 TOP: Pythagorean Theorem

48 ANS: 1 REF: 011311ia STA: A.A.2 TOP: Expressions

49 ANS: 4 REF: 011222ia STA: A.A.29 TOP: Set Theory

50 ANS: 2 REF: 081218ia STA: A.G.5 TOP: Graphing Quadratic Functions

51 ANS: 4

$5 - 2x = -4x - 7$

$2x = -12$

$x = -6$

REF: 011305ia STA: A.A.22 TOP: Solving Equations

52 ANS: 3 REF: 061206ia STA: A.S.2 TOP: Analysis of Data

53 ANS: 1 REF: 081301ia STA: A.S.12 TOP: Scatter Plots

54 ANS: 2

$$\frac{2y}{y+5} + \frac{10}{y+5} = \frac{2y+10}{y+5} = \frac{2(y+5)}{y+5} = 2$$

REF: 011230ia STA: A.A.17 TOP: Addition and Subtraction of Rationals

55 ANS: 2
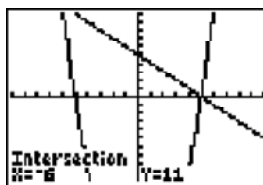
$y = -x + 5.$ $-x + 5 = x^2 - 25$. $y = -(-6) + 5 = 11.$

$0 = x^2 + x - 30$ $y = -5 + 5 = 0$

$0 = (x + 6)(x - 5)$

$x = -6, 5$

REF: 061213ia   STA: A.A.11   TOP: Quadratic-Linear Systems

56 ANS: 1

$rx - st = r$

$rx = r + st$

$x = \dfrac{r + st}{r}$

REF: 061316ia   STA: A.A.23   TOP: Transforming Formulas

57 ANS: 4

$A = \{1, 3, 5, 7, 9, 11, 13, 15, 17, 19\}$

REF: 081306ia   STA: A.A.30   TOP: Set Theory

58 ANS: 4

$m = \dfrac{-3 - 1}{2 - 5} = \dfrac{-4}{-3} = \dfrac{4}{3}$

REF: 011215ia   STA: A.A.33   TOP: Slope

59 ANS: 1   REF: 011306ia   STA: A.A.19

TOP: Factoring the Difference of Perfect Squares

60 ANS: 3

$N = 5 + J$ $N(N - 5) = 84$

$J = N - 5$ $N^2 - 5N - 84 = 0$

$NJ = 84$ $(N - 12)(N + 7) = 0$

$N = 12$

REF: 081304ia   STA: A.A.8   TOP: Writing Quadratics

61 ANS: 2   REF: 061205ia   STA: A.S.12   TOP: Scatter Plots

62 ANS: 1

$\sqrt{1700^2 - 1300^2} \approx 1095$

REF: 011221ia   STA: A.A.45   TOP: Pythagorean Theorem

63 ANS: 1

$$\frac{3}{4} \times 5 = \frac{15}{4} \text{ teaspoons} \times \frac{1 \text{ tablespoon}}{3 \text{ teaspoons}} = \frac{5}{4} = 1\frac{1}{4} \text{ tablespoon}$$

REF: 061228ia   STA: A.M.2   TOP: Conversions   KEY: dimensional analysis

64 ANS: 3   REF: 011309ia   STA: A.G.3   TOP: Defining Functions
KEY: graphs

65 ANS: 3

$$\frac{3^6}{3^1} = 3^5$$

REF: 061219ia   STA: A.A.12   TOP: Division of Powers

66 ANS: 4
The transformation is a reflection in the *x*-axis.

REF: 011206ia   STA: A.G.5   TOP: Graphing Absolute Value Functions

67 ANS: 3
$$2\sqrt{45} = 2\sqrt{9}\sqrt{5} = 6\sqrt{5}$$

REF: 011203ia   STA: A.N.2   TOP: Simplifying Radicals

68 ANS: 3   REF: 061230ia   STA: A.S.9
TOP: Frequency Histograms, Bar Graphs and Tables

69 ANS: 1

$$\frac{\text{distance}}{\text{time}} = \frac{350.7}{4.2} = 83.5$$

REF: 061201ia   STA: A.M.1   TOP: Speed

70 ANS: 2

$$\frac{x+2}{2} = \frac{4}{x}$$

$$x^2 + 2x = 8$$

$$x^2 + 2x - 8 = 0$$

$$(x+4)(x-2) = 0$$

$$x = -4, 2$$

REF: 061317ia   STA: A.A.26   TOP: Solving Rationals

71 ANS: 3   REF: 081230ia   STA: A.A.23   TOP: Transforming Formulas

72 ANS: 1

$$\frac{1}{7} + \frac{2x}{3} = \frac{15x - 3}{21}$$

$$\frac{14x + 3}{21} = \frac{15x - 3}{21}$$

$$14x + 3 = 15x - 3$$

$$x = 6$$

   REF: 011328ia   STA: A.A.25   TOP: Solving Equations with Fractional Expressions
73 ANS: 3   REF: 061225ia   STA: A.A.5   TOP: Modeling Equations
74 ANS: 4
$SA = 2lw + 2hw + 2lh = 2(3)(2.2) + 2(7.5)(2.2) + 2(3)(7.5) = 91.2$

   REF: 081216ia   STA: A.G.2   TOP: Surface Area
75 ANS: 1   REF: 081315ia   STA: A.A.10   TOP: Solving Linear Systems
76 ANS: 1

$$\left| \frac{4(-6) + 18}{4!} \right| = \left| \frac{-6}{24} \right| = \frac{1}{4}$$

   REF: 081220ia   STA: A.N.6   TOP: Evaluating Expressions
77 ANS: 4
$$m = \frac{-A}{B} = \frac{-4}{3}$$

   REF: 061319ia   STA: A.A.37   TOP: Slope
78 ANS: 4   REF: 081321ia   STA: A.A.29   TOP: Set Theory
79 ANS: 2
To determine student opinion, survey the widest range of students.

   REF: 011313ia   STA: A.S.3   TOP: Analysis of Data
80 ANS: 1   REF: 011213ia   STA: A.A.13   TOP: Addition and Subtraction of Polynomials
   KEY: addition
81 ANS: 2   REF: 081314ia   STA: A.G.6   TOP: Linear Inequalities
82 ANS: 1   REF: 081319ia   STA: A.N.1   TOP: Identifying Properties
83 ANS: 2   REF: 011330ia   STA: A.G.5   TOP: Graphing Quadratic Functions
84 ANS: 3   REF: 081207ia   STA: A.A.19
   TOP: Factoring the Difference of Perfect Squares
85 ANS: 3
The other situations are qualitative.

   REF: 081213ia   STA: A.S.1   TOP: Analysis of Data

86 ANS: 2

$W + L = 72$

$W - L = 12$

$2W = 84$

$W = 42$

REF: 081227ia   STA: A.A.7   TOP: Writing Linear Systems

87 ANS: 2

$\dfrac{20}{3.98} = \dfrac{180}{x}$

$20x = 716.4$

$x = 35.82 \approx 36$

REF: 011302ia   STA: A.M.1   TOP: Using Rate

88 ANS: 2   REF: 061312ia   STA: A.A.12   TOP: Powers of Powers

89 ANS: 4   REF: 061222ia   STA: A.A.40   TOP: Systems of Linear Inequalities

90 ANS: 2

People at a gym or football game and members of a soccer team are more biased towards sports.

REF: 061202ia   STA: A.S.3   TOP: Analysis of Data

91 ANS: 4

$P(\text{odd}) = \dfrac{7 + 14 + 20}{75} = \dfrac{41}{75}$. $P(\text{even}) = \dfrac{22 + 6 + 6}{75} = \dfrac{34}{75}$. $P(3 \text{ or less}) = \dfrac{14 + 22 + 7}{75} = \dfrac{43}{75}$.

$P(2 \text{ or } 4) = \dfrac{22 + 6}{75} = \dfrac{28}{75}$

REF: 011325ia   STA: A.S.22   TOP: Theoretical Probability

92 ANS: 3

$\dfrac{2}{x + 1} = \dfrac{x + 1}{2}$

$x^2 + 2x + 1 = 4$

$x^2 + 2x - 3 = 0$

$(x + 3)(x - 1) = 3$

$x = -3, 1$

REF: 081226ia   STA: A.A.26   TOP: Solving Rationals

93 ANS: 3

$0.06y + 200 = 0.03y + 350$

$0.03y = 150$

$y = 5,000$

REF: 081203ia   STA: A.A.25   TOP: Solving Equations with Decimals

94 ANS: 1   REF: 061301ia   STA: A.A.1   TOP: Expressions

8

95 ANS: 1   REF: 061322ia   STA: A.A.13   TOP: Addition and Subtraction of Polynomials
KEY: subtraction

96 ANS: 2   REF: 081305ia   STA: A.A.1   TOP: Expressions

97 ANS: 3   REF: 011204ia   STA: A.G.3   TOP: Defining Functions
KEY: graphs

98 ANS: 3   REF: 061323ia   STA: A.A.1   TOP: Expressions

99 ANS: 2   REF: 081318ia   STA: A.A.12   TOP: Powers of Powers

100 ANS: 2   REF: 081311ia   STA: A.A.12   TOP: Division of Powers

101 ANS: 3
$A \cup C = \{1, 2, 3, 5, 7, 9\}$

REF: 081221ia   STA: A.A.31   TOP: Set Theory

102 ANS: 3
$(3x + 2)(x - 7) = 3x^2 - 21x + 2x - 14 = 3x^2 - 19x - 14$

REF: 061210ia   STA: A.A.13   TOP: Multiplication of Polynomials

103 ANS: 1
$x^2 - 5x + 3 = x - 6 \quad y = 3 - 6 = -3 \quad (3, -3)$

$x^2 - 6x + 9 = 0$

$(x - 3)^2 = 0$

$x = 3$

REF: 061330ia   STA: A.G.9   TOP: Quadratic-Linear Systems

104 ANS: 4
$$\frac{\left(4x^3\right)^2}{2x} = \frac{16x^6}{2x} = 8x^5$$

REF: 011216ia   STA: A.A.12   TOP: Powers of Powers

105 ANS: 3   REF: 081208ia   STA: A.S.17   TOP: Scatter Plots

106 ANS: 2
The other sets of data are qualitative.

REF: 011211ia   STA: A.S.1   TOP: Analysis of Data

107 ANS: 4
If $m\angle C = 90$, then $\overline{AB}$ is the hypotenuse, and the triangle is a 3-4-5 triangle.

REF: 061224ia   STA: A.A.42   TOP: Trigonometric Ratios

108 ANS: 1
$-3x + 8 \geq 14$

$-3x \geq 6$

$x \leq -2$

REF: 081309ia   STA: A.A.21   TOP: Interpreting Solutions

109 ANS: 4

$375 + 155w \geq 900$

$155w \geq 525$

$w \geq 3.4$

REF: 081206ia   STA: A.A.6   TOP: Modeling Inequalities

110 ANS: 2

$-1 \leq 3(2) + 1.$ $2 - (-1) > 1$

$-1 \leq 7$ $3 > 1$

REF: 011323ia   STA: A.A.40   TOP: Systems of Linear Inequalities

111 ANS: 2   REF: 061327ia   STA: A.A.36   TOP: Parallel and Perpendicular Lines

112 ANS: 3

$y = mx + b$ $y = \dfrac{3}{4}x - \dfrac{1}{2}$

$1 = \left(\dfrac{3}{4}\right)(2) + b$ $4y = 3x - 2$

$1 = \dfrac{3}{2} + b$

$b = -\dfrac{1}{2}$

REF: 081219ia   STA: A.A.34   TOP: Writing Linear Equations

113 ANS: 2

$\cos x = \dfrac{\text{adjacent}}{\text{hypotenuse}} = \dfrac{16}{20}$

REF: 011307ia   STA: A.A.42   TOP: Trigonometric Ratios

114 ANS: 1

$m = -3$

REF: 081307ia   STA: A.A.38   TOP: Parallel and Perpendicular Lines

115 ANS: 2

$\left| \dfrac{(2.6 \times 6.9) - (2.5 \times 6.8)}{(2.6 \times 6.9)} \right| \approx 0.052$

REF: 011209ia   STA: A.M.3   TOP: Error   KEY: area

116 ANS: 1

$\dfrac{20 - 6}{(20 - 6) + 15 + 7 + 8} = \dfrac{14}{44}$

REF: 061302ia   STA: A.S.18   TOP: Conditional Probability

117 ANS: 1   REF: 061315ia   STA: A.A.15   TOP: Undefined Rationals

118 ANS: 3   REF: 081211ia   STA: A.A.9   TOP: Exponential Functions

119 ANS: 4   REF: 081312ia   STA: A.S.6   TOP: Box-and-Whisker Plots

120 ANS: 4   REF: 081214ia   STA: A.G.10
TOP: Identifying the Vertex of a Quadratic Given Graph

121 ANS: 4

$$x^2 - 14x + 48 = 0$$

$$(x - 6)(x - 8) = 0$$

$$x = 6, 8$$

      REF: 011320ia   STA: A.A.28   TOP: Roots of Quadratics

122 ANS: 2   REF: 081215ia   STA: A.A.1   TOP: Expressions

123 ANS: 2   REF: 011201ia   STA: A.A.19
TOP: Factoring the Difference of Perfect Squares

124 ANS: 3
The other situations are quantitative.

      REF: 081313ia   STA: A.S.1   TOP: Analysis of Data

125 ANS: 3   REF: 011319ia   STA: A.N.4   TOP: Operations with Scientific Notation

126 ANS: 4   REF: 061226ia   STA: A.A.13   TOP: Addition and Subtraction of Polynomials
KEY: subtraction

127 ANS: 2
mean = 7, median = 6 and mode = 6

      REF: 011329ia   STA: A.S.4   TOP: Central Tendency

128 ANS: 3

$$\frac{120}{60} = \frac{m}{150}$$

$$m = 300$$

      REF: 081202ia   STA: A.M.1   TOP: Using Rate

129 ANS: 4   REF: 011225ia   STA: A.A.31   TOP: Set Theory

130 ANS: 1   REF: 061209ia   STA: A.G.3   TOP: Defining Functions
KEY: graphs

131 ANS: 3   REF: 061324ia   STA: A.A.31   TOP: Set Theory

132 ANS: 4

$$\sin D = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{12}{13}$$

      REF: 061325ia   STA: A.A.43   TOP: Using Trigonometry to Find an Angle

133 ANS: 1   REF: 061310ia   STA: A.A.29   TOP: Set Theory

134 ANS: 3   REF: 061208ia   STA: A.A.31   TOP: Set Theory

135 ANS: 1

$$k = am + 3mx$$

$$k = m(a + 3x)$$

$$\frac{k}{a + 3x} = m$$

REF: 061215ia   STA: A.A.23   TOP: Transforming Formulas

136 ANS: 2

$$x^2 - 16x + 28 = 0$$

$$(x - 14)(x - 2) = 0$$

$$x = 14, 2$$

REF: 061311ia   STA: A.A.27   TOP: Solving Quadratics by Factoring

137 ANS: 2

$$m = \frac{-7 - 1}{4 - 9} = \frac{-8}{-5} = \frac{8}{5}$$

REF: 081310ia   STA: A.A.33   TOP: Slope

138 ANS: 3

$$x = \frac{-b}{2a} = \frac{-24}{2(-2)} = 6. \quad y = -2(6)^2 + 24(6) - 100 = -28$$

REF: 061214ia   STA: A.A.41   TOP: Identifying the Vertex of a Quadratic Given Equation

139 ANS: 1   REF: 011202ia   STA: A.A.9   TOP: Exponential Functions

140 ANS: 2   REF: 081205ia   STA: A.A.13   TOP: Addition and Subtraction of Polynomials
     KEY: addition

141 ANS: 1   REF: 061220ia   STA: A.A.17   TOP: Addition and Subtraction of Rationals

142 ANS: 3

$$\tan PLM = \frac{\text{opposite}}{\text{adjacent}} = \frac{4}{3}$$

REF: 011226ia   STA: A.A.42   TOP: Trigonometric Ratios

143 ANS: 2

$$\frac{x^2 - 3x - 10}{x^2 - 25} = \frac{(x - 5)(x + 2)}{(x + 5)(x - 5)} = \frac{x + 2}{x + 5}$$

REF: 061216ia   STA: A.A.16   TOP: Rational Expressions
     KEY: $a > 0$

144 ANS: 1   REF: 011303ia   STA: A.A.1   TOP: Expressions

145 ANS: 1

$$s = \frac{2x + t}{r}$$

$$rs = 2x + t$$

$$rs - t = 2x$$

$$\frac{rs - t}{2} = x$$

REF: 011228ia   STA: A.A.23   TOP: Transforming Formulas

146 ANS: 2   REF: 081327ia   STA: A.S.16   TOP: Central Tendency

147 ANS: 4

$$V = \pi r^2 h$$

$$32\pi = \pi r^2 (2)$$

$$16 = r^2$$

$$4 = r$$

REF: 081224ia   STA: A.G.2   TOP: Volume

148 ANS: 1   REF: 081302ia   STA: A.A.13   TOP: Addition and Subtraction of Polynomials
KEY: addition

149 ANS: 1

$$\cos A = \frac{\text{adjacent}}{\text{hypotenuse}} = \frac{3}{5}$$

REF: 081329ia   STA: A.A.42   TOP: Trigonometric Ratios

150 ANS: 2   REF: 061326ia   STA: A.A.28   TOP: Roots of Quadratics

151 ANS: 4   REF: 061321ia   STA: A.A.5   TOP: Modeling Inequalities

152 ANS: 3   REF: 061303ia   STA: A.S.17   TOP: Scatter Plots

153 ANS: 2   REF: 011212ia   STA: A.S.23   TOP: Theoretical Probability
KEY: independent events

154 ANS: 3   REF: 011205ia   STA: A.A.1   TOP: Expressions

155 ANS: 1

$$\frac{(x + 5)(x + 3)}{x + 5} = x + 3$$

REF: 0613071a   STA: A.A.16   TOP: Rational Expressions
KEY: $a > 0$

156 ANS: 3

$$5x < 55$$

$$x < 11$$

REF: 061211ia   STA: A.A.6   TOP: Modeling Inequalities

157 ANS: 4

$$8900 \text{ ft} \times \frac{1 \text{ mi}}{5280 \text{ ft}} \approx 1.7 \text{ mi}$$

