

# INTEGRATED ALGEBRA

The University of the State of New York  
REGENTS HIGH SCHOOL EXAMINATION

# INTEGRATED ALGEBRA

Tuesday, January 22, 2013 — 9:15 a.m. to 12:15 p.m., only

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School Name: www.JMAP.ORG

The possession or use of any communications device is strictly prohibited when taking this examination. If you have or use any communications device, no matter how briefly, your examination will be invalidated and no score will be calculated for you.

Print your name and the name of your school on the lines above.

A separate answer sheet for Part I has been provided to you. Follow the instructions from the proctor for completing the student information on your answer sheet.

This examination has four parts, with a total of 39 questions. You must answer all questions in this examination. Record your answers to the Part I multiple-choice questions on the separate answer sheet. Write your answers to the questions in Parts II, III, and IV directly in this booklet. All work should be written in pen, except graphs and drawings, which should be done in pencil. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. The formulas that you may need to answer some questions in this examination are found at the end of the examination. This sheet is perforated so you may remove it from this booklet.

Scrap paper is not permitted for any part of this examination, but you may use the blank spaces in this booklet as scrap paper. A perforated sheet of scrap graph paper is provided at the end of this booklet for any question for which graphing may be helpful but is not required. You may remove this sheet from this booklet. Any work done on this sheet of scrap graph paper will *not* be scored.

When you have completed the examination, you must sign the statement printed at the end of the answer sheet, indicating that you had no unlawful knowledge of the questions or answers prior to the examination and that you have neither given nor received assistance in answering any of the questions during the examination. Your answer sheet cannot be accepted if you fail to sign this declaration.

Notice...

A graphing calculator and a straightedge (ruler) must be available for you to use while taking this examination.

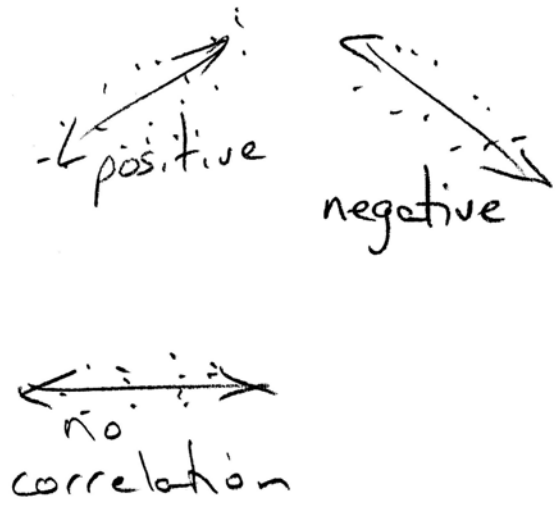
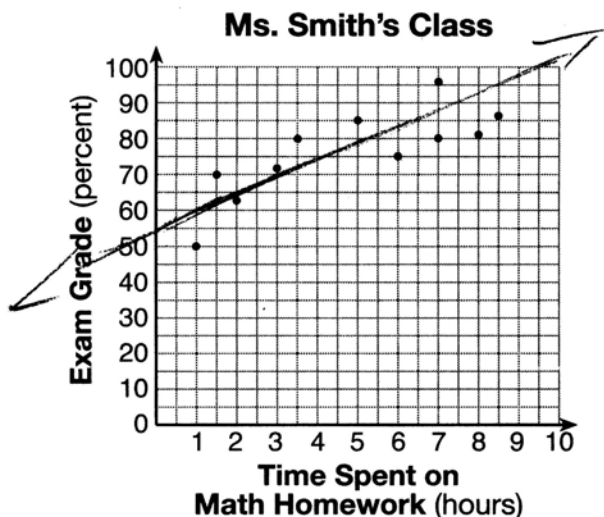
**DO NOT OPEN THIS EXAMINATION BOOKLET UNTIL THE SIGNAL IS GIVEN.**

Part I

Answer all 30 questions in this part. Each correct answer will receive 2 credits. No partial credit will be allowed. Record your answers on your separate answer sheet. [60]

Use this space for computations.

- 1 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.



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

- 2 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

$$9 \times \$3.98 = \$35.82$$

round to nearest dollar

$$\frac{\text{gallons}}{\text{miles}} \left( \frac{1}{20} = \frac{x}{180} \right)$$

$$(1)(180) = (20)(x)$$

$$180 = 20x$$

$$\frac{180}{20} = \frac{20x}{20}$$

$$9 = x$$

The car needs 9 gallons to go 180 miles

Use this space for computations.

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

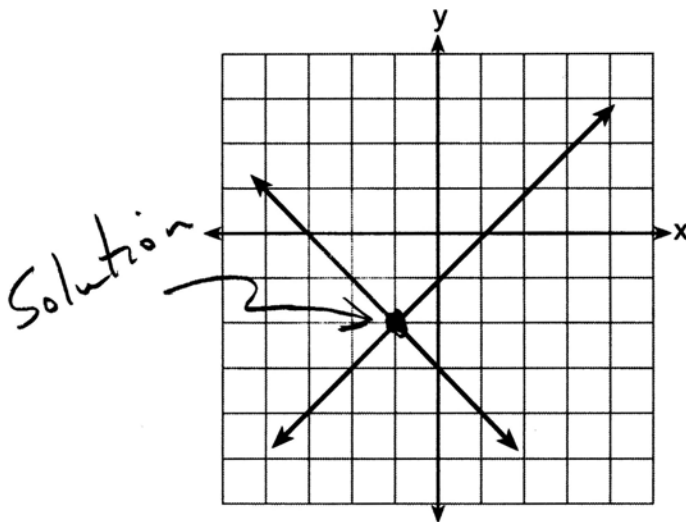
(1)  $dx$

(3)  $x + 7d$

(2)  $7dx$

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

4 What is the solution of the system of equations shown in the graph below?



(1)  $(1,0)$  and  $(-3,0)$

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

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

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

The solution of a system of equations is the set of values that solves both equations at the same time. On a graph, it is where the equations intersect.

