

TEST NAME: Math 2 - Fall 2017 - Function Standards Review
TEST ID: 2097094
GRADE: 09 - Ninth Grade - 12 - Twelfth Grade
SUBJECT: Mathematics
TEST CATEGORY: My Classroom

Student: _____
 Class: _____
 Date: _____

1. In order to keep a seesaw balanced the heavier person must sit closer to the fulcrum. The distance from the fulcrum varies inversely with the weight of the person. Which table represents possible weights and distances that would balance the seesaw?

A.

Weight of Person (pounds)	Distance from Fulcrum (feet)
72	5
90	4
120	2
180	1

B.

Weight of Person (pounds)	Distance from Fulcrum (feet)
100	4
90	3.6
75	3
70	2.8

C.

Weight of Person (pounds)	Distance from Fulcrum (feet)
90	8
120	6
160	4.5
200	3.6

D.

Weight of Person (pounds)	Distance from Fulcrum (feet)
100	2
120	3
150	5
160	8

2. Walter budgeted \$24 to buy bags of dog food. He could buy 2 bags for \$12 each, 3 bags for \$8 each, or 4 bags for \$6 each. Which statement is true about the relationship between the number of bags (x) and the price of each bag (y) in this situation?

- A. It is an inverse variation because the ratio $\frac{x}{y}$ is always 24.
- B. It is an inverse variation because the product of x and y is always 24.
- C. It is a direct variation because as x increases, the total price increases.
- D. It is a direct variation because as y increases, the total price increases.

3. Which table represents a situation in which y varies inversely as x ?

A.

x	y
2	10
4	20
6	30
8	40

B.

x	y
2	20
4	10
5	8
40	1

C.

x	y
2	-2
6	-6
-4	4
0	0

D.

x	y
4	2
3	3
2	4
1	5

4. Which function, $g(x)$, possesses function values that are 2 less than those of $f(x) = x^2$?

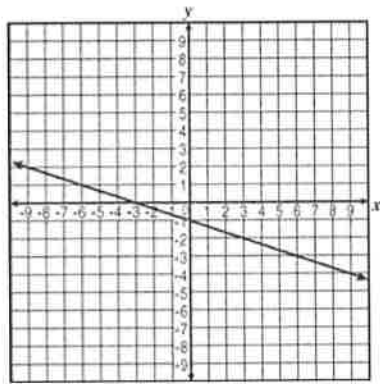
A. $g(x) = 2x^2$

B. $g(x) = 2x^2 - 2$

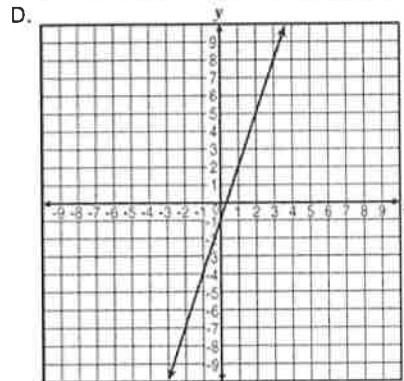
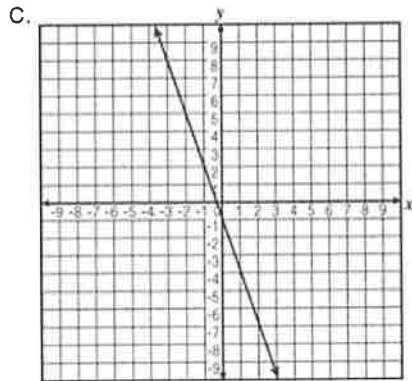
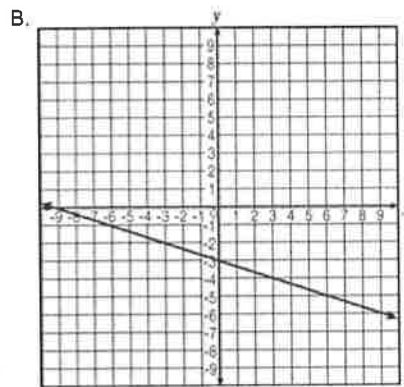
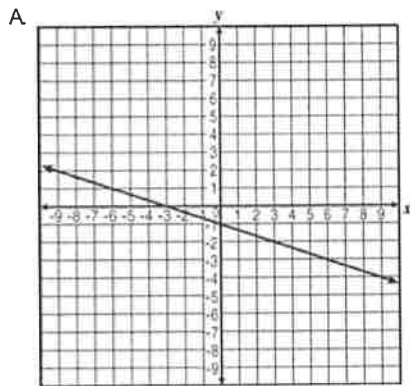
C. $g(x) = x^2 + 2$

D. $g(x) = x^2 - 2$

5. The graph below represents the equation $y = -\frac{1}{3}x - 1$.



Which graph BEST represents the equation of the line if the slope is changed to -3 ?