REF: 081210ia   STA: A.M.2   TOP: Conversions   KEY: dimensional analysis

158 ANS: 2   REF: 081223ia   STA: A.A.32   TOP: Slope

159 ANS: 1   REF: 011210ia   STA: A.G.6   TOP: Linear Inequalities

160 ANS: 3

$$\frac{4}{3a} - \frac{5}{2a} = \frac{8}{6a} - \frac{15}{6a} = -\frac{7}{6a}$$

REF: 081328ia   STA: A.A.17   TOP: Addition and Subtraction of Rationals

161 ANS: 4   REF: 011229ia   STA: A.S.8   TOP: Scatter Plots

162 ANS: 3   REF: 061217ia   STA: A.A.29   TOP: Set Theory

163 ANS: 1

$$x = \frac{-b}{2a} = \frac{-(-3)}{2(2)} = \frac{3}{4}.$$

REF: 011219ia   STA: A.A.41   TOP: Identifying the Vertex of a Quadratic Given Equation

164 ANS: 3   REF: 011317ia   STA: A.M.2   TOP: Conversions
KEY: dimensional analysis

165 ANS: 3
$${}_{18}P_3 = 4896$$

REF: 061328ia   STA: A.N.8   TOP: Permutations

166 ANS: 4   REF: 061203ia   STA: A.A.14   TOP: Division of Polynomials

167 ANS: 4
$$2(2) - (-7) = 11$$

REF: 081217ia   STA: A.A.39   TOP: Identifying Points on a Line

168 ANS: 3

$$x^2 - 4 = 0$$
$$(x + 2)(x - 2) = 0$$
$$x = \pm 2$$

REF: 081225ia   STA: A.A.15   TOP: Undefined Rationals

169 ANS: 4

$$5.5 \text{ g} \times \frac{4 \text{ q}}{1 \text{ g}} \times \frac{32 \text{ oz}}{1 \text{ q}} = 704 \text{ oz}$$

REF: 061305ia   STA: A.M.2   TOP: Conversions   KEY: dimensional analysis

170 ANS: 3   REF: 011304ia   STA: A.G.7   TOP: Solving Linear Systems

171 ANS: 4   REF: 011308ia   STA: A.S.18   TOP: Conditional Probability

172 ANS: 1   REF: 081204ia   STA: A.S.12   TOP: Scatter Plots

173 ANS: 2   REF: 081212ia   STA: A.A.5   TOP: Modeling Inequalities

174 ANS: 2
$A = \{4, 9, 16, 25, 36, 49, 64, 81, 100\}$

REF: 011326ia   STA: A.A.30   TOP: Set Theory
175 ANS: 3
$(2, T), (4, T), (6, T)$

REF: 081324ia   STA: A.S.19   TOP: Sample Space
176 ANS: 3   REF: 061318ia   STA: A.G.4   TOP: Families of Functions
177 ANS: 1
$$4 + 6 + 10 + \frac{6\pi}{2} = 20 + 3\pi$$

REF: 081228ia   STA: A.G.1   TOP: Compositions of Polygons and Circles
KEY: perimeter

Integrated Algebra Multiple Choice Regents Exam Questions
Answer Section

178 ANS: 2

$$\frac{2x-3}{x-4} = \frac{2}{3}$$
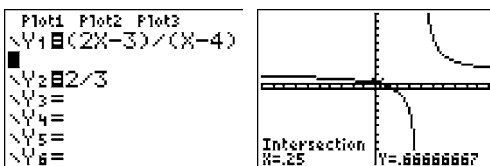
$$3(2x-3) = 2(x-4)$$

$$6x - 9 = 2x - 8$$

$$4x = 1$$

$$x = \frac{1}{4}$$

REF: 081012ia   STA: A.A.26   TOP: Solving Rationals

179 ANS: 3

$$75 - 15 = 60$$

REF: 011113ia   STA: A.S.6   TOP: Box-and-Whisker Plots

180 ANS: 2

$$\left| \frac{13.5 - 12.8}{13.5} \right| \approx 0.093$$

REF: 081123ia   STA: A.M.3   TOP: Error   KEY: area

181 ANS: 1   REF: 011004ia   STA: A.A.31   TOP: Set Theory

182 ANS: 2   REF: 011005ia   STA: A.A.5   TOP: Modeling Inequalities

183 ANS: 2

shaded = whole − unshaded

$$= \text{rectangle-triangle}$$

$$= lw - \frac{1}{2}bh$$

$$= 15 \times 6 - \frac{1}{2} \times 15 \times 4.6$$

$$= 90 - 34.5$$

$$= 55.5$$

REF: 081019ia   STA: A.G.1   TOP: Compositions of Polygons and Circles
KEY: area

184 ANS: 1

$$2y - 2x = 10 \qquad \text{axis of symmetry: } x = \frac{-b}{2a} = \frac{-2}{2(1)} = -1$$
$$2y = 2x + 10$$
$$y = x + 5$$

REF: 081010ia   STA: A.G.9   TOP: Quadratic-Linear Systems

185 ANS: 3

$$P(O) = \frac{5}{10}, P(P) = \frac{4}{10}, P(\le 5) = \frac{6}{10}, P(/3) = \frac{4}{10}$$

REF: 081125ia   STA: A.S.22   TOP: Theoretical Probability

186 ANS: 1   REF: 011001ia   STA: A.S.6   TOP: Box-and-Whisker Plots

187 ANS: 4
The other situations are quantitative.

REF: 081122ia   STA: A.S.1   TOP: Analysis of Data

188 ANS: 1

$$\frac{12.8 + 17.2}{3 + 5} = 3.75$$

REF: 061117ia   STA: A.M.1   TOP: Speed

189 ANS: 1

$$\sin x = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{28}{53}$$

REF: 011109ia   STA: A.A.42   TOP: Trigonometric Ratios

190 ANS: 3   REF: 081118ia   STA: A.G.4   TOP: Families of Functions

191 ANS: 4

$$\frac{2 + 3 + 0 + 1 + 3 + 2 + 4 + 0 + 2 + 3}{10} = \frac{20}{10} = 2 \quad \frac{x}{10} = 2 + 0.5$$
$$x = 25$$

REF: 081020ia   STA: A.S.16   TOP: Average Known with Missing Data

192 ANS: 1   REF: 061005ia   STA: A.G.10
TOP: Identifying the Vertex of a Quadratic Given Graph

193 ANS: 4

$$\frac{150}{20} = \frac{x}{30}$$
$$20x = 4500$$
$$x = 225$$

REF: 081101ia   STA: A.N.5   TOP: Direct Variation

194 ANS: 1   REF: 081030ia   STA: A.A.3   TOP: Expressions

195 ANS: 4   REF: 011020ia   STA: A.A.12   TOP: Multiplication of Powers

196 ANS: 2

$$m = \frac{-A}{B} = \frac{-3}{-7} = \frac{3}{7}$$

REF: 011122ia   STA: A.A.37   TOP: Slope

197 ANS: 2

$$A = lw + lw + \frac{\pi r^2}{4} = 5 \cdot 3 + 5 \cdot 3 + \frac{\pi \cdot 3^2}{4} \approx 37$$

REF: 011123ia   STA: A.G.1   TOP: Compositions of Polygons and Circles
KEY: area

198 ANS: 1
Asking school district employees about a school board candidate produces the most bias.

REF: 061107ia   STA: A.S.3   TOP: Analysis of Data

199 ANS: 4   REF: 061022ia   STA: A.S.3   TOP: Analysis of Data

200 ANS: 3

$$\frac{15}{15 + 13 + 12} = \frac{15}{40} = \frac{3}{8}$$

REF: 061006ia   STA: A.S.21   TOP: Experimental Probability

201 ANS: 4

$$\frac{7}{12x} - \frac{y}{6x^2} = \frac{42x^2 - 12xy}{72x^3} = \frac{6x(7x - 2y)}{72x^3} = \frac{7x - 2y}{12x^2}$$

REF: 061129ia   STA: A.A.17   TOP: Addition and Subtraction of Rationals

202 ANS: 4

$$A(-3, 4) \text{ and } B(5, 8). \quad m = \frac{4 - 8}{-3 - 5} = \frac{-4}{-8} = \frac{1}{2}$$

REF: 011007ia   STA: A.A.33   TOP: Slope

203 ANS: 3   REF: 081017a   STA: A.S.14   TOP: Analysis of Data

204 ANS: 2

$$2000(1 + 0.04)^3 \approx 2249$$

REF: 081124ia   STA: A.A.9   TOP: Exponential Functions

205 ANS: 2   REF: 061115ia   STA: A.S.7   TOP: Scatter Plots

206 ANS: 2   REF: 061023ia   STA: A.A.23   TOP: Transforming Formulas

207 ANS: 4   REF: 011114ia   STA: A.N.1   TOP: Properties of Reals

208 ANS: 3   REF: 061003ia   STA: A.A.13   TOP: Addition and Subtraction of Polynomials
KEY: addition

209 ANS: 1   REF: 081110ia   STA: A.A.1   TOP: Expressions

210 ANS: 2

$$\tan A = \frac{\text{opposite}}{\text{adjacent}} = \frac{14}{48}$$

REF: 061009ia   STA: A.A.42   TOP: Trigonometric Ratios

211 ANS: 3   REF: 011104ia   STA: A.A.1   TOP: Expressions

212 ANS: 2

$$m = \frac{5-2}{3-(-2)} = \frac{3}{5}$$

REF: 061004ia   STA: A.A.33   TOP: Slope

213 ANS: 2   REF: 011119ia   STA: A.A.29   TOP: Set Theory

214 ANS: 4   REF: 061018ia   STA: A.A.12   TOP: Division of Powers

215 ANS: 4

The other sets of data are qualitative.

REF: 011116ia   STA: A.S.1   TOP: Analysis of Data

216 ANS: 4

$$s = \frac{d}{t} = \frac{150 \text{ m}}{1.5 \text{ min}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} = 6,000 \frac{\text{m}}{\text{hr}}$$

REF: 061025ia   STA: A.M.1   TOP: Speed

217 ANS: 4

$-6x - 17 \geq 8x + 25$

$-42 \geq 14x$

$-3 \geq x$

REF: 081121ia   STA: A.A.24   TOP: Solving Inequalities

218 ANS: 3

$$\frac{12x^3 - 6x^2 + 2x}{2x} = \frac{2x(6x^2 - 3x + 1)}{2x} = 6x^2 - 3x + 1$$

REF: 011011ia   STA: A.A.14   TOP: Division of Polynomials

219 ANS: 1

$15000(1.2)^{\frac{6}{3}} = 21,600. \ 21,600 - 15,000 = 6,600$

REF: 061030ia   STA: A.A.9   TOP: Exponential Functions

220 ANS: 3

$c + 3d = 8 \quad c = 4d - 6$

$4d - 6 + 3d = 8 \quad c = 4(2) - 6$

$7d = 14 \quad c = 2$

$d = 2$

REF: 061012ia   STA: A.A.10   TOP: Solving Linear Systems

221 ANS: 4   REF: 081022ia   STA: A.A.29   TOP: Set Theory
222 ANS: 2   REF: 061027ia   STA: A.A.20   TOP: Factoring Polynomials
223 ANS: 4

$SA = 2lw + 2hw + 2lh = 2(2)(3) + 2(4)(3) + 2(2)(4) = 52$

      REF: 011029ia   STA: A.G.2   TOP: Surface Area
224 ANS: 1   REF: 011101ia   STA: A.A.31   TOP: Set Theory
225 ANS: 2

$$l(l - 3) = 40$$

$$l^2 - 3l - 40 = 0$$

$$(l - 8)(l + 5) = 0$$

$$l = 8$$

      REF: 081116ia   STA: A.A.8   TOP: Geometric Applications of Quadratics
226 ANS: 2

$$\left| \frac{55.42 - 50.27}{55.42} \right| \approx 0.093$$

      REF: 081023ia   STA: A.M.3   TOP: Error   KEY: area
227 ANS: 2

$$A = lw + \frac{\pi r^2}{2} = 6 \cdot 5 + \frac{\pi \cdot 3^2}{2} \approx 44.1$$

      REF: 061029ia   STA: A.G.1   TOP: Compositions of Polygons and Circles
      KEY: area
228 ANS: 3

$P(S) \cdot P(M) = P(S \text{ and } M)$

$$\frac{3}{5} \cdot P(M) = \frac{3}{10}$$

$$P(M) = \frac{1}{2}$$

      REF: 081024ia   STA: A.S.23   TOP: Theoretical Probability
      KEY: independent events
229 ANS: 2

$R = 0.5^{d-1}$

      REF: 011006ia   STA: A.A.9   TOP: Exponential Functions
230 ANS: 3   REF: 061119ia   STA: A.A.2   TOP: Expressions

231 ANS: 4
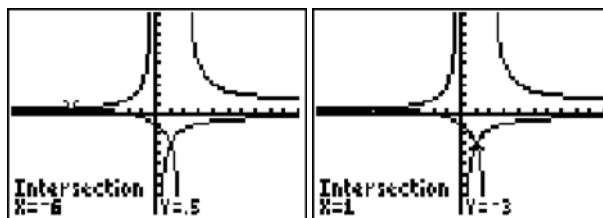
$$\frac{x+2}{x-2} = \frac{-3}{x}$$

$$x(x+2) = -3(x-2)$$

$$x^2 + 2x = -3x + 6$$

$$x^2 + 5x - 6 = 0$$

$$(x+6)(x-1) = 0$$

$$x = -6 \text{ or } 1$$

REF: 011028ia   STA: A.A.26   TOP: Solving Rationals

232 ANS: 2

$$\sqrt{5^2 + 7^2} \approx 8.6$$

REF: 081004ia   STA: A.A.45   TOP: Pythagorean Theorem

233 ANS: 4

$$\frac{ey}{n} + k = t$$

$$\frac{ey}{n} = t - k$$

$$y = \frac{n(t-k)}{e}$$

REF: 011125ia   STA: A.A.23   TOP: Transforming Formulas

234 ANS: 2

$$20000(.88)^3 = 13629.44$$

REF: 061124ia   STA: A.A.9   TOP: Exponential Functions

235 ANS: 4   REF: 061013ia   STA: A.G.3   TOP: Defining Functions
KEY: graphs

236 ANS: 1   REF: 061114ia   STA: A.A.43   TOP: Using Trigonometry to Find an Angle

237 ANS: 1

$$y = mx + b$$

$$5 = (-2)(1) + b$$

$$b = 7$$

REF: 081108ia   STA: A.A.34   TOP: Writing Linear Equations

238 ANS: 2   REF: 061105ia   STA: A.A.20   TOP: Factoring Polynomials

239 ANS: 3
$$\sqrt{72} - 3\sqrt{2} = \sqrt{36}\sqrt{2} - 3\sqrt{2} = 6\sqrt{2} - 3\sqrt{2} = 3\sqrt{2}$$

REF: 061008ia STA: A.N.3 TOP: Operations with Radicals
KEY: subtraction

240 ANS: 2 REF: 061122ia STA: A.S.14 TOP: Analysis of Data

241 ANS: 1
$$7 + 8 + 7 + \frac{12\pi}{2} = 22 + 6\pi$$

REF: 081128ia STA: A.G.1 TOP: Compositions of Polygons and Circles
KEY: perimeter

242 ANS: 3 REF: 081009ia STA: A.A.30 TOP: Set Theory

243 ANS: 2 REF: 081104ia STA: A.S.13 TOP: Analysis of Data

244 ANS: 2
$$x^2 - 2x - 15 = 0$$
$$(x - 5)(x + 3) = 0$$
$$x = 5 \ x = -3$$

REF: 011128ia STA: A.A.28 TOP: Roots of Quadratics

245 ANS: 4
In (4), each element in the domain corresponds to a unique element in the range.

REF: 011105ia STA: A.G.3 TOP: Defining Functions
KEY: ordered pairs

246 ANS: 3 REF: 061011ia STA: A.S.2 TOP: Analysis of Data

247 ANS: 1
The other situations are quantitative.

REF: 061308ia STA: A.S.1 TOP: Analysis of Data

248 ANS: 2 REF: 011027ia STA: A.A.3 TOP: Expressions

249 ANS: 2
Debbie failed to distribute the 3 properly.

REF: 011009ia STA: A.A.22 TOP: Solving Equations

250 ANS: 3
$$m = \frac{6 - 4}{3 - (-2)} = \frac{2}{5}$$

REF: 061110ia STA: A.A.33 TOP: Slope

251 ANS: 4 REF: 061001ia STA: A.A.30 TOP: Set Theory

252 ANS: 1

$$\frac{x^2 - x - 6}{x^2 - 5x + 6} = \frac{(x-3)(x+2)}{(x-3)(x+2)} = \frac{x+2}{x-2}$$

REF: 011130ia   STA: A.A.16   TOP: Rational Expressions
KEY: $a > 0$

253 ANS: 2

$A(-3, 8)$ and $B(3, 6)$. $m = \frac{8-6}{-3-3} = \frac{2}{-6} = -\frac{1}{3}$

REF: 081005ia   STA: A.A.33   TOP: Slope

254 ANS: 2

$\sqrt{18.4^2 - 7^2} \approx 17$

REF: 011107ia   STA: A.A.45   TOP: Pythagorean Theorem

255 ANS: 4   REF: 011025ia   STA: A.A.17   TOP: Addition and Subtraction of Rationals

256 ANS: 2

$\cos 38 = \frac{10}{x}$

$x = \frac{10}{\cos 38} \approx 12.69$

REF: 081126ia   STA: A.A.44   TOP: Using Trigonometry to Find a Side

257 ANS: 4   REF: 011111ia   STA: A.G.8   TOP: Solving Quadratics by Graphing

258 ANS: 4   REF: 061016ia   STA: A.A.2   TOP: Expressions

259 ANS: 4

$6\sqrt{50} + 6\sqrt{2} = 6\sqrt{25}\sqrt{2} + 6\sqrt{2} = 30\sqrt{2} + 6\sqrt{2} = 36\sqrt{2}$

REF: 011024ia   STA: A.N.3   TOP: Operations with Radicals
KEY: addition

260 ANS: 3
Frequency is not a variable.

REF: 011014ia   STA: A.S.2   TOP: Analysis of Data

261 ANS: 4
$5 \times 2 \times 3 = 30$

REF: 061002ia   STA: A.N.7   TOP: Multiplication Counting Principle

262 ANS: 2   REF: 011015ia   STA: A.G.10
TOP: Identifying the Vertex of a Quadratic Given Graph

263 ANS: 1

$x = \frac{-b}{2a} = \frac{-6}{2(-1)} = 3.$

REF: 011127ia   STA: A.A.41   TOP: Identifying the Vertex of a Quadratic Given Equation

264 ANS: 4   REF: 081107ia   STA: A.A.5   TOP: Modeling Inequalities

265 ANS: 4   REF: 081025ia   STA: A.G.4   TOP: Families of Functions

266 ANS: 2

$$m = \frac{5-3}{8-1} = \frac{2}{7} \quad y - y_1 = m(x - x_i)$$

$$y - 5 = \frac{2}{7}(x - 8)$$

REF: 081029ia   STA: A.A.35   TOP: Writing Linear Equations

267 ANS: 1

The slope of $2x - 4y = 16$ is $\frac{-A}{B} = \frac{-2}{-4} = \frac{1}{2}$

REF: 011026ia   STA: A.A.38   TOP: Parallel and Perpendicular Lines

268 ANS: 3

$$\frac{2+x}{5x} - \frac{x-2}{5x} = \frac{2+x-x+2}{5x} = \frac{4}{5x}$$

REF: 081027ia   STA: A.A.17   TOP: Addition and Subtraction of Rationals

269 ANS: 3   REF: 011017ia   STA: A.G.5   TOP: Graphing Absolute Value Functions

270 ANS: 4   REF: 011016ia   STA: A.A.23   TOP: Transforming Formulas

271 ANS: 2   REF: 011022ia   STA: A.A.19

TOP: Factoring the Difference of Perfect Squares

272 ANS: 2   REF: 061113ia   STA: A.G.5   TOP: Graphing Quadratic Functions

273 ANS: 2   REF: 011023ia   STA: A.A.40   TOP: Systems of Linear Inequalities

274 ANS: 3

$$\frac{x}{3} + \frac{x+1}{2} = x$$

$$\frac{2x + 3(x+1)}{6} = x$$

$$5x + 3 = 6x$$

$$3 = x$$

REF: 061019ia   STA: A.A.25   TOP: Solving Equations with Fractional Expressions

275 ANS: 3

$$x = \frac{-b}{2a} = \frac{-8}{2(1)} = -4. \ y = (-4)^2 + 8(-4) + 10 = -6. \ (-4, -6)$$

REF: 011314ia   STA: A.A.41   TOP: Identifying the Vertex of a Quadratic Given Equation

276 ANS: 4

In (4), each element in the domain corresponds to a unique element in the range.