5 The solution of the equation  $5 - 2x = -4x - 7$  is

(1) 1

(3) -2

(2) 2

(4) -6

$$\begin{array}{r}
 5 - 2x = -4x - 7 \\
 +7 \qquad \qquad +7 \\
 \hline
 12 - 2x = -4x + 0 \\
 +2x \quad +2x \\
 \hline
 12 + 0x = -2x \\
 12 \qquad = -2x \\
 \frac{12}{-2} \qquad = \frac{-2x}{-2} \\
 -6 \qquad = x
 \end{array}$$

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

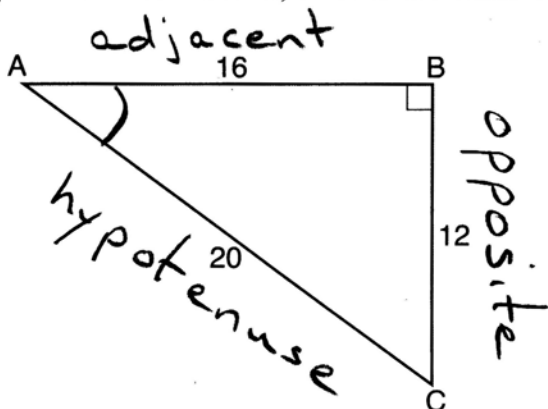
- (1)  $(10n + 1)(10n - 1)$       (3)  $(50n + 1)(50n - 1)$   
 (2)  $(10n - 1)(10n - 1)$       (4)  $(50n - 1)(50n - 1)$

$$a^2 - b^2 = (a+b)(a-b)$$



Use this space for computations.  
 Difference of Perfect Squares  
 $100n^2 - 1 = (10n+1)(10n-1)$

7 In right triangle ABC shown below, what is the value of  $\cos A$ ?



See Formula Page  
 $\cos A = \frac{\text{adjacent}}{\text{hypotenuse}}$   
 $\cos A = \frac{16}{20}$

- (1)  $\frac{12}{20}$       (3)  $\frac{20}{12}$   
 (2)  $\frac{16}{20}$       (4)  $\frac{20}{16}$

8 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?

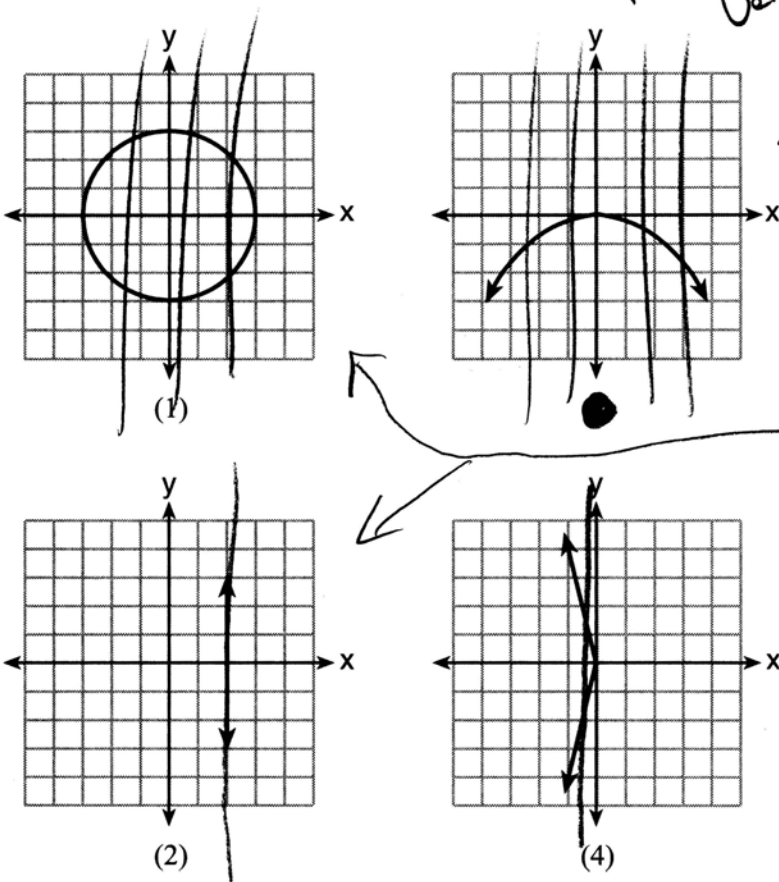
- (1)  $\frac{5}{11}$       (3)  $\frac{6}{11}$   
 (2)  $\frac{5}{10}$        (4)  $\frac{6}{10}$

start	First Pull	Next Pull
5 green	- 1 green = 4 green	
6 red	- 0 red = 6 red	
11 total	- 1 total = 10 total	

$$P(\text{red}) = \frac{6}{10}$$

9 Which graph represents a function?

Use this space for computations.