6. Which function, $g(x)$, possesses function values that are 1 more than those of

$$f(x) = -3x^2?$$

A. $g(x) = -4x^2$

B. $g(x) = -2x^2$

C. $g(x) = -3x^2 - 1$

D. $g(x) = -3x^2 + 1$

7. Which function, $g(x)$, represents the graph of $f(x) = -2x^2 + \frac{1}{2}$ shifted down $\frac{3}{2}$ units?

A. $g(x) = -\frac{7}{2}x^2 + \frac{1}{2}$

B. $g(x) = -2x^2 - \frac{3}{2}$

C. $g(x) = -2x^2 - 1$

D. $g(x) = -\frac{7}{2}x^2 - 1$

8. Which translation would move the vertex of $f(x)$ up 7 units?

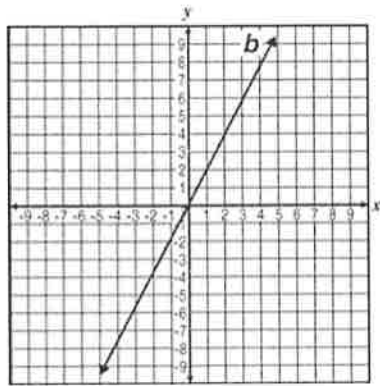
A. $f(x) - 7$

B. $f(x) + 7$

C. $f(x - 7)$

D. $f(x + 7)$

9. Line b is the image of a line after a translation of 3 units up from the original line.



Which BEST represents the equation of the original line?

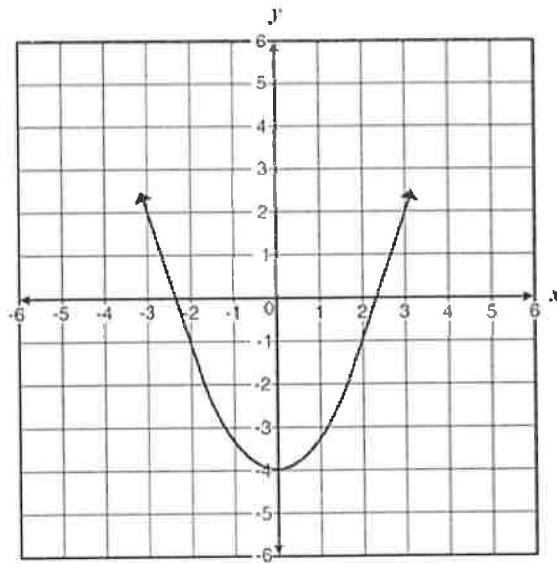
A. $y = 2x$

B. $y = 2x - 3$

C. $y = 2x + 3$

D. $y = 3x + 3$

10. The equation $y = \frac{2}{3}x^2 - 4$ is graphed in the coordinate plane.

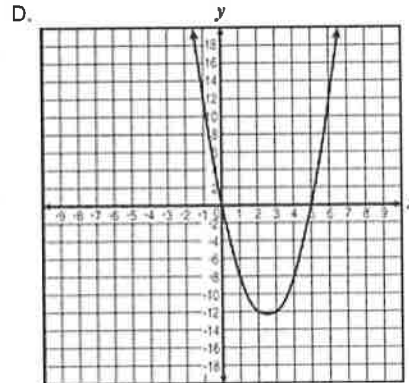
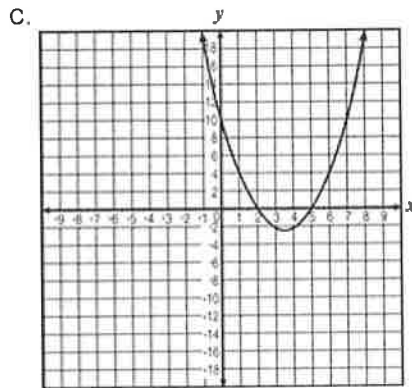
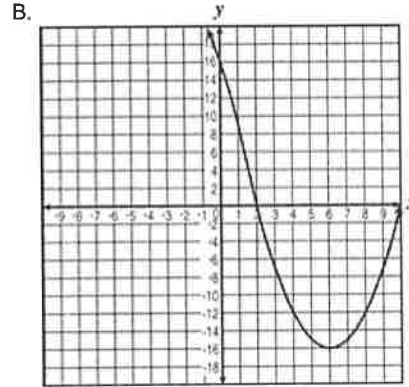
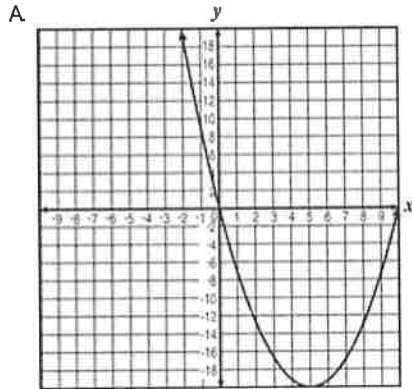