REF: 011018ia   STA: A.G.3   TOP: Defining Functions

KEY: ordered pairs

277 ANS: 2   REF: 081014ia   STA: A.A.36   TOP: Parallel and Perpendicular Lines

278 ANS: 1   REF: 081102ia   STA: A.S.12   TOP: Scatter Plots

279   ANS: 4

$_5P_5 = 5 \times 4 \times 3 \times 2 \times 1 = 120$

REF: 061109ia   STA: A.N.8   TOP: Permutations
280   ANS: 2   REF: 011002ia   STA: A.S.20   TOP: Theoretical Probability
281   ANS: 2   REF: 081127ia   STA: A.A.40   TOP: Systems of Linear Inequalities
282   ANS: 1

$3(2m - 1) \le 4m + 7$

$6m - 3 \le 4m + 7$

$2m \le 10$

$m \le 5$

REF: 081002ia   STA: A.A.24   TOP: Solving Inequalities
283   ANS: 2

$\dfrac{3}{2x} + \dfrac{7}{4x} = \dfrac{12x + 14x}{8x^2} = \dfrac{26x}{8x^2} = \dfrac{13}{4x}$

REF: 011120ia   STA: A.A.17   TOP: Addition and Subtraction of Rationals
284   ANS: 4   REF: 061111ia   STA: A.G.4   TOP: Families of Functions
285   ANS: 3

$3\sqrt{250} = 3\sqrt{25}\sqrt{10} = 15\sqrt{10}$

REF: 061106ia   STA: A.N.2   TOP: Simplifying Radicals
286   ANS: 2

$\tan B = \dfrac{\text{opposite}}{\text{adjacent}} = \dfrac{8}{15} = 0.5\overline{3}$

REF: 081026ia   STA: A.A.42   TOP: Trigonometric Ratios
287   ANS: 3

$P(odd) = \dfrac{3}{6}, P(prime) = \dfrac{3}{6}, P(perfect\ square) = \dfrac{2}{6}, P(even) = \dfrac{3}{6}$

REF: 061104ia   STA: A.S.22   TOP: Geometric Probability
288   ANS: 4   REF: 061130ia   STA: A.A.13   TOP: Addition and Subtraction of Polynomials
      KEY: subtraction
289   ANS: 3

$\text{mean} = 81\dfrac{7}{11}, \text{median} = 81 \text{ and mode} = 76$

REF: 011118ia   STA: A.S.4   TOP: Central Tendency
290   ANS: 4   REF: 081011ia   STA: A.A.5   TOP: Modeling Equations

291 ANS: 1

$$x^2 - 36 = 5x$$

$$x^2 - 5x - 36 = 0$$

$$(x-9)(x+4) = 0$$

$$x = 9$$

    REF: 061020ia   STA: A.A.8   TOP: Writing Quadratics

292 ANS: 4

$$_8P_3 = 336$$

    REF: 061026ia   STA: A.N.8   TOP: Permutations

293 ANS: 1   REF: 061024ia   STA: A.A.17   TOP: Addition and Subtraction of Rationals

294 ANS: 2   REF: 081003ia   STA: A.A.31   TOP: Set Theory

295 ANS: 2   REF: 061128ia   STA: A.A.29   TOP: Set Theory

296 ANS: 1

$$-|a-b| = -\left|7-(-3)\right| = -|-10| = -10$$

    REF: 011010ia   STA: A.N.6   TOP: Evaluating Expressions

297 ANS: 4

$$2x - 3y = 9$$

$$2(0) - 3(-3) = 9$$

$$0 + 9 = 9$$

    REF: 081016ia   STA: A.A.39   TOP: Identifying Points on a Line

298 ANS: 1   REF: 011126ia   STA: A.A.13   TOP: Addition and Subtraction of Polynomials

    KEY: subtraction

299 ANS: 3   REF: 061017ia   STA: A.S.11   TOP: Quartiles and Percentiles

300 ANS: 1

$$4y - 2x = 0$$

$$4(-1) - 2(-2) = 0$$

$$-4 + 4 = 0$$

    REF: 011021ia   STA: A.A.39   TOP: Identifying Points on a Line

301 ANS: 3

$$10^2 + 10^2 = c^2$$

$$c^2 = 200$$

$$c \approx 14.1$$

    REF: 061102ia   STA: A.A.45   TOP: Pythagorean Theorem

302 ANS: 3   REF: 081103ia   STA: A.A.30   TOP: Set Theory

303   ANS: 2
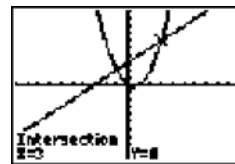
$x^2 - x = x + 3$. Since $y = x + 3$, the solutions are $(3, 6)$ and $(-1, 2)$.

$x^2 - 2x - 3 = 0$

$(x - 3)(x + 1) = 0$

$x = 3$ or -1

REF: 061118ia   STA: A.A.11   TOP: Quadratic-Linear Systems

304   ANS: 4   REF: 061028ia   STA: A.G.6   TOP: Linear Inequalities

305   ANS: 2
Candidate *B* received 45%. $45\% \times 1860 = 837$

REF: 081007ia   STA: A.N.5   TOP: Percents

306   ANS: 3

$2x - 5y = 11$ $2x - 5(-1) = 11$

$-2x + 3y = -9$ $2x = 6$

$\quad -2y = 2$ $x = 3$

$\quad\quad y = -1$

REF: 081109ia   STA: A.A.10   TOP: Solving Linear Systems

307   ANS: 2   REF: 011110ia   STA: A.N.6   TOP: Evaluating Expressions

308   ANS: 3   REF: 011117ia   STA: A.G.4   TOP: Graphing Absolute Value Functions

309   ANS: 3

$3\sqrt{2} + \sqrt{8} = 3\sqrt{2} + \sqrt{4}\sqrt{2} = 3\sqrt{2} + 2\sqrt{2} = 5\sqrt{2}$

REF: 011121ia   STA: A.N.3   TOP: Operations with Radicals
KEY: addition

310   ANS: 2

$a^3 - 4a = a(a^2 - 4) = a(a - 2)(a + 2)$

REF: 011108ia   STA: A.A.19   TOP: Factoring the Difference of Perfect Squares

311   ANS: 3   REF: 081008ia   STA: A.A.19
TOP: Factoring the Difference of Perfect Squares

312   ANS: 3
The age of a child does not cause the number of siblings he has, or vice versa.

REF: 011030ia   STA: A.S.14   TOP: Analysis of Data

313 ANS: 1

$$\frac{2x}{3} + \frac{1}{2} = \frac{5}{6}$$

$$\frac{2x}{3} = \frac{1}{3}$$

$$6x = 3$$

$$x = \frac{1}{2}$$

REF: 011112ia   STA: A.A.25   TOP: Solving Equations with Fractional Expressions

314 ANS: 3

$$\frac{10^3}{5^3} = \frac{1000}{125} = 8$$

REF: 011312ia   STA: A.G.2   TOP: Volume

315 ANS: 2   REF: 061127ia   STA: A.N.4   TOP: Operations with Scientific Notation

316 ANS: 3   REF: 061101ia   STA: A.A.19

TOP: Factoring the Difference of Perfect Squares

317 ANS: 1

$$b = 2j + 4 \quad 2j + 4 = 31 - j$$

$$b + j = 31 \qquad 3j = 27$$

$$b = 31 - j \qquad j = 9$$

REF: 081119ia   STA: A.A.7   TOP: Writing Linear Systems

318 ANS: 1

$$f + m = 53$$

$$f - m = 25$$

$$2m = 28$$

$$m = 14$$

REF: 061126ia   STA: A.A.7   TOP: Writing Linear Systems

319 ANS: 2   REF: 011012ia   STA: A.G.9   TOP: Quadratic-Linear Systems

320 ANS: 2   REF: 011019ia   STA: A.S.12   TOP: Scatter Plots

321 ANS: 2

$$J - M = 3$$

$$8J + 8M = 120$$

$$8J - 8M = 24$$

$$16J = 144$$

$$J = 9$$

REF: 011115ia   STA: A.A.7   TOP: Writing Linear Systems

322 ANS: 2   REF: 081106ia   STA: A.S.6   TOP: Box-and-Whisker Plots

323 ANS: 3

$$m = \frac{7-3}{-3-3} = \frac{4}{-6} = -\frac{2}{3} \quad y = mx + b$$

$$3 = -\frac{2}{3}(3) + b$$

$$3 = -2 + b$$

$$5 = b$$

    REF: 011013ia   STA: A.A.35   TOP: Writing Linear Equations

324 ANS: 4

$$\frac{9.2 \times 10^6}{2.3 \times 10^2} = 4 \times 10^4$$

    REF: 081006ia   STA: A.N.4   TOP: Operations with Scientific Notation

325 ANS: 3

$$\frac{3+2+4+3}{20} = \frac{12}{20}$$

    REF: 011129ia   STA: A.S.21   TOP: Experimental Probability

326 ANS: 4   REF: 011102ia   STA: A.G.9   TOP: Quadratic-Linear Systems

327 ANS: 1   REF: 061103ia   STA: A.A.12   TOP: Division of Powers

328 ANS: 4

$$5(x+4) = 5x + 20$$

    REF: 081013ia   STA: A.A.1   TOP: Expressions

329 ANS: 2

$$\tan ABC = \frac{\text{opposite}}{\text{adjacent}} = \frac{5}{12}$$

    REF: 081112ia   STA: A.A.42   TOP: Trigonometric Ratios

330 ANS: 1   REF: 081015ia   STA: A.G.5   TOP: Graphing Quadratic Functions

331 ANS: 2   REF: 061121ia   STA: A.A.3   TOP: Expressions

332 ANS: 4   REF: 061112ia   STA: A.A.36   TOP: Parallel and Perpendicular Lines

333 ANS: 2

$$36x^2 - 100y^6 = 4(9x^2 - 25y^6) = 4(3x + 5y^3)(3x - 5y^3)$$

    REF: 081129ia   STA: A.A.19   TOP: Factoring the Difference of Perfect Squares

334 ANS: 3   REF: 011103ia   STA: A.S.12   TOP: Scatter Plots

335 ANS: 3

$$\frac{(12.3 \times 11.9) - (12.2 \times 11.8)}{12.3 \times 11.9} \approx 0.0165$$

    REF: 061120ia   STA: A.M.3   TOP: Error   KEY: area

336 ANS: 2

$$\sin 57 = \frac{x}{8}$$

$$x \approx 6.7$$

REF: 061108ia   STA: A.A.44   TOP: Using Trigonometry to Find a Side

337 ANS: 1

$2(x - 4) = 4(2x + 1)$

$2x - 8 = 8x + 4$

$-12 = 6x$

$-2 = x$

REF: 011106ia   STA: A.A.22   TOP: Solving Equations

338 ANS: 3   REF: 081001ia   STA: A.S.7   TOP: Scatter Plots

339 ANS: 3

$$\frac{(10w^3)^2}{5w} = \frac{100w^6}{5w} = 20w^5$$

REF: 011124ia   STA: A.A.12   TOP: Powers of Powers

340 ANS: 1

$1P + 2C = 5$

$1P + 4C = 6$

$2C = 1$

$C = 0.5$

REF: 011003ia   STA: A.A.7   TOP: Writing Linear Systems

341 ANS: 3   REF: 081117ia   STA: A.A.29   TOP: Set Theory

342 ANS: 4   REF: 061123ia   STA: A.A.31   TOP: Set Theory

343 ANS: 3

$$\cos A = \frac{\text{adjacent}}{\text{hypotenuse}} = \frac{15}{17}$$

REF: 011008ia   STA: A.A.42   TOP: Trigonometric Ratios

344 ANS: 3

$_6P_4 = 360$

REF: 081028ia   STA: A.N.8   TOP: Permutations

345 ANS: 4

$$\frac{x}{x + 4} \div \frac{2x}{x^2 - 16} = \frac{x}{x + 4} \cdot \frac{x^2 - 16}{2x} = \frac{1}{x + 4} \cdot \frac{(x + 4)(x - 4)}{2} = \frac{x - 4}{2}$$

REF: 081130ia   STA: A.A.18   TOP: Multiplication and Division of Rationals
KEY: division

346 ANS: 2

$y - kx = 7$ may be rewritten as $y = kx + 7$

REF: 061015ia　　STA: A.A.38　　TOP: Parallel and Perpendicular Lines

347 ANS: 2　　　　　REF: 081111ia　　STA: A.G.10

TOP: Identifying the Vertex of a Quadratic Given Graph

348 ANS: 3

$$x^2 - 9 = 0$$

$$(x + 3)(x - 3) = 0$$

$$x = \pm 3$$

REF: 061014ia　　STA: A.A.15　　TOP: Undefined Rationals

349 ANS: 3

2(1)+3=5

REF: 061007ia　　STA: A.A.39　　TOP: Linear Equations

350 ANS: 2

$$x^2 - 5x + 6 = 0$$

$$(x - 3)(x - 2) = 0$$

$$x = 3 \ \ x = 2$$

REF: 081120ia　　STA: A.A.28　　TOP: Roots of Quadratics

351 ANS: 3

$$x = \frac{-b}{2a} = \frac{-10}{2(-1)} = 5.$$

REF: 081018ia　　STA: A.A.41　　TOP: Identifying the Vertex of a Quadratic Given Equation

352 ANS: 2

In (2), each element in the domain corresponds to a unique element in the range.

REF: 061116ia　　STA: A.G.3　　TOP: Defining Functions

KEY: ordered pairs

353 ANS: 3

$$V = \pi r^2 h = \pi \cdot 5^2 \cdot 2.3 \approx 180.6$$

REF: 081105ia　　STA: A.G.2　　TOP: Volume

354 ANS: 1　　　　　REF: 061010ia　　STA: A.A.40　　　　　TOP: Systems of Linear Inequalities

355 ANS: 4

$$x^2 - 4x - 12 = 0$$

$$(x - 6)(x + 2) = 0$$

$$x = 6 \ x = -2$$

REF: 061125ia　　STA: A.A.15　　TOP: Undefined Rationals

356 ANS: 1

$-3(-4)^2(2) + 4(-4) = -96 - 16 = -112$

REF: 081113ia STA: A.N.6 TOP: Evaluating Expressions

357 ANS: 1 REF: 081115ia STA: A.A.32 TOP: Slope

358 ANS: 2

$2(x - 3y = -3)$

$2x + y = 8$

$2x - 6y = -6$

$7y = 14$

$y = 2$

REF: 081021ia STA: A.A.10 TOP: Solving Linear Systems

359 ANS: 4

$-3x(x - 4) - 2x(x + 3) = -3x^2 + 12x - 2x^2 - 6x = -5x^2 + 6x$

REF: 081114ia STA: A.A.13 TOP: Addition and Subtraction of Monomials

360 ANS: 1 REF: 061021ia STA: A.A.29 TOP: Set Theory

361 ANS: 4

Let x = youngest brother and $x + 4$ = oldest brother. $3x - (x + 4) = 48$.

$$2x - 4 = 48$$

$$x = 26$$

REF: 080928ia STA: A.A.6 TOP: Modeling Equations

Integrated Algebra Multiple Choice Regents Exam Questions
Answer Section

362   ANS: 2
The volume of the cube using Ezra's measurements is 8 (2^3). The actual volume is 9.261 (2.1^3). The relative error is $\left| \dfrac{9.261 - 8}{9.261} \right| \approx 0.14$.

