

Part I

Answer all questions in this part. Each correct answer will receive 2 credits. No partial credit will be allowed. For each question, write on the separate answer sheet the letter preceding the word or expression that best completes the statement or answers the question. [60]

1. Solve: $5x - 3 = x + 2$ [A] $\frac{4}{5}$ [B] $-\frac{5}{4}$ [C] $\frac{5}{4}$ [D] $\frac{2}{5}$

[1] _____

2. Find the contrapositive of the following statement. If I live in Oregon, then I own a log cabin.

[A] If I do not own a log cabin, then I do not live in Oregon.
[B] If I own a log cabin, then I do not live in Oregon.
[C] If I live in Oregon, then I do not own a log cabin.
[D] If I do not live in Oregon, then I own a log cabin.

[2] _____

3. Write the standard form of the equation of the line passing through the point (1, 2) and perpendicular to the line $-2x - 3y = -6$.

[A] $3x - 2y = -1$ [B] $-3x + 2y = -1$
[C] $-2x + 3y = 4$ [D] $-2x - 3y = -4$

[3] _____

4. Prestige Builders has a development of new homes. There are five different floor plans, three exterior colors, and an option of either a two- or a three-car garage. How many choices are there for one home?

[A] 38 [B] 45 [C] 15 [D] 30

[4] _____

5. Divide: $\frac{x^2-9}{x-2} \div (x-3)$

- [A] $\frac{x-2}{x+3}$ [B] $\frac{(x-3)(x+3)}{x-2}$ [C] $\frac{x+3}{x-2}$ [D] $\frac{x-3}{x-2}$

[5] _____

6. Last year a large trucking company delivered about 1.1 million loads of goods at an average value of \$27,500 per load. What was the total value of goods delivered? Express your answer in scientific notation.

- [A] $\$11.0 \times 10^{10}$ [B] $\$30.25 \times 10^9$ [C] $\$3.025 \times 10^{10}$ [D] $\$1.1 \times 10^{11}$

[6] _____

7. Simplify the product: $(4gh^5)^3(gh)^3$

- [A] $4g^4h^{18}$ [B] $64g^6h^{18}$ [C] $64g^6h^8$ [D] $4g^6h^{18}$

[7] _____

8. Tell whether y varies directly as x . If so, write a function rule for the relationship shown by the data.

x	y
8	28
6	21
4	14

- [A] yes, $y = 3.5x$ [B] yes, $y = 2.5x$ [C] yes, $y = 20x$ [D] no

[8] _____

9. Find the measure of one of the interior angles of a regular polygon with nine sides.

- [A] 20° [B] 40° [C] 160° [D] 140°

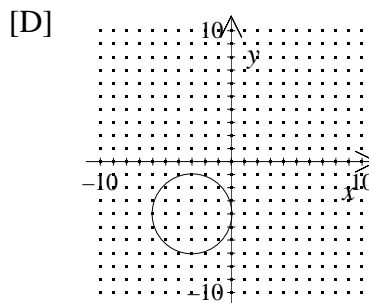
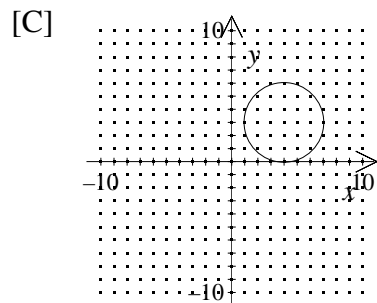
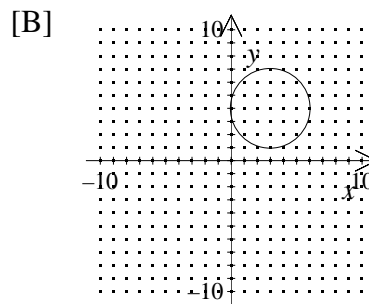
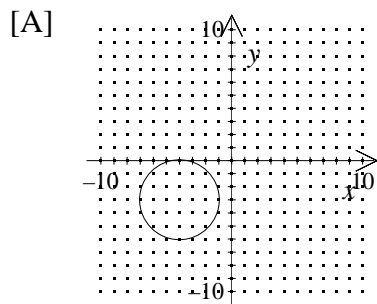
[9] _____