Passes Vertical Line Test

These three fail the Vertical Line Test.

Vertical line test.  
 1) Draw many vertical lines through the graph of a function.  
 2) If the graph touches a vertical line more than once, it is not a function.

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

$20\% = .2$

$100\% + 20\% = 1.2$

Eliminate the two answers because the population will get smaller every year if you multiply by less than 1.

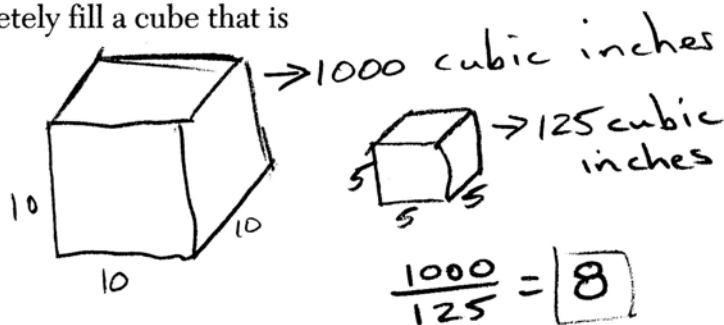
Use this space for computations.

11 Which verbal expression is represented by  $2(x + 4)$ ?

- 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

12 How many cubes with 5-inch sides will completely fill a cube that is 10 inches on a side?

- (1) 50
- 8
- (2) 25
- (4) 4



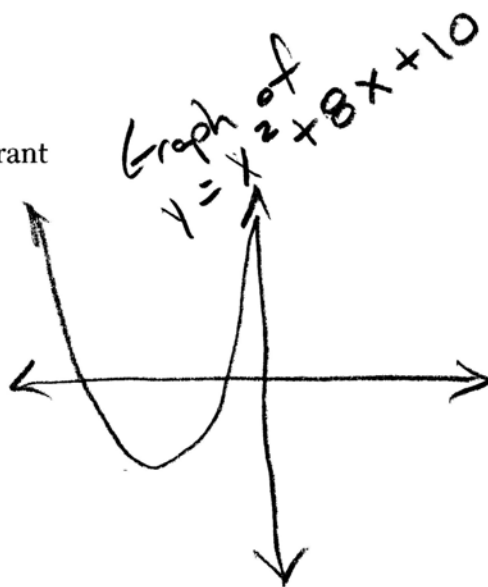
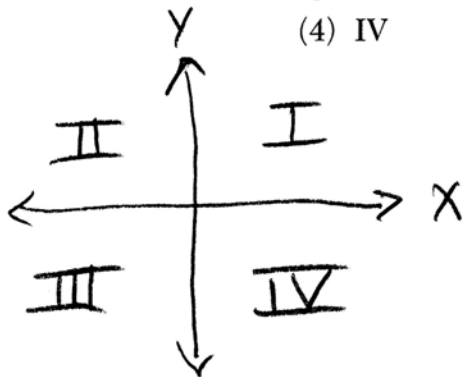
13 A school newspaper will survey students about the quality of the school's lunch program. Which method will create the *least* biased results?

- (1) Twenty-five vegetarians are randomly surveyed.
- 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.

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

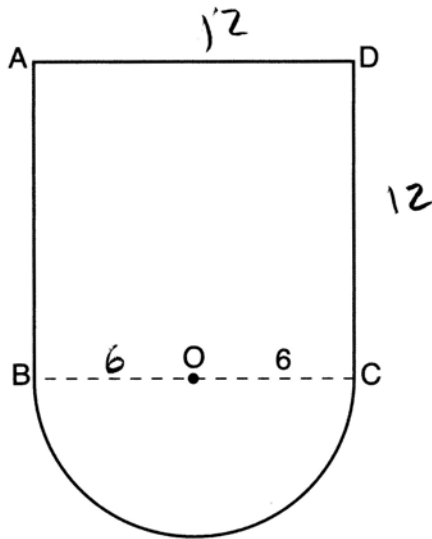
- (1) I
- (2) II
- III
- (4) IV

Names of the Quadrants



15 In the figure below,  $ABCD$  is a square and semicircle  $O$  has a radius of 6.

Use this space for computations.



$$A_{\square} = s^2$$

$$A_{\square} = 12^2 = \boxed{144}$$

$$A_{\odot} = \pi r^2$$

$$A_{\odot} = \pi 6^2$$

$$A_{\odot} = 36\pi$$

One half  $A_{\odot} = \boxed{18\pi}$

Area  $\square + \frac{1}{2}A_{\odot} = \boxed{144 + 18\pi}$

What is the area of the figure?