REF: 060928ia   STA: A.M.3   TOP: Error   KEY: volume and surface area

363   ANS: 4
$SA = 2lw + 2hw + 2lh = 2(3)(1.5) + 2(2)(1.5) + 2(3)(2) = 27$

REF: 060827ia   STA: A.G.2   TOP: Surface Area

364   ANS: 1
$-2x + 5 > 17$

$-2x > 12$

$x < -6$

REF: fall0724ia   STA: A.A.21   TOP: Interpreting Solutions

365   ANS: 4   REF: fall0704ia   STA: A.A.29   TOP: Set Theory

366   ANS: 3
$m = \dfrac{1 - (-4)}{-6 - 4} = -\dfrac{1}{2}$

REF: 060820ia   STA: A.A.33   TOP: Slope

367   ANS: 4
$\dfrac{2^6}{2^1} = 2^5$

REF: 060813ia   STA: A.A.12   TOP: Division of Powers

368   ANS: 4
$\dfrac{344 \text{ m}}{\text{sec}} \times \dfrac{60 \text{ sec}}{1 \text{ min}} \times \dfrac{60 \text{ min}}{1 \text{ hr}} = 1,238,400 \dfrac{\text{m}}{\text{hr}}$

REF: 060911ia   STA: A.M.2   TOP: Conversions   KEY: dimensional analysis

369   ANS: 2
The median score, 10, is the vertical line in the center of the box.

REF: fall0709ia   STA: A.S.5   TOP: Box-and-Whisker Plots

370   ANS: 2
$1.5^3 = 3.375$

REF: 060809ia   STA: A.G.2   TOP: Volume

371 ANS: 1

The slope of $y = 3 - 2x$ is –2. Using $m = -\dfrac{A}{B}$, the slope of $4x + 2y = 5$ is $-\dfrac{4}{2} = -2.$

REF: 010926ia   STA: A.A.38   TOP: Parallel and Perpendicular Lines

372 ANS: 1   REF: 060920ia   STA: A.G.6   TOP: Linear Inequalities

373 ANS: 2
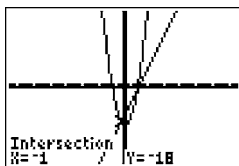
$x^2 - x - 20 = 3x - 15.$ $y = 3x - 15$

$\quad x^2 - 4x - 6 = 0 \qquad = 3(-1) - 15$

$\quad (x = 5)(x + 1) = 0 \qquad = -18$

$\qquad x = 5 \text{ or } -1$

REF: 010922ia   STA: A.A.11   TOP: Quadratic-Linear Systems

374 ANS: 4
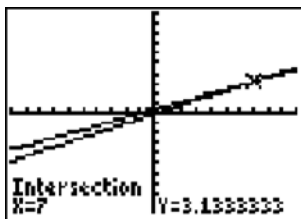
$\dfrac{2x}{5} + \dfrac{1}{3} = \dfrac{7x - 2}{15}$

$\dfrac{(2x \times 3) + (5 \times 1)}{5 \times 3} = \dfrac{7x - 2}{15}$

$\dfrac{6x + 5}{15} = \dfrac{7x - 2}{15}$

$6x + 5 = 7x - 2$

$x = 7$

REF: 080820ia   STA: A.A.25   TOP: Solving Equations with Fractional Expressions

375 ANS: 3

$(3 - 1) \times 2 \times 3 = 12$

REF: 080905ia   STA: A.N.7   TOP: Conditional Probability

376 ANS: 2

The set of integers greater than -2 and less than 6 is $\{-1, 0, 1, 2, 3, 4, 5\}$. The subset of this set that is the positive factors of 5 is $\{1, 5\}$. The complement of this subset is $\{-1, 0, 2, 3, 4\}$.

REF: 060818ia   STA: A.A.30   TOP: Set Theory

377 ANS: 3   REF: 080907ia   STA: A.S.20   TOP: Geometric Probability

378 ANS: 3

$3ax + b = c$

$3ax = c - b$

$x = \dfrac{c - b}{3a}$

REF: 080808ia   STA: A.A.23   TOP: Transforming Formulas

379 ANS: 1

$0.07m + 19 \le 29.50$

$0.07m \le 10.50$

$m \le 150$

REF: 010904ia   STA: A.A.6   TOP: Modeling Inequalities

380 ANS: 3

$b = 42 - r \quad r = 2b + 3$

$r = 2b + 3 \quad r = 2(42 - r) + 3$

$r = 84 - 2r + 3$

$3r = 87$

$r = 29$

REF: 060812ia   STA: A.A.7   TOP: Writing Linear Systems

381 ANS: 2

$\dfrac{9x^4 - 27x^6}{3x^3} = \dfrac{9x^4(1 - 3x^2)}{3x^3} = 3x(1 - 3x^2)$

REF: fall0718ia   STA: A.A.16   TOP: Rational Expressions

KEY: $a > 0$

382 ANS: 1

$x = \dfrac{-b}{2a} = \dfrac{-(-16)}{2(1)} = 8. \quad y = (8)^2 - 16(8) + 63 = -1$

REF: 060918ia   STA: A.A.41   TOP: Identifying the Vertex of a Quadratic Given Equation

383 ANS: 4   REF: 080903ia   STA: A.A.12   TOP: Multiplication of Powers

384 ANS: 4   REF: fall0730ia   STA: A.G.3   TOP: Defining Functions

KEY: graphs

385 ANS: 3

$\dfrac{(2x^3)(8x^5)}{4x^6} = \dfrac{16x^8}{4x^6} = 4x^2$

REF: fall0703ia   STA: A.A.12   TOP: Division of Powers

386 ANS: 1   REF: 060801ia   STA: A.G.4   TOP: Families of Functions

387 ANS: 4   REF: 060829ia   STA: A.G.5   TOP: Graphing Quadratic Functions

388 ANS: 2

$3c + 4m = 12.50$

$3c + 2m = 8.50$

$2m = 4.00$

$m = 2.00$

REF: 060806ia   STA: A.A.7   TOP: Writing Linear Systems

389 ANS: 4

$\dfrac{\text{distance}}{\text{time}} = \dfrac{24}{6} = 4$

REF: 010902ia   STA: A.M.1   TOP: Speed

390 ANS: 2

$\left| \dfrac{149.6 - 174.2}{149.6} \right| \approx 0.1644$

REF: 080926ia   STA: A.M.3   TOP: Error   KEY: area

391 ANS: 2   REF: 080815ia   STA: A.G.1   TOP: Compositions of Polygons and Circles
KEY: area

392 ANS: 1

$\dfrac{\sqrt{32}}{4} = \dfrac{\sqrt{16}\,\sqrt{2}}{4} = \sqrt{2}$

REF: 060828ia   STA: A.N.2   TOP: Simplifying Radicals

393 ANS: 3   REF: 010910ia   STA: A.A.35   TOP: Writing Linear Equations

394 ANS: 1

$\sin C = \dfrac{\text{opposite}}{\text{hypotenuse}} = \dfrac{13}{85}$

REF: fall0721ia   STA: A.A.42   TOP: Trigonometric Ratios

395 ANS: 1   REF: 060811ia   STA: A.G.10
TOP: Identifying the Vertex of a Quadratic Given Graph

396 ANS: 1

$x - 2y = 1$

$x + 4y = 7$

$-6y = -6$

$y = 1$

REF: 080920ia   STA: A.A.10   TOP: Solving Linear Systems

397 ANS: 1

$\dfrac{1}{8} \times \dfrac{1}{8} = \dfrac{1}{64}$

REF: 010928ia   STA: A.S.23   TOP: Geometric Probability

398 ANS: 4
$A = \{2, 4, 6, 8, 10, 12, 14, 16, 18, 20\}$

REF: 080912ia   STA: A.A.30   TOP: Set Theory

399 ANS: 3
The other situations are quantitative.

REF: 060905ia   STA: A.S.1   TOP: Analysis of Data

400 ANS: 3
$\left|-5(5) + 12\right| = |-13| = 13$

REF: 080923ia   STA: A.N.6   TOP: Evaluating Expressions

401 ANS: 2   REF: 010925ia   STA: A.A.15   TOP: Undefined Rationals

402 ANS: 2
The slope of the inequality is $-\dfrac{1}{2}$.

REF: fall0720ia   STA: A.G.6   TOP: Linear Inequalities

403 ANS: 2
$$\frac{2x^2 - 12x}{x - 6} = \frac{2x(x - 6)}{x - 6} = 2x$$

REF: 060824ia   STA: A.A.16   TOP: Rational Expressions
KEY: $a > 0$

404 ANS: 1
$30^2 + 40^2 = c^2$. 30, 40, 50 is a multiple of 3, 4, 5.

$$2500 = c^2$$
$$50 = c$$

REF: fall0711ia   STA: A.A.45   TOP: Pythagorean Theorem

405 ANS: 2
$\sqrt{32} = \sqrt{16}\sqrt{2} = 4\sqrt{2}$

REF: 060910ia   STA: A.N.2   TOP: Simplifying Radicals

406 ANS: 4
$$\frac{5}{45} = \frac{8}{x}$$
$$5x = 360$$
$$x = 72$$

REF: 060901ia   STA: A.M.1   TOP: Speed

407 ANS: 1   REF: 080902ia   STA: A.A.19
TOP: Factoring the Difference of Perfect Squares

408 ANS: 1   REF: 080911ia   STA: A.A.36   TOP: Parallel and Perpendicular Lines

409 ANS: 1   REF: 060807ia   STA: A.A.13   TOP: Multiplication of Polynomials

410 ANS: 4   REF: 010908ia   STA: A.A.9   TOP: Exponential Functions
411 ANS: 3
The value of the third quartile is the last vertical line of the box.

REF: 080818ia   STA: A.S.6   TOP: Box-and-Whisker Plots
412 ANS: 2   REF: 010909ia   STA: A.A.19
TOP: Factoring the Difference of Perfect Squares
413 ANS: 2

$$\frac{3}{2x} + \frac{4}{3x} = \frac{9x + 8x}{6x^2} = \frac{17x}{6x^2} = \frac{17}{6x}$$

REF: 080917ia   STA: A.A.17   TOP: Addition and Subtraction of Rationals
414 ANS: 2   REF: 080930ia   STA: A.S.17   TOP: Scatter Plots
415 ANS: 2
The two values are shoe size and height.

REF: fall0714ia   STA: A.S.2   TOP: Analysis of Data
416 ANS: 4
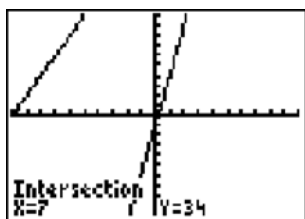
$$5p - 1 = 2p + 20$$
$$3p = 21$$
$$p = 7$$

REF: 080801ia   STA: A.A.22   TOP: Solving Equations
417 ANS: 4   REF: 010927ia   STA: A.N.4   TOP: Operations with Scientific Notation
418 ANS: 2

$$\tan 32 = \frac{x}{25}$$
$$x \approx 15.6$$

REF: 080914ia   STA: A.A.44   TOP: Using Trigonometry to Find a Side
419 ANS: 2   REF: fall0701ia   STA: A.S.7   TOP: Scatter Plots
420 ANS: 3   REF: fall0702ia   STA: A.S.23   TOP: Theoretical Probability
KEY: mutually exclusive events
421 ANS: 3   REF: 080819ia   STA: A.A.13   TOP: Addition and Subtraction of Polynomials
KEY: subtraction

422 ANS: 1

$$x^2 + 7x + 10 = 0$$

$$(x + 5)(x + 2) = 0$$

$$x = -5 \text{ or } -2$$

    REF: 080918ia   STA: A.A.15   TOP: Undefined Rationals

423 ANS: 4   REF: 060805ia   STA: A.S.12   TOP: Scatter Plots

424 ANS: 3   REF: 060926ia   STA: A.N.1   TOP: Properties of Reals

425 ANS: 4   REF: 060916ia   STA: A.A.15   TOP: Undefined Rationals

426 ANS: 4   REF: fall0729ia   STA: A.A.2   TOP: Expressions

427 ANS: 2

Intersection X=-5 Y=6
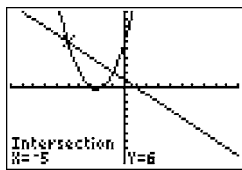
$$x^2 + 5x + 6 = -x + 1. \quad y = -x + 1$$

$$x^2 + 6x + 5 = 0 \qquad = -(-5) + 1$$

$$(x + 5)(x + 1) = 0 \qquad = 6$$

$$x = -5 \text{ or } -1$$

    REF: 080812ia   STA: A.A.11   TOP: Quadratic-Linear Systems

428 ANS: 3

$$\sqrt{72} = \sqrt{36}\sqrt{2} = 6\sqrt{2}$$

    REF: 010920ia   STA: A.N.2   TOP: Simplifying Radicals

429 ANS: 3

$$\cos 30 = \frac{x}{24}$$

$$x \approx 21$$

    REF: 010912ia   STA: A.A.44   TOP: Using Trigonometry to Find a Side

430 ANS: 4   REF: fall0717ia   STA: A.G.4   TOP: Families of Functions

431 ANS: 2

If the car can travel 75 miles on 4 gallons, it can travel 300 miles on 16 gallons. $\frac{75}{4} = \frac{x}{16}$.

$$x = 300$$

    REF: 080807ia   STA: A.G.4   TOP: Graphing Linear Functions

432 ANS: 3   REF: 060919ia   STA: A.G.3   TOP: Defining Functions

    KEY: graphs

433 ANS: 1

$$8^2 + 15^2 = c^2$$
$$c^2 = 289$$
$$c = 17$$

REF: 080906ia   STA: A.A.45   TOP: Pythagorean Theorem

434 ANS: 1

$$y = mx + b$$
$$-6 = (-3)(4) + b$$
$$b = 6$$

REF: 060922ia   STA: A.A.34   TOP: Writing Linear Equations

435 ANS: 2   REF: 010915ia   STA: A.A.5   TOP: Modeling Equations

436 ANS: 3   REF: 080925ia   STA: A.G.4   TOP: Identifying the Equation of a Graph

437 ANS: 1   REF: 080824ia   STA: A.A.43   TOP: Using Trigonometry to Find an Angle

438 ANS: 3   REF: fall0706ia   STA: A.A.19

TOP: Factoring the Difference of Perfect Squares

439 ANS: 3

The other situations are quantitative.

REF: 060819ia   STA: A.S.1   TOP: Analysis of Data

440 ANS: 3   REF: 060924ia   STA: A.G.8   TOP: Solving Quadratics by Graphing

441 ANS: 3   REF: 060817ia   STA: A.A.15   TOP: Undefined Rationals

442 ANS: 3
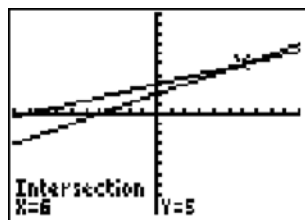
$$\frac{k+4}{2} = \frac{k+9}{3}$$
$$3(k+4) = 2(k+9)$$
$$3k + 12 = 2k + 18$$
$$k = 6$$

REF: 010906ia   STA: A.A.26   TOP: Solving Rationals

443 ANS: 4

$$P(G \text{ or } W) = \frac{4}{8}, P(G \text{ or } B) = \frac{3}{8}, P(Y \text{ or } B) = \frac{4}{8}, P(Y \text{ or } G) = \frac{5}{8}$$

REF: 060802ia   STA: A.S.22   TOP: Geometric Probability

444 ANS: 3

$$25 - 18 = 7$$

REF: 060822ia   STA: A.S.9   TOP: Frequency Histograms, Bar Graphs and Tables

445 ANS: 2

$$\frac{6}{4a} - \frac{2}{3a} = \frac{18a - 8a}{12a^2} = \frac{10a}{12a^2} = \frac{5}{6a}$$

REF: 060929ia   STA: A.A.17   TOP: Addition and Subtraction of Rationals

446 ANS: 1   REF: 060903ia   STA: A.A.12   TOP: Division of Powers

447 ANS: 2

$$5\sqrt{20} = 5\sqrt{4}\sqrt{5} = 10\sqrt{5}$$

REF: 080922ia   STA: A.N.2   TOP: Simplifying Radicals

448 ANS: 1   REF: 060804ia   STA: A.A.19

TOP: Factoring the Difference of Perfect Squares

449 ANS: 2   REF: 060830ia   STA: A.A.9   TOP: Exponential Functions

450 ANS: 4

$$P(O) = \frac{3}{6}, P(E) = \frac{3}{6}, P(< 6) = \frac{5}{6}, P(> 4) = \frac{2}{6}$$

REF: 010903ia   STA: A.S.22   TOP: Theoretical Probability

451 ANS: 3

mean = 6, median = 6 and mode = 7

REF: 080804ia   STA: A.S.4   TOP: Central Tendency

452 ANS: 4

$$-4x + 2 > 10$$
$$-4x > 8$$
$$x < -2$$

REF: 080805ia   STA: A.A.21   TOP: Interpreting Solutions

453 ANS: 3

$$x^2 - 6x = 0$$
$$x(x - 6) = 0$$
$$x = 0 \quad x = 6$$

REF: 080921ia   STA: A.A.27   TOP: Solving Quadratics by Factoring

454 ANS: 2   REF: 060908ia   STA: A.S.21   TOP: Empirical Probability

455 ANS: 2

$$x + 2y = 9$$
$$x - y = 3$$
$$3y = 6$$
$$y = 2$$

REF: 060925ia   STA: A.A.10   TOP: Solving Linear Systems

456 ANS: 1

$$\frac{4x}{x-1} \cdot \frac{x^2-1}{3x+3} = \frac{4x}{x-1} \cdot \frac{(x+1)(x-1)}{3(x+1)} = \frac{4x}{3}$$

REF: 080826ia   STA: A.A.18   TOP: Multiplication and Division of Rationals
KEY: multiplication

457 ANS: 3

$$500(1+0.06)^3 \approx 596$$

REF: 080929ia   STA: A.A.9   TOP: Exponential Functions

458 ANS: 4   REF: 080825ia   STA: A.A.40   TOP: Systems of Linear Inequalities

459 ANS: 4

$$x^2 - 7x + 6 = 0$$

$$(x-6)(x-1) = 0$$

$$x = 6 \quad x = 1$$

REF: 060902ia   STA: A.A.28   TOP: Roots of Quadratics

460 ANS: 1   REF: 080813ia   STA: A.G.10
TOP: Identifying the Vertex of a Quadratic Given Graph

461 ANS: 4

$$A = lw = (3w - 7)(w) = 3w^2 - 7w$$

REF: 010924ia   STA: A.A.1   TOP: Expressions

462 ANS: 2

$$L + S = 47$$

$$L - S = 15$$

$$2L = 62$$

$$L = 31$$

REF: 060912ia   STA: A.A.7   TOP: Writing Linear Systems

463 ANS: 4
Surveying persons leaving a football game about a sports budget contains the most bias.

REF: 080910ia   STA: A.S.3   TOP: Analysis of Data

464 ANS: 1   REF: 080803ia   STA: A.A.4   TOP: Modeling Inequalities

465 ANS: 3   REF: 010917ia   STA: A.A.29   TOP: Set Theory

466 ANS: 3

$$35000(1-0.05)^4 \approx 28507.72$$

REF: fall0719ia   STA: A.A.9   TOP: Exponential Functions

467 ANS: 4

REF: 080822ia   STA: A.S.8   TOP: Scatter Plots
468 ANS: 2   REF: 060904ia   STA: A.A.1   TOP: Expressions
469 ANS: 1

$$m = \frac{4 - (-4)}{-5 - 15} = -\frac{2}{5}$$

REF: 080915ia   STA: A.A.33   TOP: Slope
470 ANS: 1   REF: fall0728ia   STA: A.A.15   TOP: Undefined Rationals
471 ANS: 4
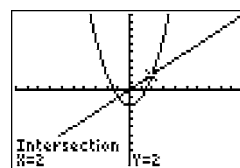
$x^2 - 2 = x$ Since $y = x$, the solutions are $(2, 2)$ and $(-1, -1)$.