If 6 is added to the equation (like $y = \frac{2}{3}x^2 - 4 + 6$), which option describes the new graph?

- A. The vertex is now located at (2, 0). B. The vertex is now located at (6, 0).
 C. The vertex is now located at (0, 2). D. The vertex is now located at (0, 6).
11. Bill graphed $y = 3x^2 + 8$ and Joy graphed $y = 3x^2 + 4$. What statement describes the difference in the two graphs?
- A. Joy's graph is wider than Bill's graph. B. Joy's graph is half the size of Bill's graph.
 C. Joy's graph is located to the left of Bill's graph. D. Joy's graph is located further down the y-axis than Bill's graph.
12. Changing the value of a in $y = ax^2 + c$ to its opposite has what effect on the graph?
- A. It changes the width of the graph. B. It changes the vertex of the graph.
 C. It changes the graph's axis of symmetry. D. It changes the direction that the graph opens.
13. The graph of $f(x) = 2x + 4$ was translated resulting in the graph of $g(x) = 2x - 5$. Which describes the translation that occurred to $f(x)$?
- A. down 5 units B. up 5 units
 C. down 9 units D. up 9 units

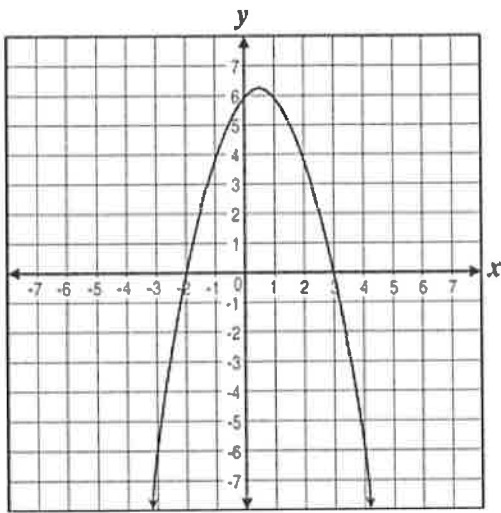
14. Which graph BEST represents the table of x - and y -values below?

x	y
-1	12
0	0
1	-8
3	-12
4	-8

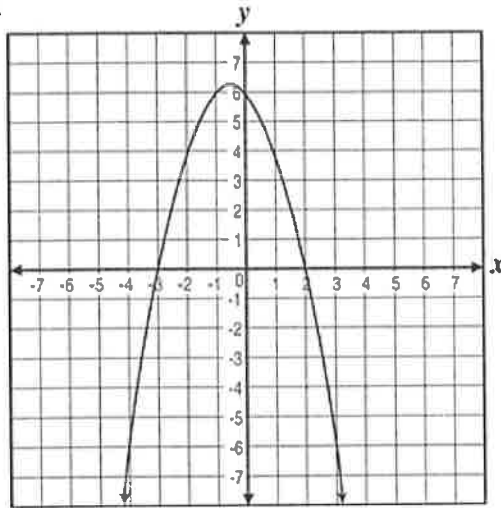


15. The roots of the quadratic equation $x^2 - x - 6 = 0$ can be found by using which of the following?

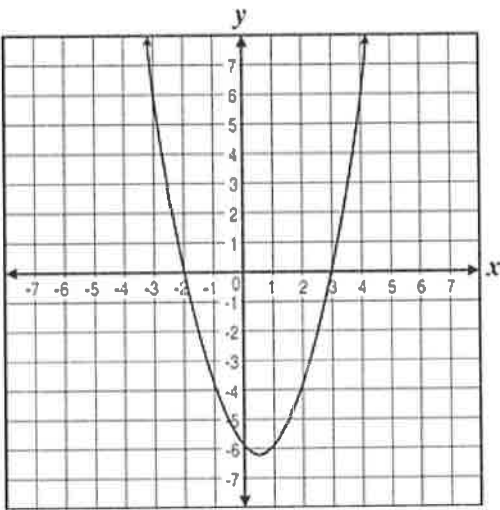
A.