- (1)  $36 + 6\pi$                         $144 + 18\pi$   
 (2)  $36 + 18\pi$                     (4)  $144 + 36\pi$

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

- (1)  $6xy^4 - 4x^5$                       (3)  $6x^2y^3 - 4x^6y$   
  $6xy^4 - 4x^5 + 1$                     (4)  $6x^2y^3 - 4x^6y + 1$

$$\frac{24x^2y^6}{4xy^2} - \frac{16x^6y^2}{4xy^2} + \frac{4xy^2}{4xy^2}$$

$$6x^{(2-1)}y^{(6-2)} - 4x^{(6-1)}y^{(2-2)} + 1x^{(1-1)}y^{(2-2)}$$

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

$$\boxed{6xy^4 - 4x^5 + 1}$$

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

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

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

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

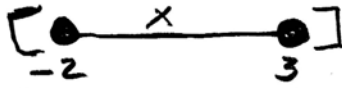
~~(4)~~  $\frac{75 \text{ km}}{1 \text{ hr}} \times \frac{1,000 \text{ m}}{1 \text{ km}} \times \frac{60 \text{ min}}{1 \text{ hr}}$

$$= \frac{(75)(1)(1)(\text{km})(\text{km})(\text{hr})}{(1)(1,000)(60)(\text{hr})(\text{m})(\text{min})} = \frac{75 \text{ km}^2 \text{ hr}}{60,000 \text{ hr} \cdot \text{m} \cdot \text{min}}$$

$$= \frac{(75)(1)(60)(\text{km})(\text{km})(\text{min})}{(1)(1,000)(1)(\text{hr})(\text{m})(\text{hr})} = \frac{4500 \text{ km}^2 \text{ min}}{1,000 \text{ hr}^2 \text{ m}}$$

$$= \frac{(75)(1,000)(1)(\text{km})(\text{m})(\text{hr})}{(1)(1)(60)(\text{hr})(\text{km})(\text{min})} = \frac{75,000 \text{ m}}{60 \text{ min}}$$

$$= \frac{(75)(1,000)(60)(\text{km})(\text{m})(\text{min})}{(1)(1)(1)(\text{hr})(\text{km})(\text{hr})} = \frac{4,500,000 \text{ m min}}{1 \text{ hr}^2}$$



18 The inequality  $-2 \leq x \leq 3$  can be written as

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

Use this space for computations.

$[ ]$   $( )$   
 $\leq$   $<$   
 $\geq$   $>$

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

- (1)  $2 \times 10^4$  (2)  $2 \times 10^{10}$   
 (3)  $2 \times 10^{-4}$  (4)  $2 \times 10^{-10}$

$$\frac{6 \times 10^{-7}}{3 \times 10^{-3}} = \left(\frac{6}{3}\right) \left(\frac{10^{-7}}{10^{-3}}\right)$$

$$(2) 10^{(-7 - (-3))}$$

$$2(10^{-4})$$

20 The roots of the equation  $x^2 - 14x + 48 = 0$  are

- (1)  $-6$  and  $-8$  (3)  $6$  and  $-8$   
 (2)  $-6$  and  $8$  (4)  $6$  and  $8$

48  
 1 48  
 2 24  
 3 16  
 4 12

-6 -8

$$x^2 - 14x + 48 = 0$$

$$(x-6)(x-8) = 0$$

factors  $x-6=0$  and  $x-8=0$   
 roots  $x=6$   $x=8$

21 If  $x = -3$ , what is the value of  $|x - 4| - x^2$ ?

- (1)  $-8$  (3)  $7$   
 (2)  $-2$  (4)  $16$

$$|x-4| - x^2$$

$$|-3-4| - (-3)^2$$

$$|-7| - (9) \rightarrow 7 - 9 \rightarrow -2$$

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

- (1)  $y = \frac{2}{3}x - 4$  (3)  $y = \frac{3}{2}x - 4$   
 (2)  $y = -\frac{2}{3}x + 4$  (4)  $y = -\frac{3}{2}x + 4$

Parallel lines have  
 - same slopes  
 - different y-intercepts

$$\begin{array}{r} 2x - 3y = 9 \\ -2x \qquad -2x \\ \hline -3y = 9 - 2x \end{array}$$

$$\frac{-3y}{-3} = \frac{-2x+9}{-3} \rightarrow y = \frac{2}{3}x - 3$$

$$y = mx + b$$

$\rightarrow$  slope  $\rightarrow$  y-intercept



Use this space for computations.

23 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)  $(-1, 2)$~~

$x - y > 1$   
 $+y \quad +y$

$x > 1 + y$   
 $-1 \quad -1$

$x - 1 > y \rightarrow$

Input for calculator

$y < x - 1$

check  
 $(2, -1)$

$y \leq 3x + 1$   
 $-1 \leq 3(2) + 1$   
 $-1 \leq 6 + 1$   
 $-1 \leq 7$  True

$x - y > 1$   
 $2 - (-1) > 1$   
 $2 + 1 > 1$   
 $3 > 1$  true

24 Which equation represents the line that passes through the point  $(-3, 4)$  and is parallel to the x-axis?

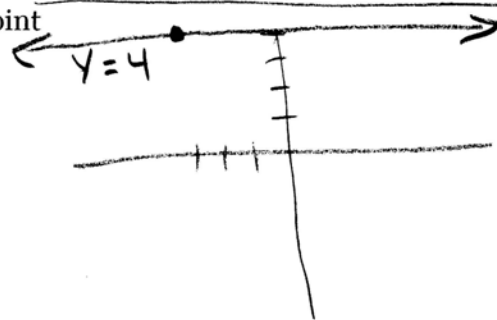
(1)  $x = 4$

(2)  $x = -3$

(3)  $y = 4$

(4)  $y = -3$

$y = mx + b$   
 $y = 0x + 4$   
 $y = 4$



25 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

$P(\text{odd}) = \frac{7 + 14 + 20}{75} = \frac{41}{75}$

$P(\text{even}) = \frac{22 + 6 + 6}{75} = \frac{34}{75}$

$P(2 \text{ or } 4) = \frac{22 + 6}{75} = \frac{28}{75}$

$P(3 \text{ or less}) = \frac{7 + 22 + 14}{75} = \frac{43}{75}$

Based on these results, which statement is true?