$x^2 - x - 2 = 0$

$(x - 2)(x + 1) = 0$

$x = 2 \text{ or } -1$

REF: 060810ia   STA: A.A.11   TOP: Quadratic-Linear Systems
472 ANS: 2   REF: fall0725ia   STA: A.N.4   TOP: Operations with Scientific Notation
473 ANS: 3

0.75 hours = 45 minutes. $\dfrac{120}{1} = \dfrac{x}{45}$

$x = 5400$

REF: 080814ia   STA: A.M.1   TOP: Using Rate
474 ANS: 4

$V = \pi r^2 h = \pi \cdot 6^2 \cdot 15 \approx 1696.5$

REF: fall0712ia   STA: A.G.2   TOP: Volume
475 ANS: 2   REF: 080823ia   STA: A.A.32   TOP: Slope
476 ANS: 1

The slope of both is −4.

REF: 060814ia   STA: A.A.38   TOP: Parallel and Perpendicular Lines
477 ANS: 1   REF: 080924ia   STA: A.G.1   TOP: Compositions of Polygons and Circles
KEY: perimeter

478 ANS: 3

$$a + ar = b + r$$

$$a(1 + r) = b + r$$

$$a = \frac{b + r}{1 + r}$$

REF: 060913ia   STA: A.A.23   TOP: Transforming Formulas

479 ANS: 4   REF: 060906ia   STA: A.A.4   TOP: Modeling Inequalities

480 ANS: 1

$$\frac{4}{3}x + 5 < 17$$

$$\frac{4}{3}x < 12$$

$$4x < 36$$

$$x < 9$$

REF: 060914ia   STA: A.A.21   TOP: Interpreting Solutions

481 ANS: 3

$$x^2 - 10x + 21 = 0$$

$$(x - 7)(x - 3) = 0$$

$$x = 7 \quad x = 3$$

REF: 010914ia   STA: A.A.28   TOP: Roots of Quadratics

482 ANS: 4

The transformation is a reflection in the *x*-axis.

REF: fall0722ia   STA: A.G.5   TOP: Graphing Absolute Value Functions

483 ANS: 2   REF: 080901ia   STA: A.A.4   TOP: Modeling Equations

484 ANS: 1

$$\frac{(2x \times 6) + (3 \times x)}{3 \times 6} = 5$$

$$\frac{12x + 3x}{18} = 5$$

$$15x = 90$$

$$x = 6$$
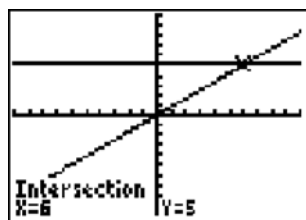
REF: 060907ia   STA: A.A.25   TOP: Solving Equations with Fractional Expressions

485 ANS: 4

$$\frac{x^2 - 1}{x + 1} \cdot \frac{x + 3}{3x - 3} = \frac{(x + 1)(x - 1)}{x + 1} \cdot \frac{x + 3}{3(x - 1)} = \frac{x + 3}{3}$$

REF: 060815ia   STA: A.A.18   TOP: Multiplication and Division of Rationals
KEY: multiplication

486 ANS: 4

$$\frac{25x - 125}{x^2 - 25} = \frac{25(x - 5)}{(x + 5)(x - 5)} = \frac{25}{x + 5}$$

REF: 080821ia   STA: A.A.16   TOP: Rational Expressions
KEY: $a > 0$

487 ANS: 3

$5x + 2y = 48$

$3x + 2y = 32$

$2x = 16$

$x = 8$

REF: fall0708ia   STA: A.A.10   TOP: Solving Linear Systems

488 ANS: 3

$$F = \frac{9}{5}C + 32 = \frac{9}{5}(15) + 32 = 59$$

REF: 010901ia   STA: A.M.2   TOP: Conversions   KEY: formula

489 ANS: 2

$$\frac{6}{5x} - \frac{2}{3x} = \frac{18x - 10x}{15x^2} = \frac{8x}{15x^2} = \frac{8}{15x}$$

REF: 010921ia   STA: A.A.17   TOP: Addition and Subtraction of Rationals

490 ANS: 1
Everyone eats, can shop in malls and wear clothes. People who work in a sporting goods store probably watch more sports television than most.

REF: 010923ia   STA: A.S.3   TOP: Analysis of Data

491 ANS: 4   REF: 060930ia   STA: A.A.29   TOP: Set Theory

492 ANS: 1
$so = f + 60$ $j = 2f - 50$ $se = 3f$. $f + (f + 60) + (2f - 50) + 3f = 1424$

$$7f + 10 = 1424$$

$$f = 202$$

REF: 060917ia   STA: A.A.7   TOP: Writing Linear Systems

493 ANS: 2

$$\frac{3}{5}(x+2) = x - 4$$

$$3(x+2) = 5(x-4)$$

$$3x + 6 = 5x - 20$$

$$26 = 2x$$

$$x = 13$$

  REF: 080909ia   STA: A.A.25   TOP: Solving Equations with Fractional Expressions
494 ANS: 2   REF: 060821ia   STA: A.A.5   TOP: Modeling Inequalities
495 ANS: 1

$$_4P_4 = 4 \times 3 \times 2 \times 1 = 24$$

  REF: 080816ia   STA: A.N.8   TOP: Permutations
496 ANS: 1   REF: fall0723ia   STA: A.M.3   TOP: Error
  KEY: area
497 ANS: 3   REF: fall0705ia   STA: A.N.1   TOP: Identifying Properties
498 ANS: 1
A rooster crows before sunrise, not because of the sun.

  REF: fall0707ia   STA: A.S.14   TOP: Analysis of Data
499 ANS: 2

$$\sin A = \frac{8}{12}$$

$$A \approx 42$$

  REF: 060816ia   STA: A.A.43   TOP: Using Trigonometry to Find an Angle
500 ANS: 3
The number of correct answers on a test causes the test score.

  REF: 080908ia   STA: A.S.13   TOP: Analysis of Data
501 ANS: 4

$$w(w+5) = 36$$

$$w^2 + 5w - 36 = 0$$

  REF: fall0726ia   STA: A.A.5   TOP: Modeling Equations
502 ANS: 2

$$l(l-5) = 24$$

$$l^2 - 5l - 24 = 0$$

$$(l-8)(l+3) = 0$$

$$l = 8$$

  REF: 080817ia   STA: A.A.8   TOP: Geometric Applications of Quadratics

503 ANS: 4

$$16^2 + b^2 = 34^2$$

$$b^2 = 900$$

$$b = 30$$

REF: 080809ia   STA: A.A.45   TOP: Pythagorean Theorem

504 ANS: 1   REF: 010905ia   STA: A.G.4   TOP: Families of Functions

505 ANS: 2   REF: 080802ia   STA: A.N.1   TOP: Identifying Properties

506 ANS: 4

The mean is $80.\overline{6}$, the median is 84.5 and the mode is 87.

REF: 010907ia   STA: A.S.4   TOP: Central Tendency

507 ANS: 2

$$2x^2 + 10x - 12 = 2(x^2 + 5x - 6) = 2(x + 6)(x - 1)$$

REF: 080806ia   STA: A.A.20   TOP: Factoring Polynomials

508 ANS: 2   REF: 060923ia   STA: A.A.13   TOP: Addition and Subtraction of Polynomials
KEY: subtraction

509 ANS: 3

$$3^2 + 5^2 = x^2$$

$$34 = x^2$$

$$\sqrt{34} = x$$

REF: 060909ia   STA: A.A.45   TOP: Pythagorean Theorem

510 ANS: 2   REF: 080810ia   STA: A.A.36   TOP: Parallel and Perpendicular Lines

511 ANS: 3   REF: fall0710ia   STA: A.A.31   TOP: Set Theory

512 ANS: 2   REF: 080916ia   STA: A.G.8   TOP: Solving Quadratics by Graphing

513 ANS: 2

$$\frac{x^2 - 2x - 15}{x^2 + 3x} = \frac{(x - 5)(x + 3)}{x(x + 3)} = \frac{x - 5}{x}$$

REF: 060921ia   STA: A.A.16   TOP: Rational Expressions
KEY: $a > 0$

514 ANS: 2

$$\sin U = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{15}{17}$$

REF: 010919ia   STA: A.A.42   TOP: Trigonometric Ratios

515 ANS: 3   REF: 060808ia   STA: A.N.8   TOP: Permutations

516 ANS: 3

$$m = \frac{4 - 10}{3 - (-6)} = -\frac{2}{3}$$

    REF: fall0716ia   STA: A.A.33   TOP: Slope

517 ANS: 3   REF: 060825ia   STA: A.A.45   TOP: Pythagorean Theorem

518 ANS: 4

$-2(x - 5) < 4$

$-2x + 10 < 4$

$\qquad -2x < -6$

$\qquad x > 3$

    REF: 080913ia   STA: A.A.21   TOP: Interpreting Solutions

519 ANS: 2

$s + o = 126.\ s + 2s = 126$

$\quad o = 2s \qquad s = 42$

    REF: 080811ia   STA: A.A.7   TOP: Writing Linear Systems

520 ANS: 4   REF: 010929ia   STA: A.S.6   TOP: Box-and-Whisker Plots

521 ANS: 4   REF: 060927ia   STA: A.N.4   TOP: Operations with Scientific Notation

522 ANS: 3

The value of the upper quartile is the last vertical line of the box.

    REF: 060915ia   STA: A.S.6   TOP: Box-and-Whisker Plots

523 ANS: 4

$25(x - 3) = 25x - 75$

    REF: 060823ia   STA: A.A.1   TOP: Expressions

524 ANS: 3

An element of the domain, 1, is paired with two different elements of the range, 3 and 7.

    REF: 080919ia   STA: A.G.3   TOP: Defining Functions

    KEY: ordered pairs

525 ANS: 4   REF: 010930ia   STA: A.G.3   TOP: Defining Functions

    KEY: graphs

526 ANS: 4   REF: 080827ia   STA: A.A.12   TOP: Powers of Powers

527 ANS: 1

$13.95 + 0.49s \le 50.00$

$\qquad 0.49s \le 36.05$

$\qquad\quad s \le 73.57$

    REF: 080904ia   STA: A.A.6   TOP: Modeling Inequalities

528 ANS: 4

$$\frac{(d \times 3) + (2 \times 2d)}{2 \times 3} = \frac{3d + 4d}{6} = \frac{7d}{6}$$

REF: fall0727ia   STA: A.A.17   TOP: Addition and Subtraction of Rationals

529 ANS: 4

$$y = mx + b$$

$$-1 = (2)(3) + b$$

$$b = -7$$

REF: 080927ia   STA: A.A.34   TOP: Writing Linear Equations

530 ANS: 4
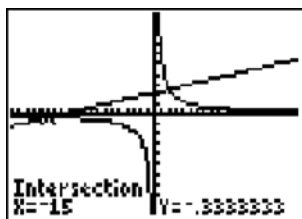
$$\frac{5}{x} = \frac{x + 13}{6}$$

$$x^2 + 13x = 30$$

$$x^2 + 13x - 30 = 0$$

$$(x + 15)(x - 2) = 0$$

$$x = -15 \text{ or } 2$$

REF: 060826ia   STA: A.A.26   TOP: Solving Rationals

531 ANS: 2

$$P = 2l + 2w$$

$$P - 2l = 2w$$

$$\frac{P - 2l}{2} = w$$

REF: 010911ia   STA: A.A.23   TOP: Transforming Formulas

532 ANS: 1

To determine student interest, survey the widest range of students.

REF: 060803ia   STA: A.S.3   TOP: Analysis of Data

533 ANS: 3

$\sin A = \dfrac{10}{16}$ $B = 180 - (90 = 38.7) = 51.3$.   A 90° angle is not acute.

$A \approx 38.7$

REF: 080829ia   STA: A.A.43   TOP: Using Trigonometry to Find an Angle

534 ANS: 2

The events are not mutually exclusive: P(prime) = $\frac{3}{6}$, P(even) = $\frac{3}{6}$, P(prime AND even) = $\frac{1}{6}$

P(prime OR even) = $\frac{3}{6} + \frac{3}{6} - \frac{1}{6} = \frac{5}{6}$

REF: 080830ia   STA: A.S.23   TOP: Theoretical Probability
KEY: not mutually exclusive events

535 ANS: 1

$m = \frac{3-0}{0-2} = -\frac{3}{2}$. Using the given y-intercept $(0,3)$ to write the equation of the line $y = -\frac{3}{2}x + 3$.

REF: fall0713ia   STA: A.A.35   TOP: Writing Linear Equations

536 ANS: 4   REF: fall0715ia   STA: A.A.5   TOP: Modeling Inequalities

537 ANS: 2   REF: 010916ia   STA: A.G.10
TOP: Identifying the Vertex of a Quadratic Given Graph

538 ANS: 2

$m = \frac{5-3}{2-7} = -\frac{2}{5}$

REF: 010913ia   STA: A.A.33   TOP: Slope

539 ANS: 1

$\left| \frac{289 - 282}{289} \right| \approx 0.024$

REF: 080828ia   STA: A.M.3   TOP: Error   KEY: volume and surface area

540 ANS: 1

$\frac{2}{x} - 3 = \frac{26}{x}$

$-3 = \frac{24}{x}$

$x = -8$

REF: 010918ia   STA: A.A.26   TOP: Solving Rationals

Integrated Algebra 2 Point Regents Exam Questions
Answer Section

541 ANS:

$\frac{3}{8}$. (H,H,H), (H,H,T), (H,T,H), **(H,T,T)**, (T,H,H), **(T,H,T)**, **(T,T,H)**, (T,T,T)

PTS: 2   REF: 080933ia   STA: A.S.19   TOP: Sample Space

542 ANS:

$bc + ac = ab$

$c(b + a) = ab$

$c = \dfrac{ab}{b + a}$

PTS: 2   REF: 081131ia   STA: A.A.23   TOP: Transforming Formulas

543 ANS:

$d = 6.25h$, 250. $d = 6.25(40) = 250$

PTS: 2   REF: 010933ia   STA: A.N.5   TOP: Direct Variation

544 ANS:

$\dfrac{x - 1}{x + 2} \cdot \dfrac{x^2 - 1}{x^2 + 3x + 2} = \dfrac{(x + 1)(x - 1)}{(x + 2)(x + 1)}$

PTS: 2   REF: 011233ia   STA: A.A.16   TOP: Rational Expressions
KEY: a > 0

545 ANS:

$5x^3 - 20x^2 - 60x$

$5x(x^2 - 4x - 12)$

$5x(x + 2)(x - 6)$

PTS: 2   REF: 011332ia   STA: A.A.20   TOP: Factoring Polynomials

546 ANS:

$\dfrac{600 - 592}{592} \approx 0.014$

PTS: 2   REF: 061031ia   STA: A.M.3   TOP: Error
KEY: volume and surface area

547 ANS:

$\dfrac{8100 - 7678.5}{7678.5} \approx 0.055$

PTS: 2   REF: 061233ia   STA: A.M.3   TOP: Error
KEY: area

548 ANS:

$77120 + 33500 = 110620$ sq. ft. $\times \dfrac{1 \text{ acre}}{43560 \text{ sq. ft.}} \approx 2.54$ acres

PTS: 2   REF: 081133ia   STA: A.M.2   TOP: Conversions
KEY: dimensional analysis

549 ANS:

$\dfrac{5.4 \text{ miles}}{\text{hour}} \times \dfrac{5280 \text{ feet}}{\text{mile}} \times \dfrac{1 \text{ hour}}{60 \text{ min}} = \dfrac{475.2 \text{ ft}}{\text{min}}$

PTS: 2   REF: 081331ia   STA: A.M.2   TOP: Conversions
KEY: dimensional analysis

550 ANS:

5. 48 inches $\times \dfrac{1 \text{ yard}}{36 \text{ inches}} = \dfrac{4}{3}$ yards $\times \$3.75 = \$5.00$

PTS: 2   REF: 011131ia   STA: A.M.2   TOP: Conversions
KEY: dimensional analysis

551 ANS:

$\dfrac{3k^2 m^6}{4}$

PTS: 2   REF: 010932ia   STA: A.A.12   TOP: Division of Powers

552 ANS:
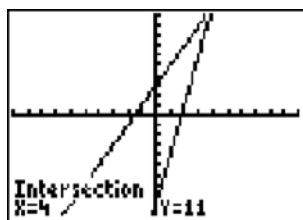
4. $3 + 2g = 5g - 9$

$12 = 3g$

$g = 4$

PTS: 2   REF: fall0732ia   STA: A.A.22   TOP: Solving Equations

553 ANS:

6.56×10^{-2}

PTS: 2   REF: 081231ia   STA: A.N.4   TOP: Operations with Scientific Notation

554 ANS:

50. $12 + 10 + 12 + \dfrac{1}{2}(10\pi) \approx 50$

PTS: 2   REF: 010931ia   STA: A.G.1   TOP: Compositions of Polygons and Circles
KEY: perimeter