10. If 5 cans of cherries cost \$18.00, how many cans of cherries can be purchased with \$28.80?

- [A] 7 [B] 8 [C] 9 [D] 10

[10] _____

11. Sketch the graph of $(x+3)^2 + (y+4)^2 = 9$



[11] _____

12. Solve for d in the equation $R = 7c^2d$.

- [A] $\frac{7c^2}{R}$ [B] $R - 7c^2$ [C] $\frac{R}{7c^2}$ [D] $7c^2 - R$

[12] _____

13. Describe the locus of points in a plane equidistant from two parallel lines in that plane.

- [A] a plane parallel to the two lines and midway between them
[B] a circle with the lines as diameters
[C] a line parallel to the two lines and midway between them
[D] a circle with the lines as radii

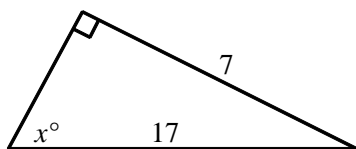
[13] _____

14. Which of the following square roots is an irrational number?

- [A] $-\sqrt{49}$ [B] $\sqrt{16}$ [C] $\sqrt{22}$ [D] $\sqrt{\frac{1}{16}}$

[14] _____

15. Solve for x to the nearest degree.



- [A] 66 [B] 24 [C] 68 [D] 22

[15] _____

16. Assume the statement "Cheryl is taking history and algebra" is true.
Which of the following statements must be true?

[A] Cheryl is taking both history and algebra.

[B] Cheryl is taking neither history, nor algebra.

[C] Cheryl is taking only history. [D] Cheryl is taking only algebra.

[16] _____

17. Which of these lengths could be the sides of a triangle?

[A] 23 cm, 12 cm, 10 cm

[B] 16 cm, 7 cm, 10 cm

[C] 12 cm, 23 cm, 9 cm

[D] 7 cm, 16 cm, 9 cm

[17] _____

18. What is the area of a circle whose diameter is 10 centimeters?

[A] $25\pi \text{ cm}^2$

[B] $100\pi \text{ cm}^2$

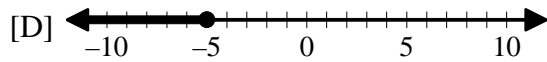
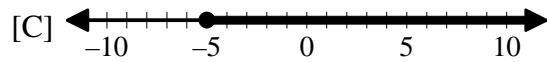
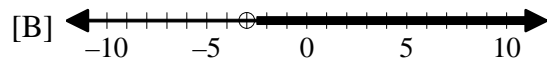
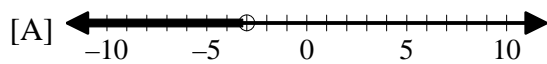
[C] $20\pi \text{ cm}^2$

[D] $10\pi \text{ cm}^2$

[18] _____

19. Graph: $x > -3$ or $x \geq -5$

[19] _____



20. Simplify: $2\sqrt{6} + 5\sqrt{6} - 4\sqrt{6}$

[A] $11\sqrt{6}$

[B] 18

[C] $\sqrt{18}$

[D] $3\sqrt{6}$

[20] _____

21. Find the measure, to the nearest tenth, of the diagonal of a rectangle with dimensions 19 cm by 11 cm.

[A] 5.5 cm

[B] 23.1 cm

[C] 22 cm

[D] 15.5 cm

[21] _____

22. Factor: $x^2 + 14x + 48$

[A] $(x + 6)(x - 8)$

[B] $(x - 6)(x + 8)$

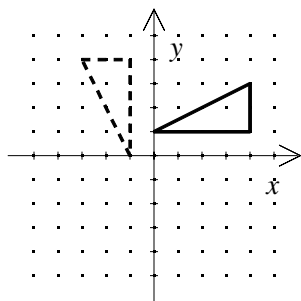
[C] $(x + 6)(x + 8)$

[D] $(x - 6)(x - 8)$

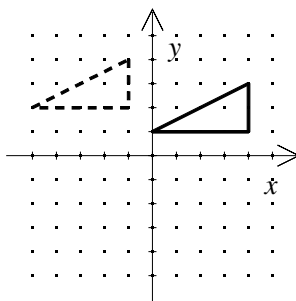
[22] _____

23. Which graph represents a translation?

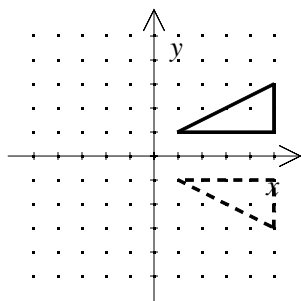
[A]