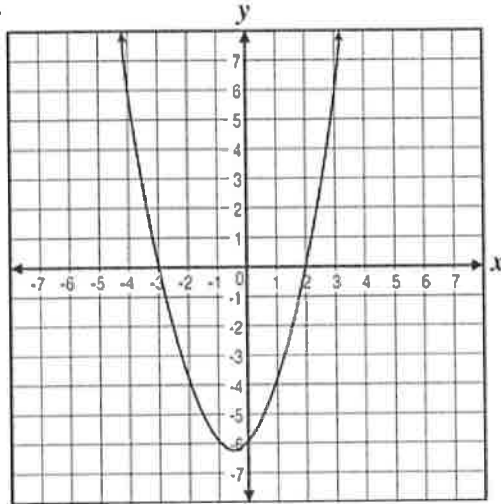
B.



C.

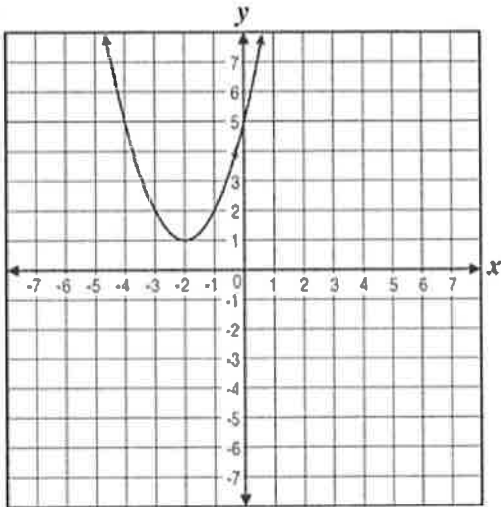


D.

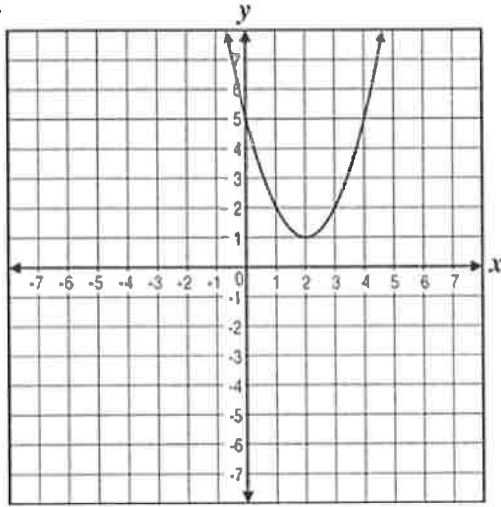


16. Which graph represents the quadratic function $y = (x + 1)^2 + 2$?

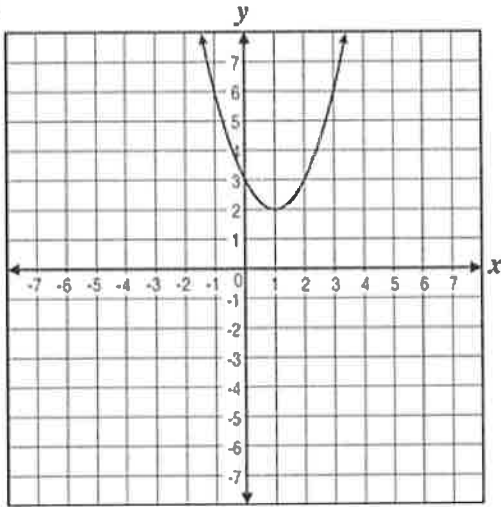
A.



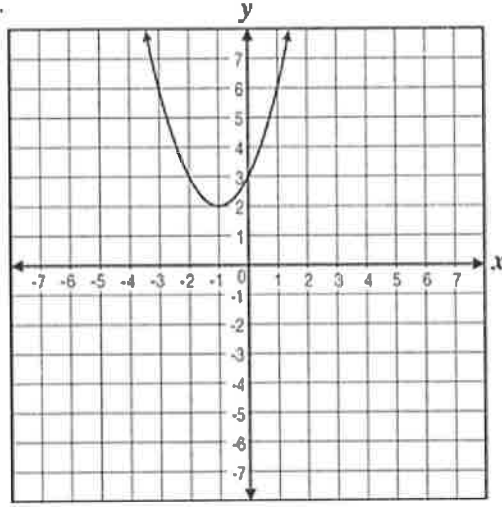
B.