555 ANS:

$-3\sqrt{48} = -3\sqrt{16}\sqrt{3} = -12\sqrt{3}$

PTS: 2   REF: 081033ia   STA: A.N.2   TOP: Simplifying Radicals

556 ANS:

2.1. $\cos 65 = \dfrac{x}{5}$

$\quad\quad x \approx 2.1$

PTS: 2   REF: 011133ia   STA: A.A.44   TOP: Using Trigonometry to Find a Side

557 ANS:

60. $_5P_3 = 60$

PTS: 2   REF: 060931ia   STA: A.N.8   TOP: Permutations

558 ANS:

$\dfrac{6}{25} \cdot \dfrac{25 - (11 + 5 + 3)}{25}$

PTS: 2   REF: 011232ia   STA: A.S.21   TOP: Experimental Probability

559 ANS:

$\dfrac{x^2 - 5x - 24}{x - 8} = \dfrac{(x - 8)(x + 3)}{x - 8} = x + 3$

PTS: 2   REF: 061131ia   STA: A.A.16   TOP: Rational Expressions
KEY: $a > 0$

560 ANS:

(1) Distributive; (2) Commutative

PTS: 2   REF: 061132ia   STA: A.N.1   TOP: Identifying Properties

561 ANS:

$\dfrac{x + 2}{2} \times \dfrac{4(x + 5)}{(x + 4)(x + 2)} = \dfrac{2(x + 5)}{x + 4}$

PTS: 2   REF: 081232ia   STA: A.A.18   TOP: Multiplication and Division of Rationals
KEY: multiplication

562 ANS:

111.25. $\dfrac{\text{distance}}{\text{time}} = \dfrac{89}{0.8} = 111.25$

PTS: 2   REF: 080831ia   STA: A.M.1   TOP: Speed

563 ANS:

$-5(x - 7) < 15$

$\quad\quad x - 7 > -3$

$\quad\quad\quad x > 4$

PTS: 2   REF: 061331ia   STA: A.A.24   TOP: Solving Inequalities

564 ANS:

$30\sqrt{2}$. $5\sqrt{72} = 5\sqrt{36}\sqrt{2} = 30\sqrt{2}$

PTS: 2 REF: fall0731ia STA: A.N.2 TOP: Simplifying Radicals

565 ANS:

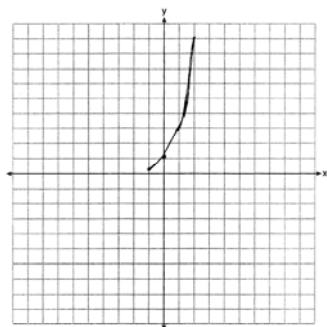$\dfrac{1375}{1600}$. $\dfrac{40^2 - 15^2}{40^2} = \dfrac{1375}{1600}$

PTS: 2 REF: 011132ia STA: A.S.20 TOP: Geometric Probability

566 ANS:

PTS: 2 REF: 081233ia STA: A.G.4 TOP: Graphing Exponential Functions

567 ANS:
$0 \le t \le 40$

PTS: 2 REF: 060833ia STA: A.A.31 TOP: Set Theory

568 ANS:

$36 - 9\pi$. 15.6. Area of square–area of 4 quarter circles. $(3+3)^2 - 3^2\pi = 36 - 9\pi$

PTS: 2 REF: 060832ia STA: A.G.1 TOP: Compositions of Polygons and Circles
KEY: area

569 ANS:

$3a^2 b^2 - 6a$. $\dfrac{45a^4 b^3 - 90a^3 b}{15a^2 b} = \dfrac{45a^4 b^3}{15a^2 b} - \dfrac{90a^3 b}{15a^2 b} = 3a^2 b^2 - 6a$

PTS: 2 REF: 081031ia STA: A.A.14 TOP: Division of Polynomials

570 ANS:

$\dfrac{3}{8}$. $P(s_1 < 4) \times P(s_2 = \text{back}) = \dfrac{3}{4} \times \dfrac{1}{2} = \dfrac{3}{8}$

PTS: 2 REF: 080832ia STA: A.S.23 TOP: Geometric Probability

571 ANS:
Not all of the homework problems are equations. The first problem is an expression.

PTS: 2 REF: 080931ia STA: A.A.3 TOP: Expressions

572 ANS:

33.4. Serena needs 24 (9 + 6 + 9) feet of fencing to surround the rectangular portion of the garden. The length of the fencing needed for the semicircular portion of the garden is $\frac{1}{2} \pi d = 3\pi \approx 9.4$ feet.

PTS: 2   REF: fall0733ia   STA: A.G.1   TOP: Compositions of Polygons and Circles
KEY: perimeter

573 ANS:

$2\sqrt{108} = 2\sqrt{36}\sqrt{3} = 12\sqrt{3}$

PTS: 2   REF: 081332ia   STA: A.N.2   TOP: Simplifying Radicals

574 ANS:

orchestra: $\frac{3}{26} > \frac{4}{36}$

PTS: 2   REF: 011033ia   STA: A.S.22   TOP: Theoretical Probability

575 ANS:

$t = \frac{d}{s} = \frac{136,000,000}{31,000} \approx 4387.1$ hours. $\frac{4387.1}{24} \approx 183$

PTS: 2   REF: 061333ia   STA: A.M.1   TOP: Speed

576 ANS:

16. 12 feet equals 4 yards. $4 \times 4 = 16$.

PTS: 2   REF: 011031ia   STA: A.M.2   TOP: Conversions
KEY: dimensional analysis

577 ANS:

White. There are 31 white blocks, 30 red blocks and 29 blue blocks.

PTS: 2   REF: 061232ia   STA: A.S.22   TOP: Theoretical Probability

578 ANS:

{1,2,4,5,9,10,12}

PTS: 2   REF: 080833ia   STA: A.A.30   TOP: Set Theory

579 ANS:

147.75 $2 \times 5.5 \times 3 + 2 \times 6.75 \times 3 + 2 \times 5.5 \times 6.75 = 147.75$

PTS: 2   REF: 011231ia   STA: A.G.2   TOP: Surface Area

580 ANS:

53. $\sin A = \frac{16}{20}$

$A \approx 53$

PTS: 2   REF: 011032ia   STA: A.A.43   TOP: Using Trigonometry to Find an Angle

581 ANS:
$V = \pi r^2 h = \pi \cdot 6.5^2 \cdot 24 = 1014\pi$

PTS: 2　　　REF: 061332ia　　　STA: A.G.2　　　TOP: Volume

582 ANS:

2,160　$\dfrac{1,200}{25} = \dfrac{x}{45}$

　　　　$25x = 54,000$

　　　　　$x = 2,160$

PTS: 2　　　REF: 081032ia　　　STA: A.M.1　　　TOP: Using Rate

583 ANS:
$-6a + 42.$ distributive

PTS: 2　　　REF: 061032ia　　　STA: A.N.1　　　TOP: Properties of Reals

584 ANS:

$\dfrac{1}{8}$. After the English and social studies books are taken, 8 books are left and 1 is an English book.

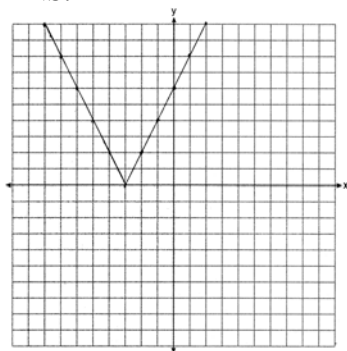PTS: 2　　　REF: 060933ia　　　STA: A.S.18　　　TOP: Conditional Probability

585 ANS:

$\sin x = \dfrac{30}{50}$

　$x = \sin^{-1}\dfrac{3}{5}$

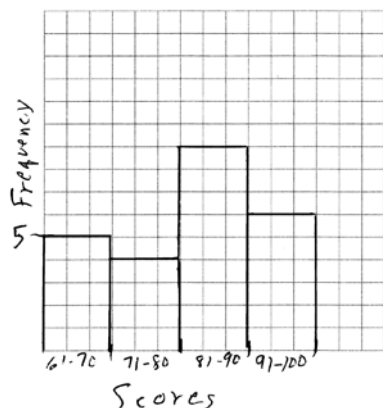　$x \approx 37$

PTS: 2　　　REF: 061033ia　　　STA: A.A.43　　　TOP: Using Trigonometry to Find an Angle

586 ANS:

PTS: 2　　　REF: 011333ia　　　STA: A.G.4　　　TOP: Graphing Absolute Value Functions

6

587 ANS:

PTS: 2   REF: 081132ia   STA: A.S.5
TOP: Frequency Histograms, Bar Graphs and Tables   KEY: frequency histograms

588 ANS:
5,112. $(12 \times 30 \times 16) - (6 \times 12 \times 9) = 5112$

PTS: 2   REF: 080932ia   STA: A.G.2   TOP: Volume

589 ANS:
2. Subtracting the equations: $3y = 6$

$$y = 2$$

PTS: 2   REF: 061231ia   STA: A.A.10   TOP: Solving Linear Systems

590 ANS:
$4x(x + 3)(x - 3)$. $4x^3 - 36x = 4x(x^2 - 9) = 4x(x + 3)(x - 3)$

PTS: 2   REF: 060932ia   STA: A.A.19
TOP: Factoring the Difference of Perfect Squares

591 ANS:
Ann's. $\dfrac{225}{15} = 15$ mpg is greater than $\dfrac{290}{23.2} = 12.5$ mpg

PTS: 2   REF: 060831ia   STA: A.M.1   TOP: Using Rate

592 ANS:
$x = 1$; $(1, -5)$

PTS: 2   REF: 061133ia   STA: A.G.10
TOP: Identifying the Vertex of a Quadratic Given Graph

593 ANS:
$4\sqrt{75} = 4\sqrt{25}\sqrt{3} = 20\sqrt{3}$

PTS: 2   REF: 011331ia   STA: A.N.2   TOP: Simplifying Radicals

594 ANS:

$A = P(1 + R)^t = 2000(1 + 0.035)^4 \approx 2295$

PTS: 2   REF: 081333ia   STA: A.A.9   TOP: Exponential Functions

Integrated Algebra 3 Point Regents Exam Questions
Answer Section

595 ANS:

Greg's rate of 5.5 is faster than Dave's rate of 5.3. $\dfrac{\text{distance}}{\text{time}} = \dfrac{11}{2} = 5.5$. $\dfrac{16}{3} = 5.\overline{3}$

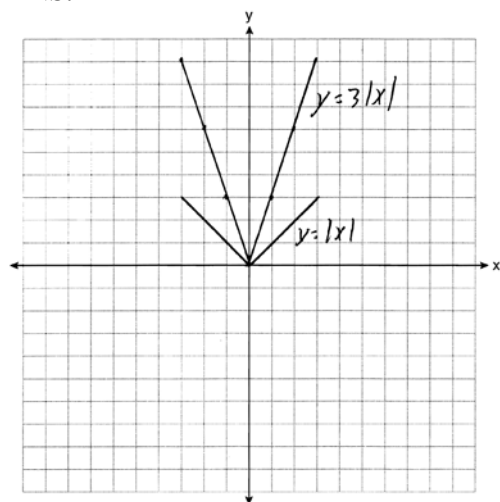PTS: 3   REF: 080936ia   STA: A.M.1   TOP: Speed

596 ANS:

The graph becomes steeper.

PTS: 3   REF: 081134ia   STA: A.G.5   TOP: Graphing Absolute Value Functions

597 ANS:

The turtle won by .5 minutes. Turtle: $\dfrac{d}{s} = \dfrac{100}{20} = 5$. Rabbit: $\dfrac{d}{s} = \dfrac{100}{40} = 2.5 + 3 = 5.5$

PTS: 3   REF: 011236ia   STA: A.M.1   TOP: Speed

598 ANS:

$-12.\ 3\left(\dfrac{2}{3}x + 3 < -2x - 7\right)$

$\qquad x + 9 < -6x - 21$

$\qquad\quad 7x < -30$

$\qquad\quad\ x < \dfrac{-30}{7}$

PTS: 3   REF: 061034ia   STA: A.A.21   TOP: Interpreting Solutions

599 ANS:

$6\sqrt{3}\quad \dfrac{3\sqrt{75} + \sqrt{27}}{3} = \dfrac{3\sqrt{25}\sqrt{3} + \sqrt{9}\sqrt{3}}{3} = \dfrac{15\sqrt{3} + 3\sqrt{3}}{3} = \dfrac{18\sqrt{3}}{3} = 6\sqrt{3}$

PTS: 3   REF: 061236ia   STA: A.N.3   TOP: Operations with Radicals

600 ANS:

$\dfrac{38}{\pi}, 2.$ $V = \pi r^2 h$. $\dfrac{36}{\left(\dfrac{38}{\pi}\right)} \approx 2.97$. Three cans will not fit. The maximum number is 2.

$$342 = \pi\left(\dfrac{6}{2}\right)^2 h$$

$$\dfrac{342}{9\pi} = h$$

$$\dfrac{38}{\pi} = h$$

    PTS: 3   REF: 010936ia   STA: A.G.2   TOP: Volume

601 ANS:

$-2\sqrt{3}$ $\dfrac{16\sqrt{21}}{2\sqrt{7}} - 5\sqrt{12} = 8\sqrt{3} - 5\sqrt{4}\sqrt{3} = 8\sqrt{3} - 10\sqrt{3} = -2\sqrt{3}$

    PTS: 3   REF: 081136ia   STA: A.N.3   TOP: Operations with Radicals

602 ANS:

$L - S = 28$. $2S - 8 = S + 28$

    $L = 2S - 8$ $S = 36$

    $L = S + 28$ $L = 36 + 28 = 64$

    PTS: 3   REF: 081335ia   STA: A.A.7   TOP: Writing Linear Systems

603 ANS:

$y = \dfrac{3}{4}x + 10.$ $y = mx + b$

$$4 = \dfrac{3}{4}(-8) + b$$

$$4 = -6 + b$$

$$10 = b$$

    PTS: 3   REF: 011134ia   STA: A.A.34   TOP: Writing Linear Equations

604 ANS:

$\dfrac{3}{4x - 8} \cdot \dfrac{3x + 6}{4x + 12} \div \dfrac{x^2 - 4}{x + 3} = \dfrac{3(x + 2)}{4(x + 3)} \cdot \dfrac{x + 3}{(x + 2)(x - 2)} = \dfrac{3}{4(x - 2)}$

    PTS: 3   REF: 010935ia   STA: A.A.18   TOP: Multiplication and Division of Rationals
    KEY: division

605 ANS:

7. $15x + 22 \geq 120$

        $x \geq 6.5\overline{3}$

    PTS: 3   REF: fall0735ia   STA: A.A.6   TOP: Modeling Inequalities

606 ANS:

1,512, 1,551.25, 0.025. $36 \times 42 = 1512$. $36.5 \times 42.5 = 1551.25$. $RE = \left| \dfrac{1512 - 1551.25}{1551.25} \right| \approx 0.025$.

PTS: 3   REF: 010934ia   STA: A.M.3   TOP: Error
KEY: area

607 ANS:
3, 0, 20. $15 - 12 = 3$. $12 - 12 = 0$

PTS: 3   REF: 081234ia   STA: A.S.9
TOP: Frequency Histograms, Bar Graphs and Tables

608 ANS:
$-15, 2$ $x^2 + 13x - 30 = 0$

$(x + 15)(x - 2) = 0$

$x = -15, 2$

PTS: 3   REF: 081036ia   STA: A.A.28   TOP: Roots of Quadratics

609 ANS:
$4, -5.$ $\dfrac{x + 2}{6} = \dfrac{3}{x - 1}$

$(x + 2)(x - 1) = 18$

$x^2 - x + 2x - 2 = 18$

$x^2 + x - 20 = 0$

$(x + 5)(x - 4) = 0$

$x = -5 \, \text{or} \, 4$

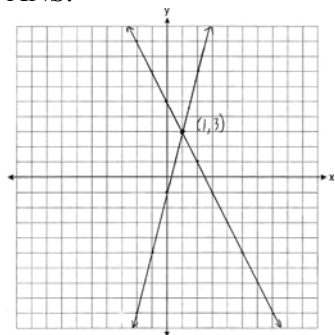PTS: 3   REF: 011136ia   STA: A.A.26   TOP: Solving Rationals

610 ANS:
56. If the circumference of circle O is $16\eth$ inches, the diameter, $\overline{AD}$, is 16 inches and the length of $\overline{BC}$ is 12 inches $\dfrac{3}{4} \times 16$. The area of trapezoid $ABCD$ is $\dfrac{1}{2} \times 4(12 + 16) = 56$.

PTS: 3   REF: 060934ia   STA: A.G.1   TOP: Compositions of Polygons and Circles
KEY: area

611 ANS:

PTS: 3   REF: 011235ia   STA: A.G.7   TOP: Solving Linear Systems

612 ANS:

12, 7. Both the median and the mode will increase.