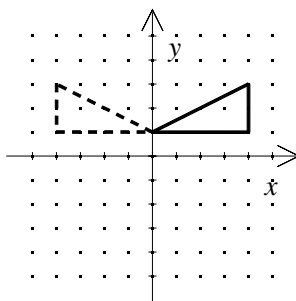
[B]



[C]



[D]



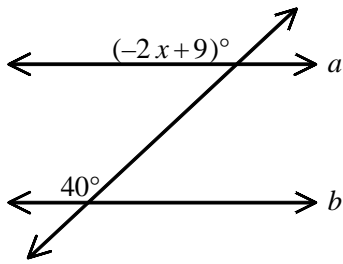
[23] _____

24. If the replacement set is the set of integers, find the solution set for the inequality $x + 3 \geq 5$.

[A] {8, 9, 10,...} [B] {0, 1, 2,...} [C] {2} [D] {2, 3, 4,...}

[24] _____

25. What must be the value of x for a to be parallel to b ?



- [A] $-\frac{31}{2}$ [B] $-\frac{49}{2}$ [C] $-\frac{2}{49}$ [D] $-\frac{2}{31}$

[25] _____

26. What property is illustrated by the fact that $30.3 \cdot (83.1 \cdot 85) = (83.1 \cdot 85) \cdot 30.3$?

[26] _____

- [A] identity property for multiplication
[B] zero property for multiplication
[C] commutative property of multiplication
[D] associative property for multiplication

27. If $\frac{15}{3}$, $\frac{23}{5}$, $\frac{9}{4}$, and $\frac{20}{2}$ are placed in order from least to greatest, which would be first?

- [A] $\frac{15}{3}$ [B] $\frac{9}{4}$ [C] $\frac{23}{5}$ [D] $\frac{20}{2}$

[27] _____

28. The sales of a brand of sneakers rose from \$2 million to \$2.9 million. Find the percent increase to the nearest whole percent.

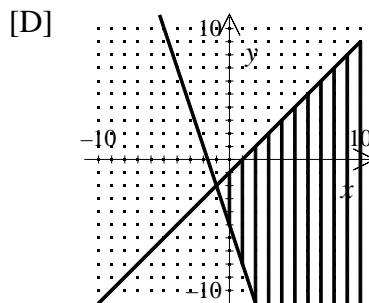
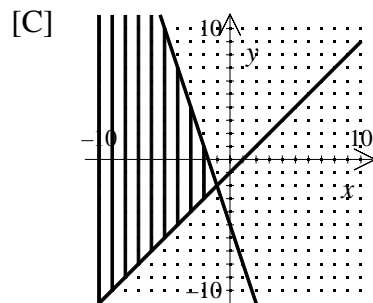
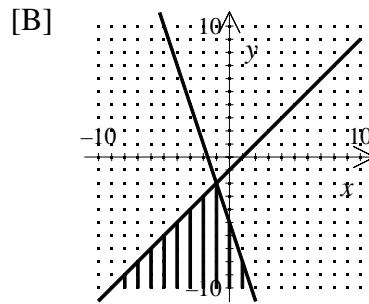
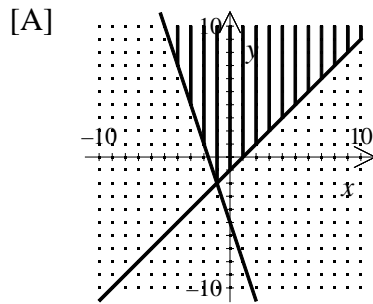
- [A] 45% [B] 31% [C] 3.1% [D] 4.5%

[28] _____

29. Solve the system graphically:

$$y \geq -3x - 5$$

$$y \geq x - 1$$



[29] _____

30. Subtract: $(-8x^2 - 7x - 2) - (x^2 - 4x - 3)$

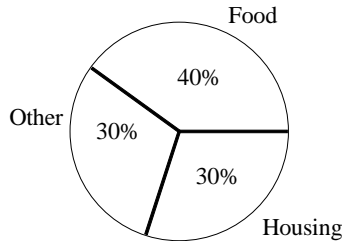
- [A] $-9x^2 - 3x + 1$ [B] $-9x^2 - 11x - 5$
 [C] $-9x^2 - 3x - 5$ [D] $-9x^2 + 3x + 1$

[30] _____

Part II

Answer all 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. [10]

31. The circle graph below represents a family's monthly budget. If the total monthly income is \$1600, how much is spent on food?



[31] _____

32. Five cards are drawn in succession and without replacement from a standard deck of 52 cards. How many sets of five cards are possible?