~~(1)  $P(\text{odd}) < P(\text{even})$~~

~~(3)  $P(\text{even}) < P(2 \text{ or } 4)$~~

~~(2)  $P(3 \text{ or less}) < P(\text{odd})$~~

(4)  $P(2 \text{ or } 4) < P(3 \text{ or less})$

$\frac{43}{75} < \frac{41}{75}$

$\frac{28}{75} < \frac{43}{75}$

26 Given:

$x$	1	2	3	4	5	6	7	8	9	10
$x^2$	1	4	9	16	25	36	49	64	81	100

$A = \{4, 9, 16, 25, 36, 49, 64, 81, 100\}$   
A = {perfect square integers from 4 to 100, inclusive}

$B = \{16, 36, 49, 64\}$

The complement of set B in the universal set A is

(1)  $\{9, 25, 81\}$

(3)  $\{1, 4, 9, 25, 81, 100\}$

(2)  $\{4, 9, 25, 81, 100\}$

(4)  $\{4, 16, 36, 49, 64, 100\}$

Use this space for computations.

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

(1)  $\frac{x-2}{2}$

(3)  $\frac{x+2}{2}$

(2)  $x-1$

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

$$\frac{2x^2 + 10x - 28}{4x + 28}$$

$$\frac{2(x^2 + 5x - 14)}{4(x+7)}$$

$$\frac{2(x-2)(x+7)}{2 \cdot 2(x+7)} \rightarrow \frac{x-2}{2}$$

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

(1) 6

(3)  $\frac{4}{13}$

(2) 0

(4)  $\frac{6}{29}$

Check  $\frac{1}{7} + \frac{2(6)}{3} = \frac{15(6)-3}{21}$

$\frac{1}{7} + \frac{12}{3} = \frac{87}{21} \rightarrow 4.1428 = 4.1428$  True

Multiply by 21

$$\left(\frac{3}{3}\right)\left(\frac{1}{7}\right) + \left(\frac{2x}{3}\right)\left(\frac{7}{7}\right) = \frac{15x-3}{21}$$

$$\frac{3}{21} + \frac{14x}{21} = \frac{15x-3}{21}$$

$$3 + 14x = 15x - 3$$

$$6 = x$$

29 Which statement is true about the data set 4, 5, 6, 6, 7, 9, 12?

(1) mean = mode

(3) mean < median

4 5 6 6 7 9 12

(2) mode = median  
6 = 6

(4) mode > mean  
6 > 7

mode = 6  
mean =  $\frac{49}{7} = 7$

Median

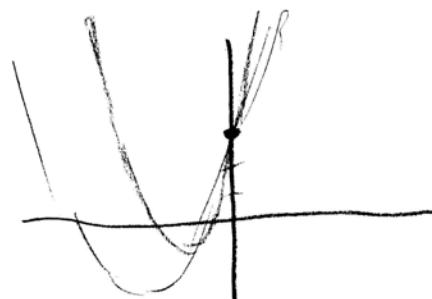
30 How is the graph of  $y = x^2 + 4x + 3$  affected when the coefficient of  $x^2$  is changed to a smaller positive number?

(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.



From Graphing Calculator

$$y = ax^2 + bx + c$$

$$y = x^2 + 4x + 3$$

$$y = \frac{1}{2}x^2 + 4x + 3$$

Part II

Answer all 3 questions in this part. Each correct answer will receive 2 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [6]