PTS: 3   REF: 061134ia   STA: A.S.16   TOP: Central Tendency

613 ANS:

$0.65x + 35 \le 45$

$0.65x \le 10$

$x \le 15$

PTS: 3   REF: 061135ia   STA: A.A.6   TOP: Modeling Inequalities

614 ANS:

$\dfrac{(5.9 \times 10.3 \times 1.7) - (6 \times 10 \times 1.5)}{5.9 \times 10.3 \times 1.7} \approx 0.129$

PTS: 3   REF: 081235ia   STA: A.M.3   TOP: Error
KEY: volume and surface area

615 ANS:

$60 - 42\sqrt{5}$. $3\sqrt{20}(2\sqrt{5} - 7) = 6\sqrt{100} - 21\sqrt{20} = 60 - 21\sqrt{4}\sqrt{5} = 60 - 42\sqrt{5}$

PTS: 3   REF: 080834ia   STA: A.N.3   TOP: Operations with Radicals
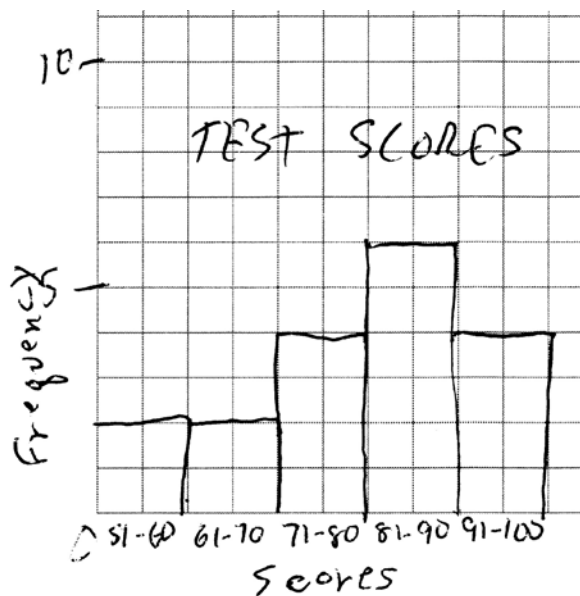KEY: multiplication

616 ANS:

$\tan x = \dfrac{350}{1000}$

$x \approx 19$

PTS: 3   REF: 061335ia   STA: A.A.43   TOP: Using Trigonometry to Find an Angle

617 ANS:

Interval	Tally	Frequency
51–60	‖	2
61–70	‖	2
71–80	‖‖	4
81–90	‖‖‖ ‖	6
91–100	‖‖‖	4

PTS: 3　　　　REF: 011135ia　　　STA: A.S.5
TOP: Frequency Histograms, Bar Graphs and Tables　　　　KEY: frequency histograms

618 ANS:

$3n + 4p = 8.50$　.　$3(2.50) + 4p = 8.50$

$5n + 8p = 14.50$　　　　　$4p = 1$

$6n + 8p = 17$　　　　　　$p = 0.25$

　　　$n = 2.50$

PTS: 3　　　　REF: 011335ia　　　STA: A.A.7　　　TOP: Writing Linear Systems

619 ANS:

41.8.　$\sin x = \dfrac{8}{12}$

　　　$A \approx 41.8$

PTS: 3　　　　REF: 081135ia　　　STA: A.A.43　　　TOP: Using Trigonometry to Find an Angle

620 ANS:

$(-3, -5), (3, 7)$.　$x^2 + 2x - 8 = 2x + 1$.　$y = 2(3) + 1 = 7$

　　　　　　　$x^2 - 9 = 0$　　　　$y = 2(-3) + 1 = -5$

　　　　　　　　$x = \pm 3$

PTS: 3　　　　REF: 081236ia　　　STA: A.A.11　　　TOP: Quadratic-Linear Systems

5

621 ANS:
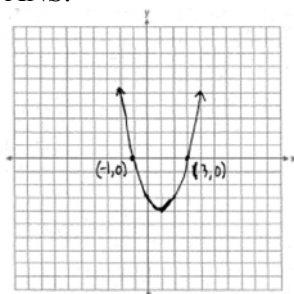
PTS: 3　　　　REF: 060836ia　　STA: A.G.8　　　TOP: Solving Quadratics by Graphing

622 ANS:

$\frac{1}{6}$, 16.67%, \$13.50. $\frac{18 - 15}{18} = \frac{1}{6}$. $18 \times 0.75 = 13.5$
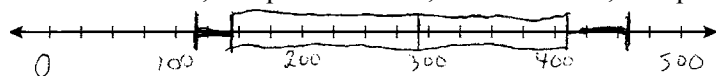
PTS: 3　　　　REF: 060835ia　　STA: A.N.5　　　TOP: Percents

623 ANS:

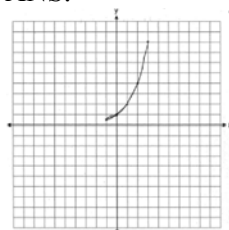minimum is 120, 1st quartile is 145, median is 292, 3rd quartile is 407, and maximum is 452

PTS: 3　　　　REF: 081034ia　　STA: A.S.5　　　TOP: Box-and-Whisker Plots

624 ANS:

. The graph will never intersect the x-axis as $2^x > 0$ for all values of x.

PTS: 3　　　　REF: 080835ia　　STA: A.G.4　　　TOP: Graphing Exponential Functions

625 ANS:

$(-2, 11)$. $x = \dfrac{-b}{2a} = \dfrac{-(-8)}{2(-2)} = -2$

$y = -2(-2)^2 - 8(-2) + 3 = 11$

PTS: 3　　　　REF: 080934ia　　STA: A.A.41

TOP: Identifying the Vertex of a Quadratic Given Equation

626 ANS:

(S,S), (S,K), **(S,D)**, (K,S), (K,K), **(K,D)**, **(D,S)**, **(D,K)**, (D,D), $\frac{4}{9}$

PTS: 3　　　　REF: fall0736ia　　STA: A.S.19　　　TOP: Sample Space

6

627 ANS:

$$\frac{(10.75)(12.5) - (10.5)(12.25)}{(10.75)(12.5)} \approx 0.043$$

PTS: 3 REF: 081336ia STA: A.M.3 TOP: Error
KEY: area

628 ANS:

$$0.102. \quad \frac{(5.3 \times 8.2 \times 4.1) - (5 \times 8 \times 4)}{5.3 \times 8.2 \times 4.1} = \frac{178.16 - 160}{178.16} = 0.102$$

PTS: 3 REF: 011036ia STA: A.M.3 TOP: Error
KEY: volume and surface area

629 ANS:

$-2, 3.$

$$x^2 - x = 6$$
$$x^2 - x - 6 = 0$$
$$(x - 3)(x + 2) = 0$$
$$x = 3 \text{ or } -2$$

PTS: 3 REF: 011034ia STA: A.A.28 TOP: Roots of Quadratics

630 ANS:

$78. \quad \cos x = \dfrac{6}{28}$

$\quad\quad x \approx 78$

PTS: 3 REF: 061235ia STA: A.A.43 TOP: Using Trigonometry to Find an Angle

631 ANS:

$y = \dfrac{2}{5}x + 2. \quad m = \dfrac{4 - 0}{5 - (-5)} = \dfrac{2}{5}. \quad y = mx + b \quad .$

$$4 = \frac{2}{5}(5) + b$$
$$b = 2$$

PTS: 3 REF: 080836ia STA: A.A.35 TOP: Writing Linear Equations

632 ANS:
$800 - (895)(0.75)(1.08) = 75.05$

PTS: 3 REF: 081334ia STA: A.N.5 TOP: Percents

633 ANS:

$2(x - 4) \geq \dfrac{1}{2}(5 - 3x)$

$4(x - 4) \geq 5 - 3x$

$4x - 16 \geq 5 - 3x$

$\qquad 7x \geq 21$

$\qquad x \geq 3$

PTS: 3   REF: 011234ia   STA: A.A.24   TOP: Solving Inequalities

634 ANS:

81.3, 80, both increase

PTS: 3   REF: 011035ia   STA: A.S.16   TOP: Central Tendency

635 ANS:

$5 - 2\sqrt{3} + \sqrt{9}\sqrt{3} + 2(3) = 5 - 2\sqrt{3} + 3\sqrt{3} + 6 = 11 + \sqrt{3}$

PTS: 3   REF: 061336ia   STA: A.N.3   TOP: Operations with Radicals

636 ANS:

80, 136 $V = lwh = 10 \cdot 2 \cdot 4 = 80$ $SA = 2lw + 2hw + 2lh = 2 \cdot 10 \cdot 2 + 2 \cdot 4 \cdot 2 + 2 \cdot 10 \cdot 4 = 136$
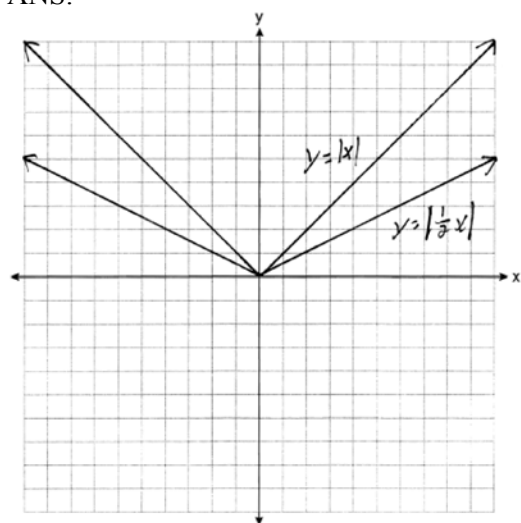
PTS: 3   REF: 081035ia   STA: A.G.2   TOP: Surface Area

637 ANS:

. Graph becomes wider as the coefficient approaches 0.

PTS: 3   REF: 061035ia   STA: A.G.5   TOP: Graphing Absolute Value Functions

638 ANS:

50, 1.5, 10. $\dfrac{\text{distance}}{\text{time}} = \dfrac{60}{1.2} = 50.$ $\dfrac{\text{distance}}{\text{time}} = \dfrac{60}{40} = 1.5.$ $\text{speed} \times \text{time} = 55 \times 2 = 110.$ $120 - 110 = 10$
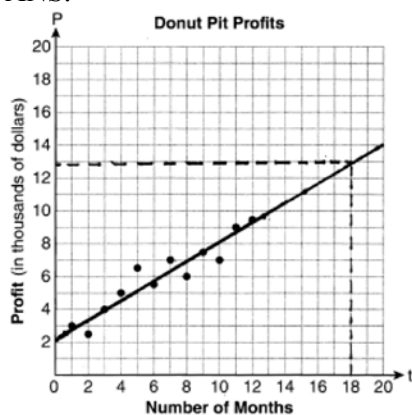
PTS: 3   REF: fall0734ia   STA: A.M.1   TOP: Speed
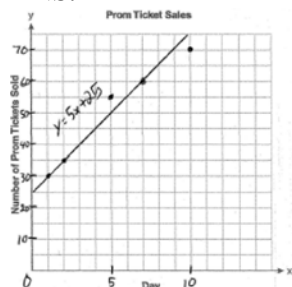
639 ANS:

They will not reach their goal in 18 months.

PTS: 3   REF: 061036ia   STA: A.S.17   TOP: Scatter Plots

640 ANS:

PTS: 3   REF: 060936ia   STA: A.S.8   TOP: Scatter Plots

641 ANS:
$10 + 2d \geq 75$, 33. $10 + 2d \geq 75$

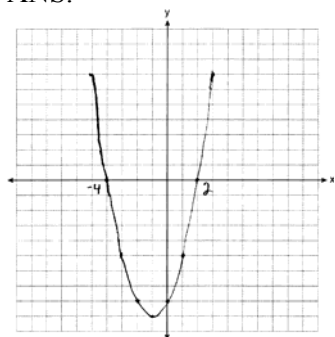$$d \geq 32.5$$

PTS: 3   REF: 060834ia   STA: A.A.6   TOP: Modeling Inequalities

642 ANS:
$5 \times 3 \times 5 \times 3 = 225$. $1 \times 3 \times 5 \times 3 = 45$. $1 \times 2 \times 5 \times 3 = 30$

PTS: 4   REF: 061334ia   STA: A.N.7   TOP: Multiplication Counting Principle

643 ANS:

PTS: 3   REF: 061234ia   STA: A.G.8   TOP: Solving Quadratics by Graphing

644 ANS:

30.4%; no, 23.3%. $\dfrac{7.50 - 5.75}{5.75} = 30.4\%$. $\dfrac{7.50 - 5.75}{7.50} = 23.3\%$

PTS: 3 REF: 080935ia STA: A.N.5 TOP: Percents

645 ANS:

5,583.86. $A = P(1 + R)^t = 5000(1 + 0.0375)^3 \approx 5583.86$

PTS: 3 REF: 060935ia STA: A.A.9 TOP: Exponential Functions

646 ANS:

$2(x + 3)(x - 4) + 2(5)(x - 4) + 2(x + 3)(5)$

$2(x^2 - 4x + 3x - 12) + 10(x - 4) + 10(x + 3)$

$2x^2 - 2x - 24 + 10x - 40 + 10x + 30$

$2x^2 + 18x - 34$

PTS: 3 REF: 061136ia STA: A.G.2 TOP: Surface Area

647 ANS:

(1,A), (1,B), (1,C), (3,A), (3,B), (3,C), (5,A), (5,B), (5,C), (7,A), (7,B), (7,C), (9,A), (9,B), (9,C). 6

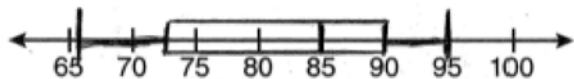PTS: 3 REF: 011334ia STA: A.S.19 TOP: Sample Space

648 ANS:

$\left| \dfrac{(24.2 \times 14.1) - (24 \times 14)}{(24.2 \times 14.1)} \right| = \dfrac{5.22}{341.22} \approx 0.015$

PTS: 3 REF: 011336ia STA: A.M.3 TOP: Error
KEY: area

Integrated Algebra 4 Point Regents Exam Questions
Answer Section

649 ANS:

PTS: 4   REF: 080939ia   STA: A.S.5   TOP: Box-and-Whisker Plots

650 ANS:

$$\frac{4}{12} \times \frac{2}{11} \times \frac{1}{10} = \frac{8}{1320} \quad \frac{6}{12} \times \frac{5}{11} \times \frac{4}{10} + \frac{4}{12} \times \frac{3}{11} \times \frac{2}{10} = \frac{120}{1320} + \frac{24}{1320} = \frac{144}{1320}$$

PTS: 4   REF: 081137ia   STA: A.S.23   TOP: Theoretical Probability
KEY: dependent events

651 ANS:
$259.99 \times 1.07 - 259.99(1 - 0.3) \times 1.07 = 83.46$

PTS: 4   REF: 011239ia   STA: A.N.5   TOP: Percents

652 ANS:

$$\frac{x^2 + 9x + 14}{x^2 - 49} \div \frac{3x + 6}{x^2 + x - 56} = \frac{(x + 7)(x + 2)}{(x + 7)(x - 7)} \cdot \frac{(x + 8)(x - 7)}{3(x + 2)} = \frac{x + 8}{3}$$

PTS: 4   REF: 061037ia   STA: A.A.18   TOP: Multiplication and Division of Rationals
KEY: division

653 ANS:

$26 \times 25 \times 24 \times 23 = 358,800$. $10^6 = 1,000,000$. Use the numeric password since there are over 500,000 employees

PTS: 4   REF: 061239ia   STA: A.N.8   TOP: Permutations

654 ANS:
(H,F,M), (H,F,J), (H,F,S), (H,A,M), (H,A,J), (H,A,S), (C,F,M), (C,F,J), (C,F,S), (C,A,M), (C,A,J), (C,A,S), (T,F,M), (T,F,J), (T,F,S), (T,A,M), (T,A,J), (T,A,S). There are 18 different kids' meals, 12 do not include juice and 6 include chicken nuggets.

PTS: 4   REF: 010939ia   STA: A.S.19   TOP: Sample Space

655 ANS:

$$\frac{m}{5} + \frac{3(m-1)}{2} = 2(m-3)$$

$$\frac{2m}{10} + \frac{15(m-1)}{10} = 2m - 6$$

$$\frac{17m - 15}{10} = 2m - 6$$

$$17m - 15 = 20m - 60$$
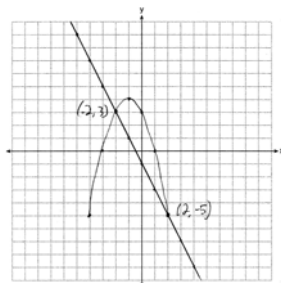
$$45 = 3m$$

$$15 = m$$

PTS: 4   REF: 081139ia   STA: A.A.25
TOP: Solving Equations with Fractional Expressions

656 ANS:

PTS: 4   REF: 081337ia   STA: A.G.9   TOP: Quadratic-Linear Systems

657 ANS:

$$0.029. \quad \frac{[2\pi(5.1)^2 + 2\pi(5.1)(15.1)] - [2\pi(5)^2 + 2\pi(5)(15)]}{2\pi(5.1)^2 + 2\pi(5.1)(15.1)} \approx \frac{647.294 - 628.319}{647.294} \approx 0.029$$

PTS: 4   REF: 011137ia   STA: A.M.3   TOP: Error
KEY: volume and surface area

658 ANS:

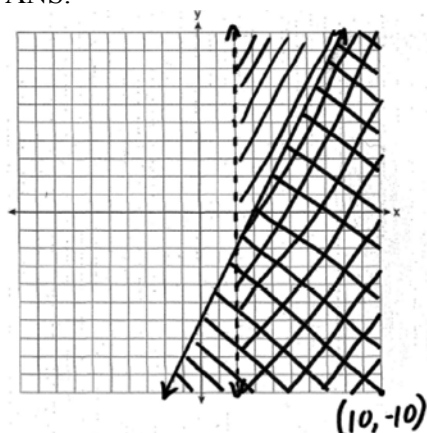$(-2, 5)$. $3x + 2y = 4$ $12x + 8y = 16$. $3x + 2y = 4$

$4x + 3y = 7$ $12x + 9y = 21$ $3x + 2(5) = 4$

$y = 5$ $3x = -6$

$x = -2$

PTS: 4   REF: 010937ia   STA: A.A.10   TOP: Solving Linear Systems

659 ANS:

(10, -10)

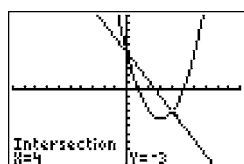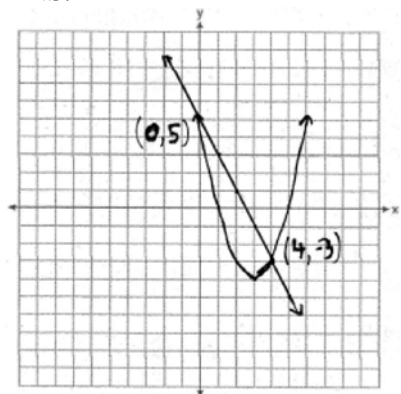PTS: 4 REF: 010938ia STA: A.G.7 TOP: Systems of Linear Inequalities

660 ANS:

$\tan 48 = \dfrac{9}{x}$. $\sin 48 = \dfrac{9}{y}$

$x \approx 8$ $y \approx 12$

PTS: 4 REF: 011338ia STA: A.A.44 TOP: Using Trigonometry to Find a Side

661 ANS:

PTS: 4 REF: fall0738ia STA: A.G.9 TOP: Quadratic-Linear Systems

662 ANS:
(C,B,T), (C,B,5), (C,N,T), (C,N,5), (C,2,T), (C,2,5), (F,B,T), (F,B,5), (F,N,T), (F,N,5), (F,2,T), (F,2,5). 1, 2.

PTS: 4 REF: 081237ia STA: A.S.19 TOP: Sample Space

663 ANS:

84, 71 $\sin 50 = \dfrac{x}{110}$ $\cos 50 = \dfrac{y}{110}$

$x \approx 84$ $y \approx 71$

PTS: 4 REF: 081039ia STA: A.A.44 TOP: Using Trigonometry to Find a Side

664 ANS:
(T,J,F), (T,J,N), (T,K,F), (T,K,N), (T,C,F), (T,C,N), (B,J,F), (B,J,N), (B,K,F), (B,K,N), (B,C,F), (B,C,N), (S,J,F), (S,J,N), (S,K,F), (S,K,N), (S,C,F), (S,C,N). 3, 12.