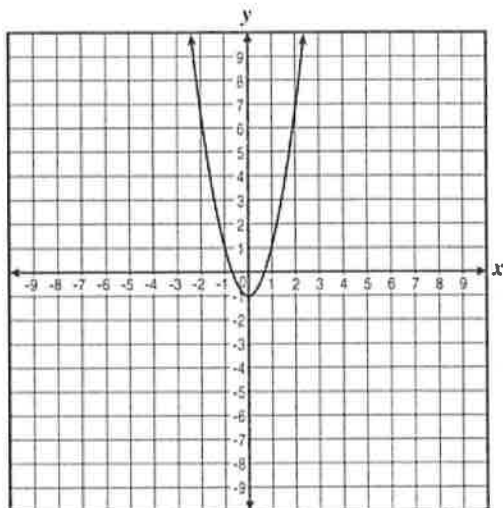
C.



D.



17. What function is represented on this graph?



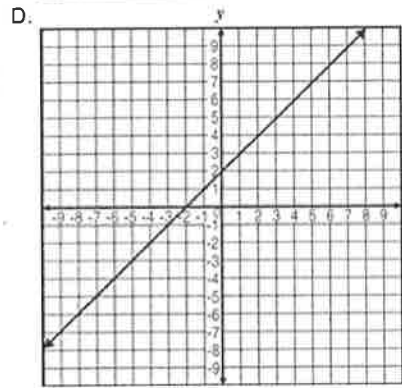
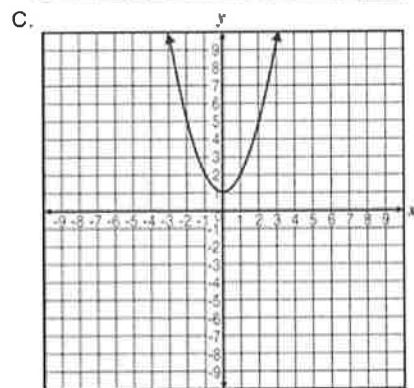
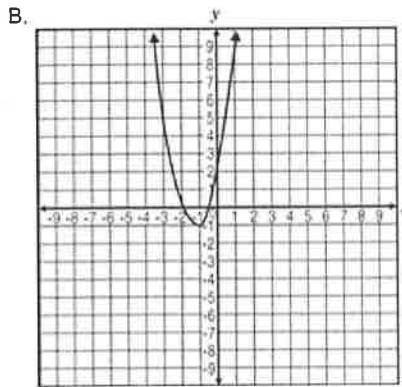
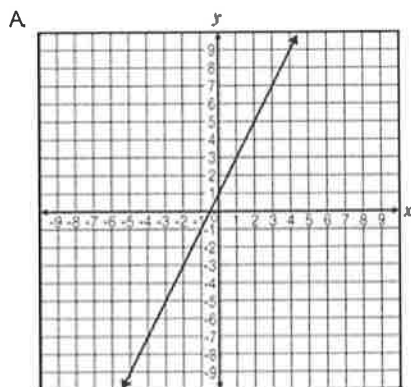
A. $f(x) = 2x^2 - 1$