31 Express  $4\sqrt{75}$  in simplest radical form.

$$4\sqrt{75}$$

$$4\sqrt{25}\sqrt{3}$$

$$(4)(5)\sqrt{3}$$

$$20\sqrt{3}$$

32 Factor completely:  $5x^3 - 20x^2 - 60x$

$$5x^3 - 20x^2 - 60x$$

$$5(x^3 - 4x^2 - 12x)$$

$$5(x)(x^2 - 4x - 12)$$

$$\boxed{5x(x+2)(x-6)}$$

$$x^2 - 4x - 12$$

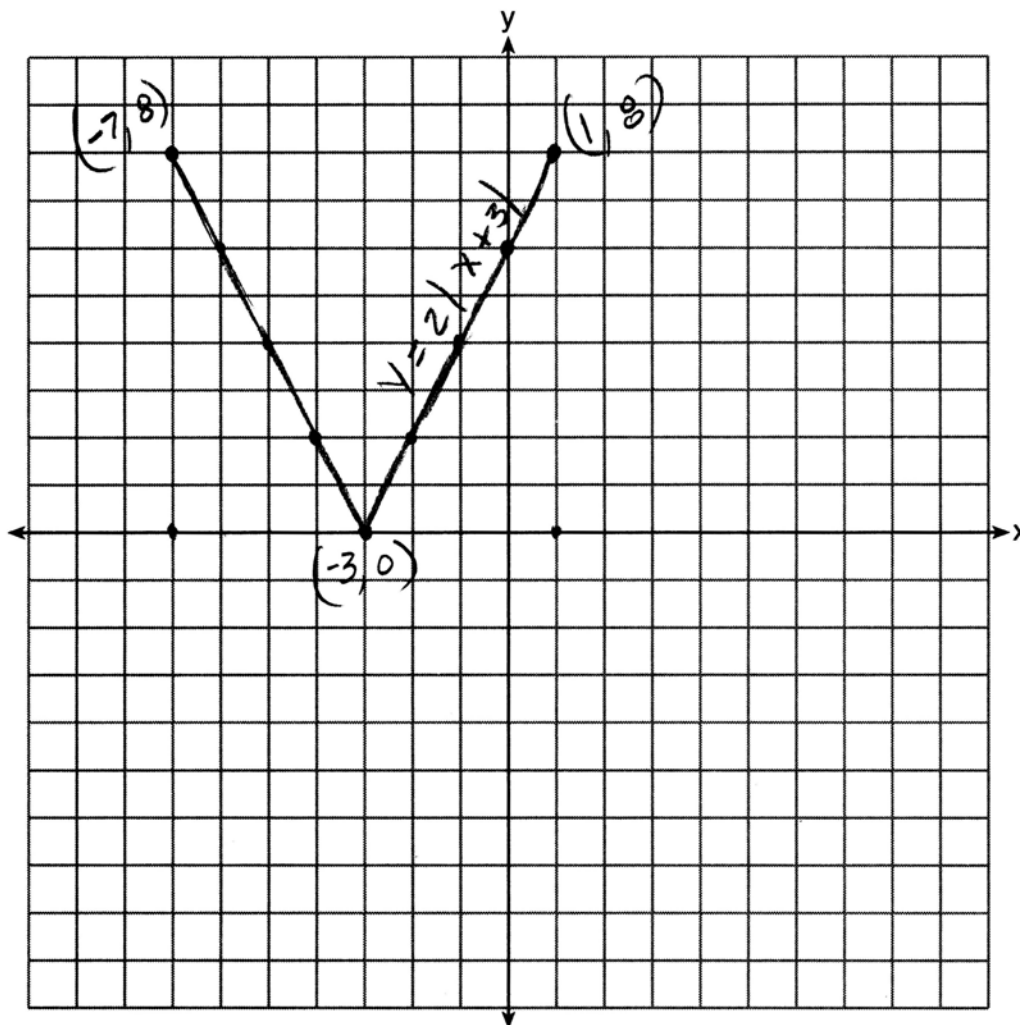
$$\begin{array}{l} | 12 \\ \hline \end{array}$$

$$1 \quad 12$$

$$\textcircled{+2 \quad -6}$$

$$(x+2)(x-6)$$

33 On the set of axes below, graph  $y = 2|x + 3|$ . Include the interval  $-7 \leq x \leq 1$ .



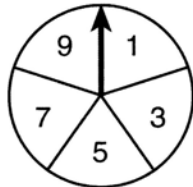
Use  $\boxed{2nd}$   $\boxed{abs}$   
on TI graphing  
calculator to  
get absolute value  
signs

x	y
-7	8
-6	6
-5	4
-4	2
-3	0
-2	2
-1	4
0	6
1	8

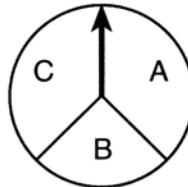
Part III

Answer all 3 questions in this part. Each correct answer will receive 3 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [9]

34 In a game, a player must spin each spinner shown in the diagram below once.

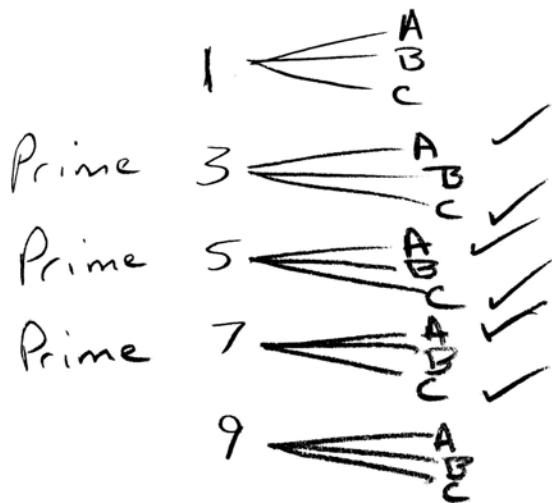


Spinner 1



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."

6

3A  
3C  
5A  
5C  
7A  
7C

35 The cost of  $\overset{3N}{\text{three notebooks}}$  and  $\overset{4P}{\text{four pencils}}$  is  $\overset{8.50}{\$8.50}$ . The cost of  $\overset{5N}{\text{five notebooks}}$  and  $\overset{8P}{\text{eight pencils}}$  is  $\overset{14.50}{\$14.50}$ . Determine the cost of one notebook and the cost of one pencil.