PTS: 4　　　　REF: 061138ia　　　STA: A.S.19　　　TOP: Sample Space

665 ANS:

39, 63. $\tan 52 = \dfrac{50}{x}$. $\sin 52 = \dfrac{50}{x}$

$x \approx 39$　　　$x \approx 63$

PTS: 4　　　　REF: 060937ia　　　STA: A.A.44　　　TOP: Using Trigonometry to Find a Side

666 ANS:
(W,H,A), (W,H,S), (W,T,A), (W,T,S), (W,B,A), (W,B,S), (R,H,A), (R,H,S), (R,T,A), (R,T,S), (R,B,A), (R,B,S). 8, 3

PTS: 4　　　　REF: 011238ia　　　STA: A.S.19　　　TOP: Sample Space

667 ANS:

$-\dfrac{9}{4}$.　　$\dfrac{3}{4} = \dfrac{-(x+11)}{4x} + \dfrac{1}{2x}$

$\dfrac{3}{4} = \dfrac{-x-11}{4x} + \dfrac{2}{4x}$

$\dfrac{3}{4} = \dfrac{-x-9}{4x}$

$12x = -4x - 36$

$16x = -36$

$x = -\dfrac{9}{4}$

PTS: 4　　　　REF: 061137ia　　　STA: A.A.26　　　TOP: Solving Rationals

668 ANS:

54, 23. $\cos A = \dfrac{17}{29}$. $\sqrt{29^2 - 17^2} \approx 23$

$x \approx 54$

PTS: 4　　　　REF: 081238ia　　　STA: A.A.43　　　TOP: Using Trigonometry to Find an Angle

669 ANS:
$m = 50¢, p = 15¢$. $3m + 2p = 1.80$. $9m + 6p = 5.40$. $4(.50) + 6p = 2.90$

$\quad\quad\quad\quad 4m + 6p = 2.90 \quad 4m + 6p = 2.90 \quad\quad\quad 6p = .90$

$\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad 5m = 2.50 \quad\quad\quad\quad p = \$0.15$

$\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad m = \$0.50$

PTS: 4　　　　REF: 080837ia　　　STA: A.A.7　　　TOP: Writing Linear Systems

670 ANS:

$$\frac{2}{3x} + \frac{12}{3x} = \frac{7}{x+1}$$

$$\frac{14}{3x} = \frac{7}{x+1}$$

$$21x = 14x + 14$$

$$7x = 14$$

$$x = 2$$

PTS: 4   REF: 061337ia   STA: A.A.26   TOP: Solving Rationals

671 ANS:

24,435.19. $30000(.95)^4 \approx 24435.19$

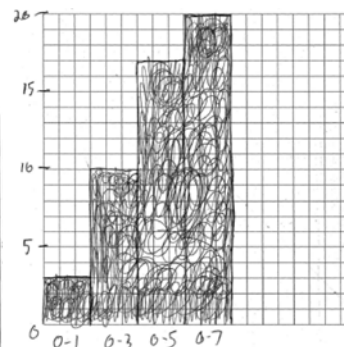PTS: 4   REF: 011138ia   STA: A.A.9   TOP: Exponential Functions

672 ANS:

15,600,000, 4,368,000. $10 \times 10 \times 10 \times 26 \times 25 \times 24 = 15,600,000$. $10 \times 9 \times 8 \times 26 \times 25 \times 24 = 11,232,000$. $15,600,000 - 11,232,000 = 4,368,000$.

PTS: 4   REF: 011037ia   STA: A.N.8   TOP: Permutations
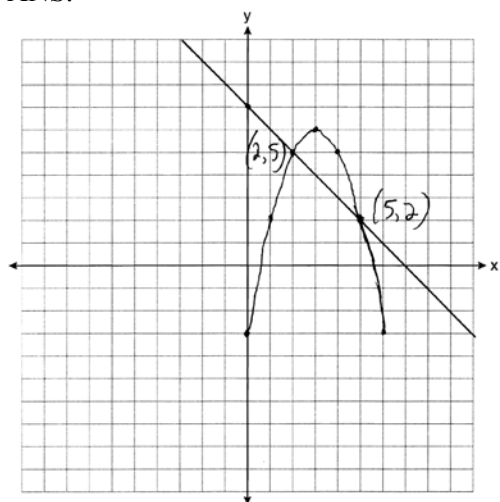
673 ANS:

Number of Days Outside

Interval	Tally	Frequency
0–1	|||	3
2–3	||||| ||	7
4–5	||||| ||	7
6–7	|||	3

Number of Days Outside

Interval	Cumulative Frequency
0–1	3
0–3	10
0–5	17
0–7	20

PTS: 4   REF: 080838ia   STA: A.S.5

TOP: Frequency Histograms, Bar Graphs and Tables   KEY: cumulative frequency histograms

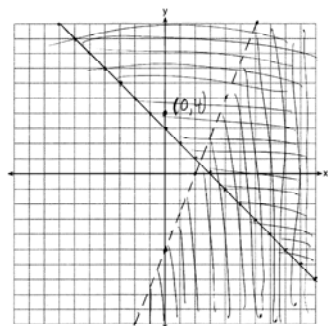674 ANS:

PTS: 4   REF: 081138ia   STA: A.G.9   TOP: Quadratic-Linear Systems

675 ANS:

PTS: 4   REF: 081239ia   STA: A.G.7   TOP: Systems of Linear Inequalities

676 ANS:

618.45, 613.44, 0.008. $21.7 \times 28.5 = 618.45$. $21.6 \times 28.4 = 613.44$. $\left| \dfrac{618.45 - 613.44}{613.44} \right| \approx 0.008$. An error of less

than 1% would seem to be insignificant.

PTS: 4   REF: 060838ia   STA: A.M.3   TOP: Error
KEY: area

677 ANS:
315,000, 180,000, the median better represents value since it is closer to more prices than the mean.

PTS: 4   REF: 060839ia   STA: A.S.4
TOP: Frequency Histograms, Bar Graphs and Tables

678 ANS:
225000, 175000, the median better represents the value since it is closer to more values than the mean.
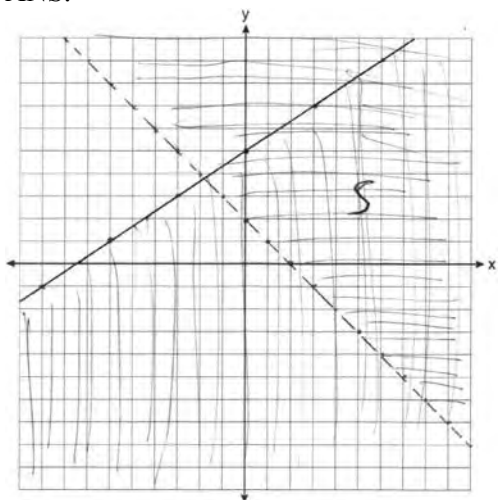
PTS: 4   REF: fall0737ia   STA: A.S.4
TOP: Frequency Histograms, Bar Graphs and Tables

679 ANS:

PTS: 4 REF: 011139ia STA: A.G.7 TOP: Systems of Linear Inequalities

680 ANS:

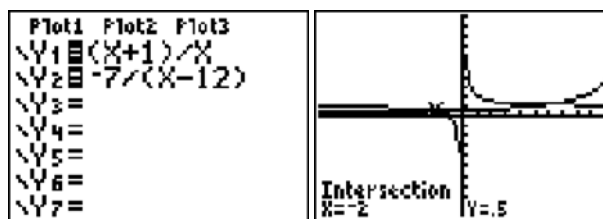

$6, -2.$ $\dfrac{x+1}{x} = \dfrac{-7}{x-12}$

$(x+1)(x-12) = -7x$

$x^2 - 11x - 12 = -7x$

$x^2 - 4x - 12 = 0$

$(x-6)(x+2) = 0$

$x = 6 \text{ or } -2$

PTS: 4 REF: fall0739ia STA: A.A.26 TOP: Solving Rationals

681 ANS:

$\dfrac{3x(x+3)}{(x+3)(x+2)} \times \dfrac{(x-3)(x+2)}{(x+3)(x-3)} = \dfrac{3x}{x+3}$

PTS: 4 REF: 081338ia STA: A.A.18 TOP: Multiplication and Division of Rationals
KEY: division

682 ANS:

6, 8, 10. Three consecutive even integers are x, $x + 2$ and $x + 4$. $(x + 2)(x + 4) = 10x + 20$

$$x^2 + 6x + 8 = 10x + 20$$

$$x^2 - 4x - 12 = 0$$

$$(x - 6)(x + 2) = 0$$

$$x = 6$$

PTS: 4   REF: 011039ia   STA: A.A.8   TOP: Writing Quadratics

683 ANS:

$$\frac{x - 7}{3x} \cdot \frac{2x^2 - 8x - 42}{6x^2} \div \frac{x^2 - 9}{x^2 - 3x} = \frac{2(x^2 - 4x - 21)}{6x^2} \cdot \frac{x(x - 3)}{(x + 3)(x - 3)} = \frac{(x - 7)(x + 3)}{3x} \cdot \frac{1}{x + 3} = \frac{x - 7}{3x}$$

PTS: 4   REF: 080937ia   STA: A.A.18   TOP: Multiplication and Division of Rationals
KEY: division

684 ANS:

4. $3(x + 1) - 5x = 12 - (6x - 7)$

$$3x + 3 - 5x = 12 - 6x + 7$$
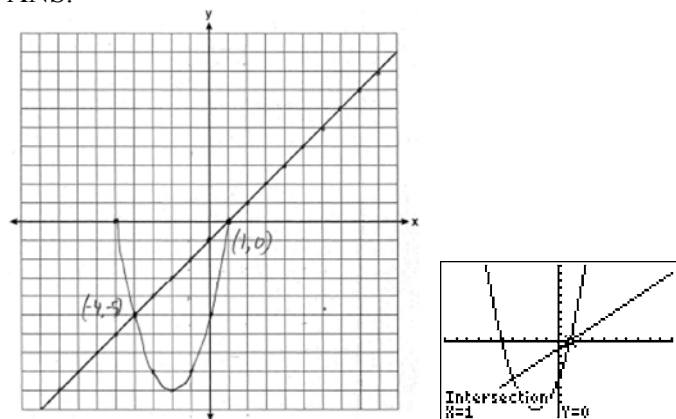
$$-2x + 3 = -6x + 19$$

$$4x = 16$$

$$x = 4$$

PTS: 4   REF: 061238ia   STA: A.A.22   TOP: Solving Equations

685 ANS:

PTS: 4   REF: 080839ia   STA: A.G.9   TOP: Quadratic-Linear Systems

686 ANS:

7, 9, 11. $x + (x + 2) + (x + 4) = 5(x + 2) - 18$

$$3x + 6 = 5x - 8$$

$$14 = 2x$$

$$7 = x$$

PTS: 4　　　REF: 011237ia　　STA: A.A.6　　　TOP: Modeling Equations

687 ANS:

$\dfrac{5}{8} \times \dfrac{3}{7} = \dfrac{15}{56}$. $\dfrac{5}{8} \times \dfrac{4}{7} = \dfrac{20}{56}$. $\dfrac{20}{56} + \dfrac{3}{8} \times \dfrac{2}{7} = \dfrac{26}{56}$

PTS: 4　　　REF: 061338ia　　STA: A.S.23　　TOP: Theoretical Probability

KEY: dependent events

688 ANS:

Hat A, add 1 not green to Hat A, add 11 green to Hat B, and add none to Hat C.

PTS: 4　　　REF: 081038ia　　STA: A.S.22　　TOP: Theoretical Probability

689 ANS:

Area of rectangle minus area of semicircle: $(5 + 6 + 5) \times 5 - \dfrac{\pi \times 3^2}{2} \approx 65.86$

PTS: 4　　　REF: 061339ia　　STA: A.G.1　　　TOP: Compositions of Polygons and Circles

KEY: area

690 ANS:
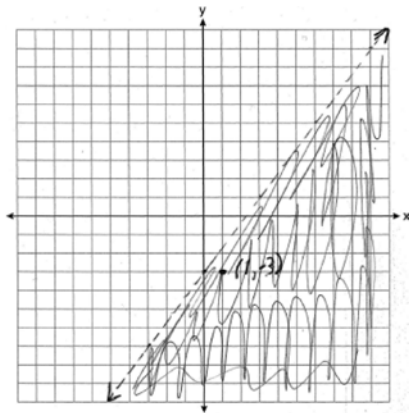
$(1, -3)$ is in the solution set. $4(1) - 3(-3) > 9$

$$4 + 9 > 9$$

PTS: 4　　　REF: 011038ia　　STA: A.G.6　　TOP: Linear Inequalities

691 ANS:

$w(w + 15) = 54$, 3, 18.

$$w(w + 15) = 54$$
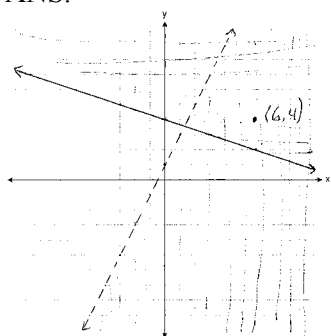$$w^2 + 15w - 54 = 0$$
$$(w + 18)(w - 3) = 0$$
$$w = 3$$

PTS: 4   REF: 060837ia   STA: A.A.8   TOP: Geometric Applications of Quadratics

692 ANS:

Carol's, by 14.9. $V_M = 5 \times 3.5 \times 7 = 122.5$. $V_C = \pi \times 2.5^2 \times 7 \approx 137.4$. $137.4 - 122.5 = 14.9$

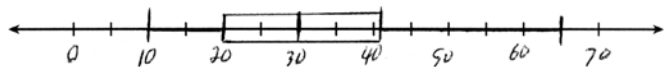PTS: 4   REF: 061237ia   STA: A.G.2   TOP: Volume

693 ANS:

PTS: 4   REF: 081037ia   STA: A.G.7   TOP: Systems of Linear Inequalities

694 ANS:

 . Three scores are above 41.

PTS: 4   REF: 011337ia   STA: A.S.5   TOP: Box-and-Whisker Plots

695 ANS:

$\dfrac{12}{20} \times \dfrac{8}{19} + \dfrac{8}{20} \times \dfrac{12}{19} = \dfrac{192}{380}$. $1 - P(BB) = 1 - \left(\dfrac{8}{20} \times \dfrac{7}{19} \right) = \dfrac{380}{380} - \dfrac{56}{380} = \dfrac{324}{380}$

PTS: 4   REF: 081339ia   STA: A.S.23   TOP: Theoretical Probability
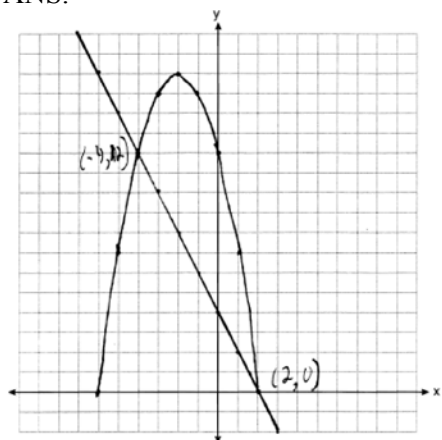KEY: dependent events

696 ANS:

30, 20, 71-80, 81-90 and 91-100

PTS: 4   REF: 061038ia   STA: A.S.9
TOP: Frequency Histograms, Bar Graphs and Tables

697 ANS:

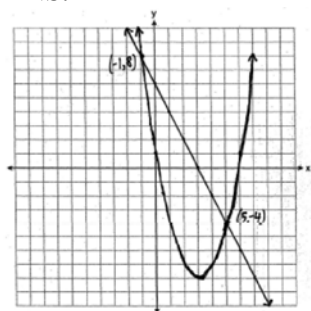
PTS: 4   REF: 061039ia   STA: A.G.9   TOP: Quadratic-Linear Systems

698 ANS:

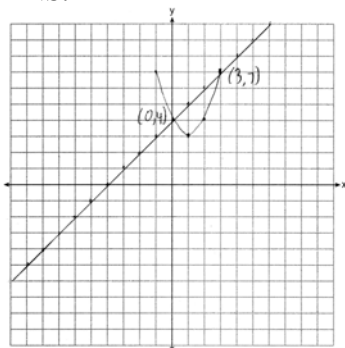
PTS: 4   REF: 060939ia   STA: A.G.9   TOP: Quadratic-Linear Systems

699 ANS:

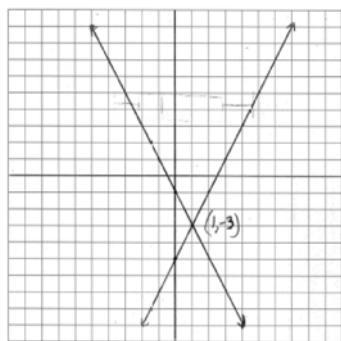
PTS: 4   REF: 011339ia   STA: A.G.9   TOP: Quadratic-Linear Systems

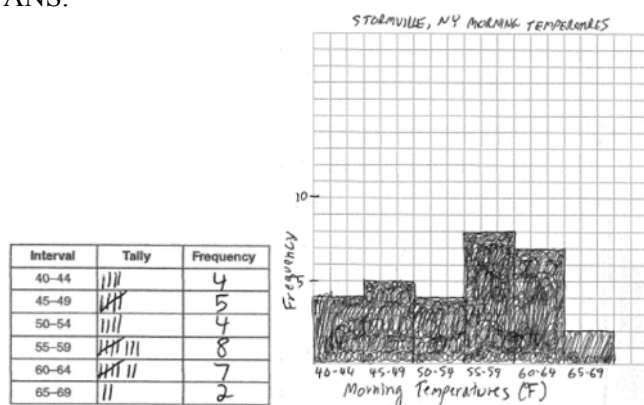700 ANS:

PTS: 4   REF: 080938ia   STA: A.G.7   TOP: Solving Linear Systems

701 ANS:

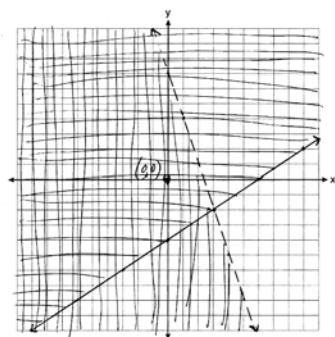PTS: 4   REF: 060938ia   STA: A.S.5
TOP: Frequency Histograms, Bar Graphs and Tables   KEY: frequency histograms

702 ANS:

PTS: 4   REF: 061139ia   STA: A.G.7   TOP: Systems of Linear Inequalities