B. $f(x) = x^2 - 1$

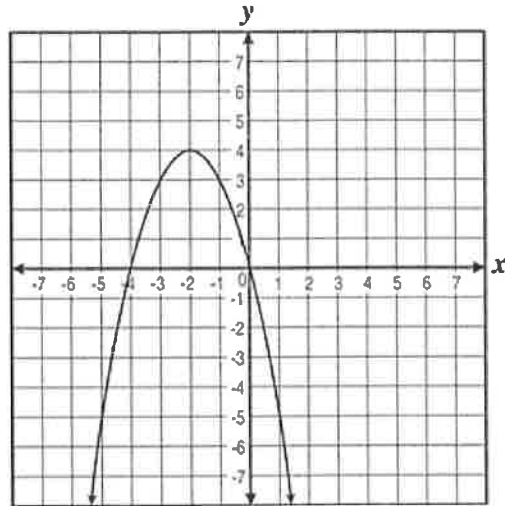
C. $f(x) = 2x^2 + 1$

D. $f(x) = x^2 + 1$

18. Which of the graphs below BEST represents the function $f(x) = (2x + 1)(x + 2)$?

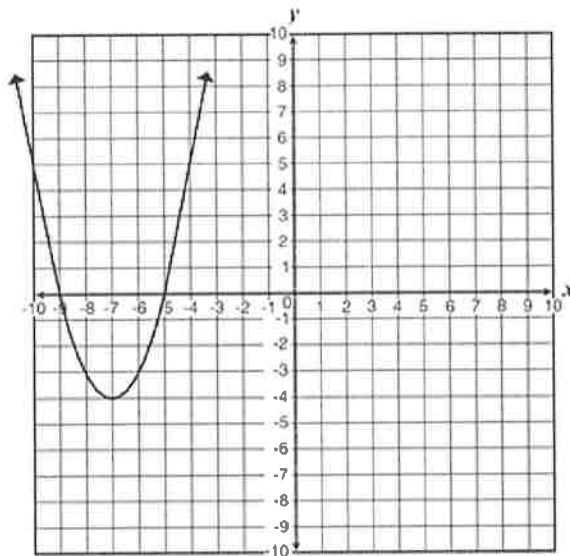


19. What is the maximum of the quadratic function represented in the graph?



- A. $(0, -4)$ and $(0, 0)$ B. $(0, 0)$
C. $(-2, 4)$ D. $(0, 4)$ and $(0, 0)$

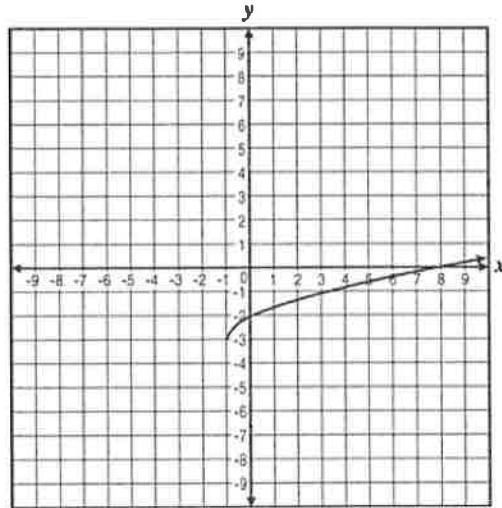
20. The graph of a quadratic equation is shown below.



Which quadratic function matches this graph?

- A. $f(x) = x^2 - 11x + 28$ B. $f(x) = x^2 + 11x + 28$
C. $f(x) = x^2 - 14x + 45$ D. $f(x) = x^2 + 14x + 45$

23. Which function is represented by this graph?



A. $y = \sqrt{x-1} - 3$

B. $y = \sqrt{x-3} - 1$

C. $y = \sqrt{x+1} - 3$

D. $y = \sqrt{x-3} + 1$

24. What happens to the value of y in the following equation as the value of x increases, where x is a whole number?

$$y = x^2 + 4$$

A. The value of y approaches 0.

B. The value of y approaches $-\infty$.

C. The value of y approaches $+\infty$.

D. The value of y approaches -4 .

TEST NAME: Math 2 - Fall 2017 - Geometry Standard Review
TEST ID: 2097110
GRADE: 09 - Ninth Grade - 12 - Twelfth Grade
SUBJECT: Mathematics
TEST CATEGORY: My Classroom

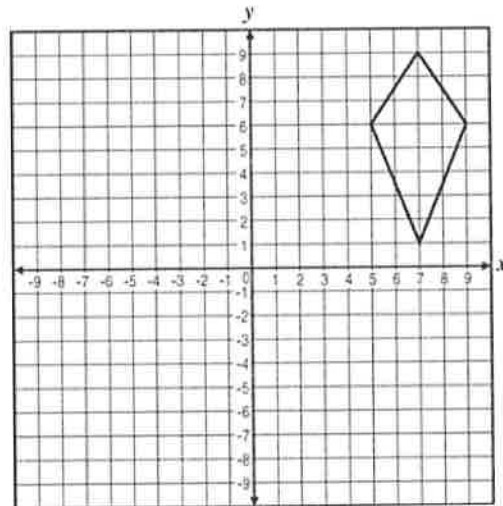
Student: _____
Class: _____
Date: _____

1. The vertices of a square are located at $(0, 2)$, $(2, 0)$, $(0, -2)$, and $(-2, 0)$.

Select all transformations that will carry this square onto itself.

Pick up to 4 answers.