[Only an algebraic solution can receive full credit.]

$$\text{Eq. \#3} \quad 6N + 8P = \$17.00$$

$$\text{Eq. \#1} \quad \cancel{3N + 4P = \$8.50}$$

$$\text{Eq. \#2} \quad 5N + 8P = \$14.50$$

$$\text{Eq. \#3} = (\text{Eq. \#1})(2)$$

Subtract  
Eq. \#2 from  
Eq. \#3

$$\boxed{N = \$2.50} \quad \text{Notebook}$$

Substitute  $N = 2.50$   
into Eq. \#2

$$5(2.50) + 8P = \$14.50$$

$$12.50 + 8P = \$14.50$$

$$8P = \$2.00$$

$$\boxed{P = 25\text{¢}} \quad \text{Pencil}$$

Check

$$\begin{aligned} \text{Eq. \#1} \quad 3(2.50) + 4(.25) &= 8.50 \\ 7.50 + 1.00 &= 8.50 \\ 8.50 &= 8.50 \quad \text{True } \checkmark \end{aligned}$$

$$\begin{aligned} \text{Eq. \#2} \quad 5(2.50) + 8(.25) &= 14.50 \\ 12.50 + 2.00 &= 14.50 \\ 14.50 &= 14.50 \quad \text{True } \checkmark \end{aligned}$$

36 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.

$$\text{Error} = \left| \frac{\text{Actual} - \text{Measured}}{\text{Actual}} \right|$$

$$\text{Actual Area} = (24.2)(14.1) = 341.22$$

$$\text{Measured Area} = (24)(14) = 336$$

$$\text{Error} = \frac{341.22 - 336}{341.22} = \frac{5.22}{341.22} = 0.015298$$

tenths  
hundredths  
thousandths

less than 500

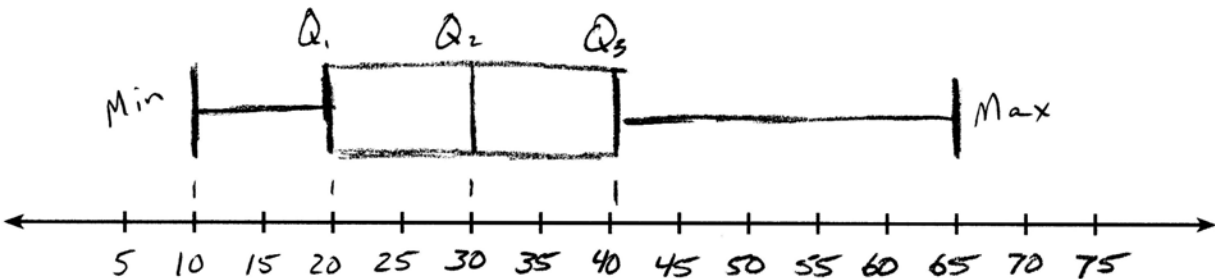
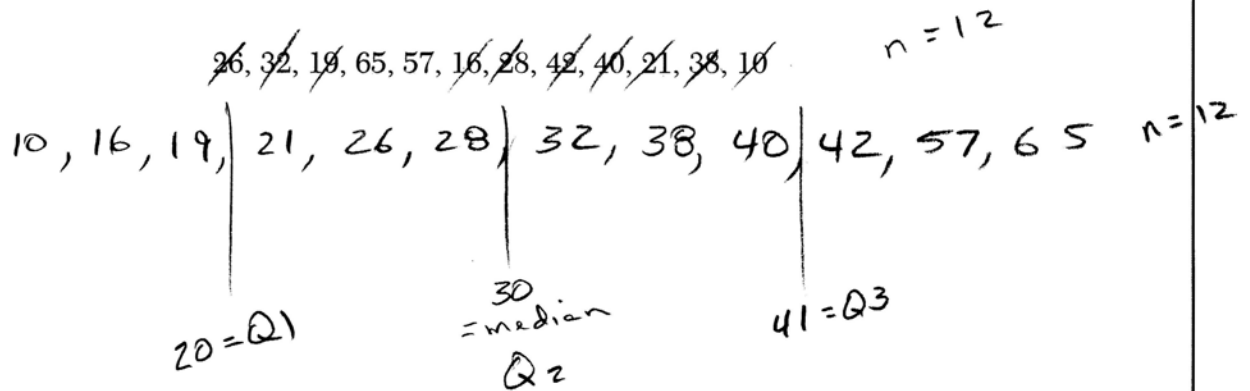
$$\text{Relative Error} = \boxed{.015}$$



Part IV

Answer all 3 questions in this part. Each correct answer will receive 4 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [12]

37 Using the line provided, construct a box-and-whisker plot for the 12 scores below.

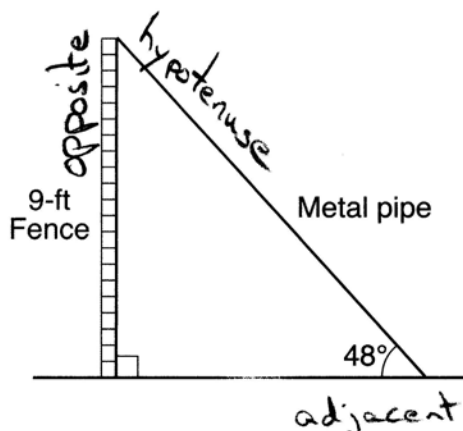


Determine the number of scores that lie above the 75th percentile.

3

42  
57  
65

- 38 A metal pipe is used to hold up a 9-foot fence, as shown in the diagram below. The pipe makes an angle of  $48^\circ$  with the ground.



Determine, to the nearest foot, how far the bottom of the pipe is from the base of the fence.

See formula page

$$\tan A = \frac{\text{opposite}}{\text{adjacent}}$$

$$\tan 48^\circ = \frac{9}{\text{adjacent}}$$

$$(\text{adjacent})(\tan 48^\circ) = 9$$

$$\text{adjacent} = \frac{9}{\tan 48^\circ} = 8.1036$$

8 feet

Determine, to the nearest foot, the length of the metal pipe.