[32] _____

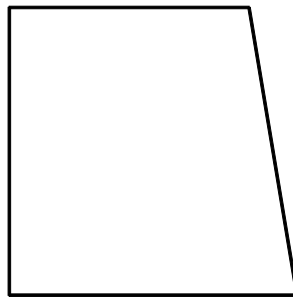
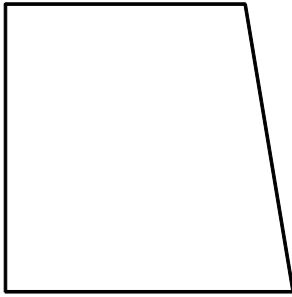
33. Lawanda's test scores are 75, 89, 65, and 83. What score does she need on the last test in order to average 80 on her tests?

[33] _____

34. A coin is tossed and a die is rolled. What is the probability that the coin shows tails and the die shows a 2?

[34] _____

35. For the figure below, draw all the lines of symmetry. If there are none, write "none".



[35] _____

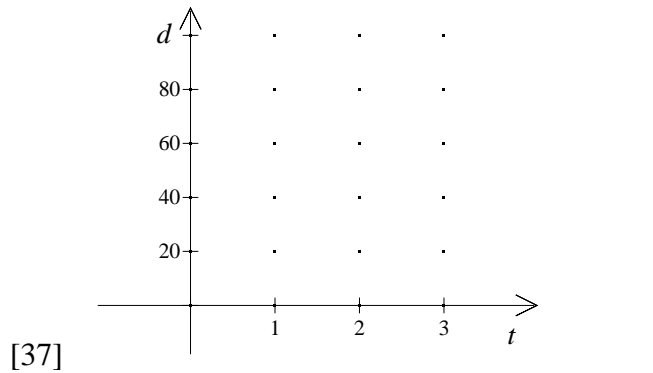
Part III

Answer all 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. [6]

36. Sara has \$6.30 in nickels and dimes. She has three times as many dimes as nickels. How many nickels and how many dimes does she have?

[36] _____

37. If an object is dropped from a height of 47 feet, the function $d = -16t^2 + 47$ gives the height of the object after t seconds. Graph this function. Approximately how long does it take the object to reach the ground ($d = 0$)?



Part IV

Answer all 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. [8]

38. The length of a rectangle is 7 feet greater than four times its width. Find the length and width of the rectangle if its area is 57 square feet.

[38] _____

39. At the local ballpark, the team charges \$6.50 for each ticket and expects to make \$907.50 in concessions. The team must pay its players \$2447.50 and pay all other workers \$880.00. Each fan gets a free bat that costs the team \$3.75 per bat. Write the income and expense equations and find how many tickets must be sold to break even.

[39] _____

ANSWER KEY

- [1] C
- [2] A
- [3] A
- [4] D
- [5] C
- [6] C
- [7] B
- [8] A
- [9] D
- [10] B
- [11] D
- [12] C
- [13] C
- [14] C
- [15] B
- [16] A
- [17] B
- [18] A
- [19] C
- [20] D
- [21] C
- [22] C
- [23] B
- [24] D
- [25] A
- [26] C
- [27] B

ANSWER KEY

[28] A

[29] A

[30] A

[31] \$640

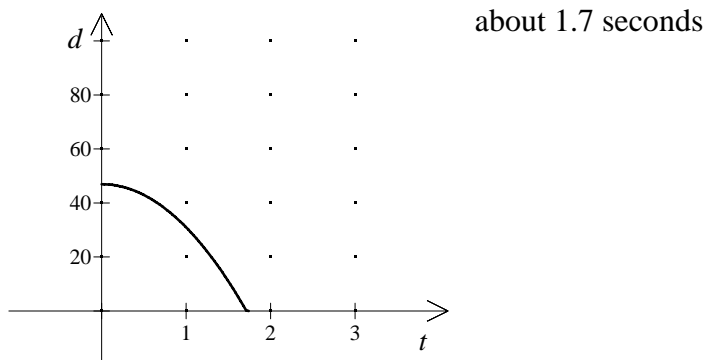
[32] 2,598,960

[33] 88

[34] $\frac{1}{12}$

[35] none

[36] 18 nickels and 54 dimes



[37] _____

[38] length = 19 ft; width = 3 ft

income = $6.5x + 907.5$; expenses = $2447.5 + 880 + 3.75x$

[39] 880 tickets