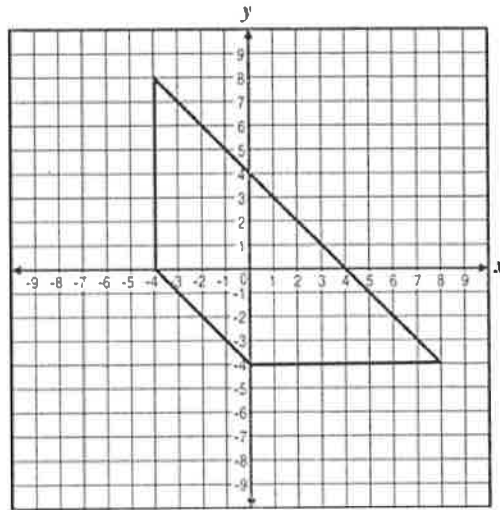
- A. reflection across the line $y = x$ B. reflection across the line $y = -x$
C. reflection across the x -axis D. 45° rotation about the origin
E. 90° rotation about the origin
2. Which figure can NOT be mapped onto itself by a rotation of less than 360 degrees?
A. square B. trapezoid
C. regular hexagon D. regular pentagon
3. The figure below is a kite with vertices at $(5, 6)$, $(7, 9)$, $(9, 6)$, and $(7, 1)$.



Which type of symmetry does this figure possess?

- A. reflection symmetry about the line $x = 7$ B. reflection symmetry about the line $y = 6$
C. 90° rotational symmetry about the point $(7, 6)$ D. 180° rotational symmetry about the point $(7, 6)$

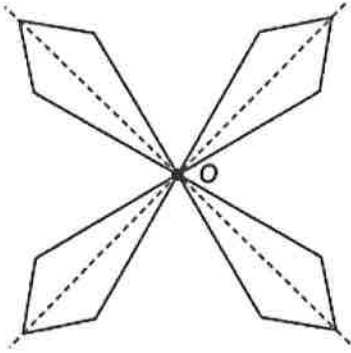
4. The figure below is an isosceles trapezoid with vertices at $(0, -4)$, $(-4, 0)$, $(-4, 8)$, and $(8, -4)$.



What is the equation for the line of symmetry of this figure?

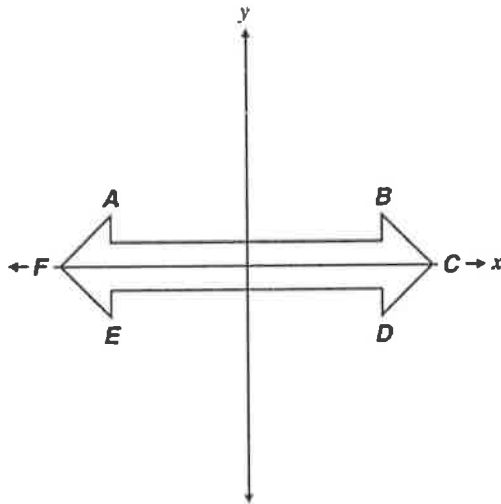
- A. $x = 0$
 B. $y = 0$
 C. $y = x$
 D. $y = -x$
5. The opposite sides of a certain quadrilateral are congruent to each other and parallel to each other. The midpoints of two opposite sides are connected to form a midsegment. Which of these statements is **always** true?
- A. Reflecting the quadrilateral across its midsegment carries the quadrilateral onto itself.
 B. Rotating the quadrilateral by 90° counterclockwise about the midpoint of its midsegment will carry it onto itself.
 C. Reflecting the quadrilateral across its midsegment carries the quadrilateral onto itself only if the adjacent angles of the quadrilateral are congruent.
 D. Rotating the quadrilateral by 90° counterclockwise about the midpoint of its midsegment will carry it onto itself only if the adjacent angles of the quadrilateral are congruent.

6. Mr. Williams drew the image of a windmill with the perpendicular lines of symmetry shown below.



He asked two of his students what rotation about the center point, O , will result in an image that looks like the original. Lara said 90° clockwise and Clark said 180° . Which student(s) answered correctly?

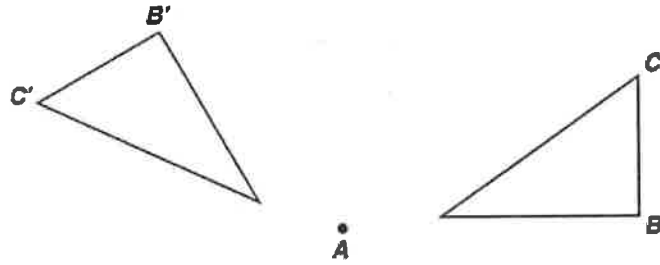
- A. only Lara
B. only Clark
C. both Lara and Clark
D. neither Lara nor Clark
7. The figure shown below is symmetric with respect to both the x -axis and the y -axis.



If the coordinates of Point A are $(-6, 2)$, what are the coordinates of Point D ?