See formula page

$$\sin A = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\sin 48^\circ = \frac{9}{\text{hypotenuse}}$$

$$(\text{hypotenuse})(\sin 48^\circ) = 9$$

$$\text{hypotenuse} = \frac{9}{\sin 48^\circ} = 12.11069$$

12 feet

Check

$$a^2 + b^2 = c^2$$

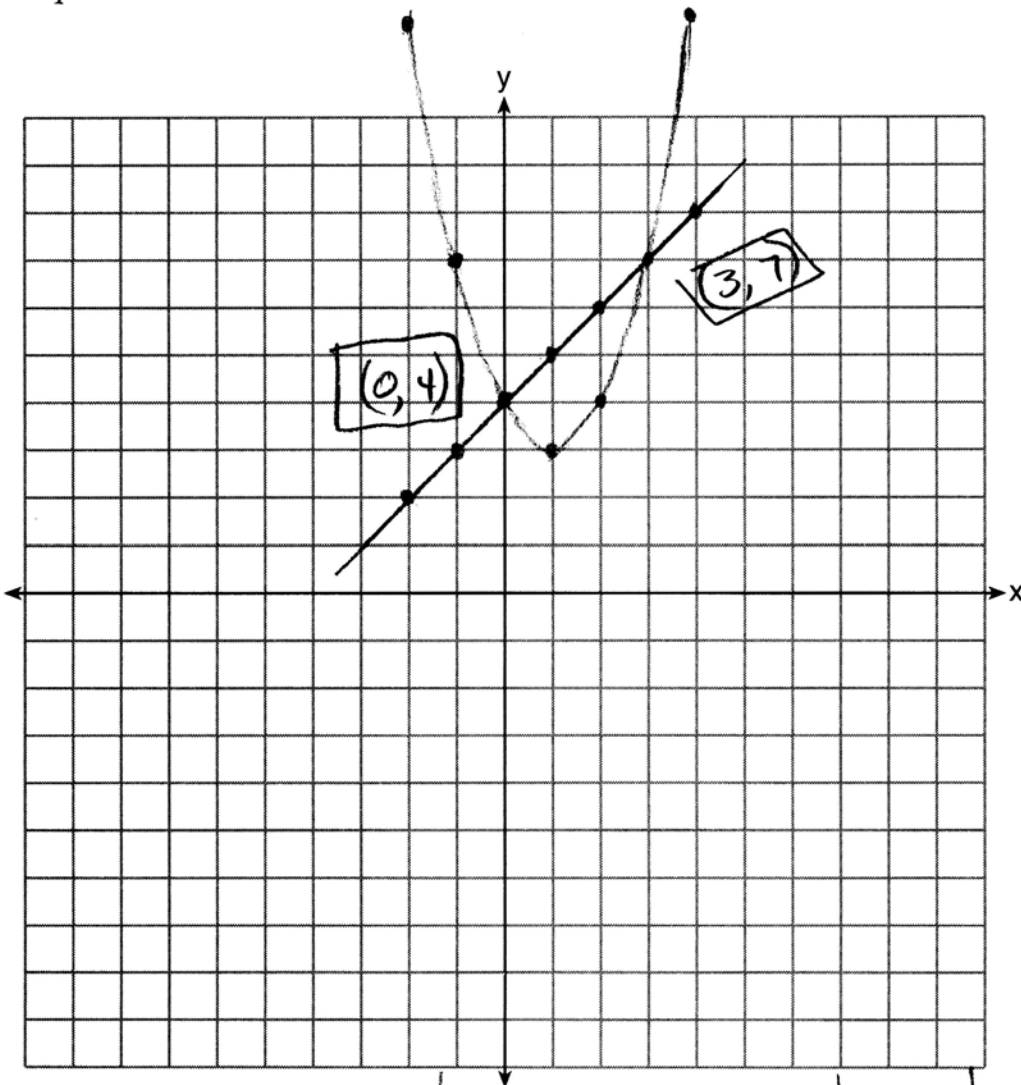
$$(9)^2 + (8.1036)^2 = (12.1107)^2$$

$$146.6683 = 146.6690 \text{ (close enough)}$$

39 On the set of axes below, graph the following system of equations.

$$\begin{aligned}
 y + 2x &= x^2 + 4 & \rightarrow & Y_1 = x^2 - 2x + 4 \\
 y - x &= 4 & \rightarrow & Y_2 = x + 4
 \end{aligned}$$

Using the graph, determine and state the coordinates of *all* points in the solution set for the system of equations.



$$\begin{aligned}
 y - x &= 4 \\
 7 - 3 &= 4 \\
 4 &= 4 \checkmark
 \end{aligned}$$

$$\begin{aligned}
 y + 2x &= x^2 + 4 \\
 7 + 6 &= 9 + 4 \\
 13 &= 13 \checkmark
 \end{aligned}$$

check  
(3, 7)

check

$$\begin{aligned}
 (0, 4) \quad y + 2x &= x^2 + 4 \\
 4 + 0 &= 0 + 4 \checkmark
 \end{aligned}$$

$$\begin{aligned}
 y - x &= 4 \\
 4 - 0 &= 4 \checkmark
 \end{aligned}$$

	x	$Y_1$	$Y_2$
	-2	12	2
	-1	7	3
solution →	0	4	4
	1	3	5
	2	4	6
solution →	3	7	7
	4	12	8