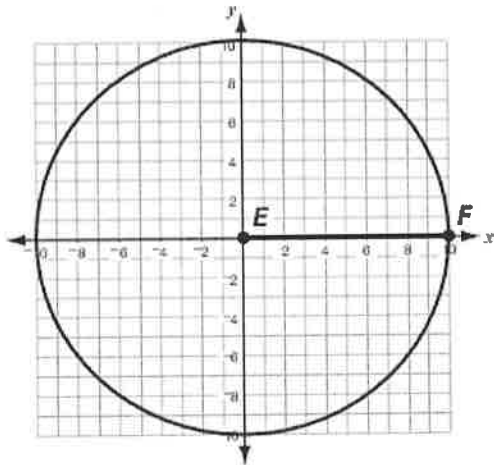
- A. $(6, 2)$
B. $(6, -2)$
C. $(2, 6)$
D. $(-2, 6)$

8. A rotation about Point A maps Point B to B' and Point C to C' .



Which statement must be true?

- A. $m \angle C'AB' = m \angle B'AC$
- B. $m \angle C'AC = m \angle B'AB$
- C. If Point B is $(1, -2)$, then Point B' must be $(-1, 2)$.
- D. If Point C is $(1, 4)$, then Point C' must be $(-4, 1)$.
9. William draws circle E , centered at the origin with radius \overline{EF} measuring 10 units, as shown below.

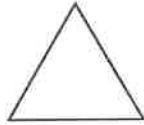


William rotates \overline{EF} 90° counterclockwise about the origin to form \overline{EG} .

Which statement is **true**?

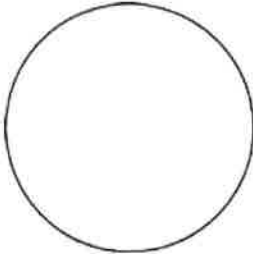
- A. \overline{EF} and \overline{EG} are congruent and $m \angle FEG$ is 90° .
- B. \overline{EF} and \overline{EG} are not congruent and $m \angle FEG$ is 90° .
- C. \overline{EF} and \overline{EG} are congruent and $m \angle FEG$ is not 90° .
- D. \overline{EF} and \overline{EG} are not congruent and $m \angle FEG$ is not 90° .

10. Sheila created a design by translating and rotating the tile shown.

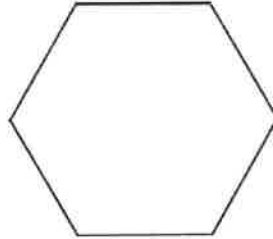


Which design did she produce?

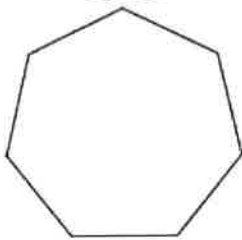
A.



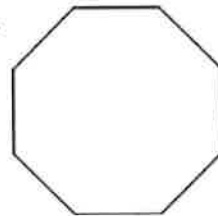
B.



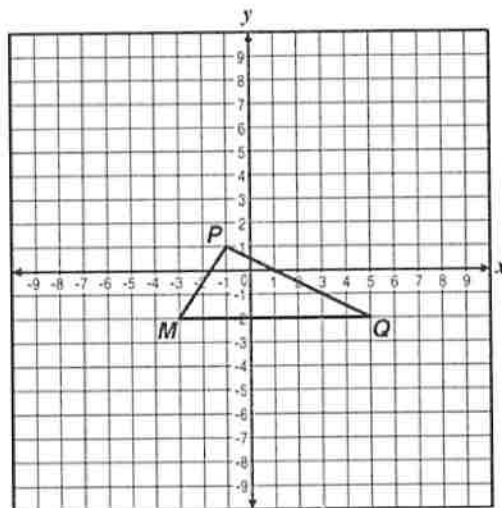
C.



D.



11. Triangle MPQ is shown on the grid below.



If $\triangle MPQ$ is reflected across the x -axis, what will be the coordinates of Vertex M' ?

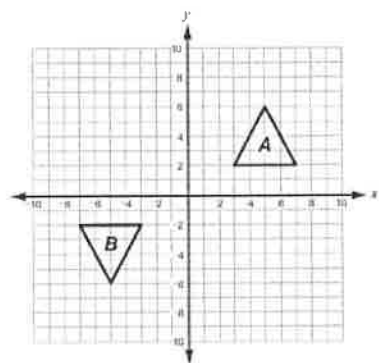
A. $(-3, 2)$

B. $(2, -3)$

C. $(3, -2)$

D. $(-2, 3)$

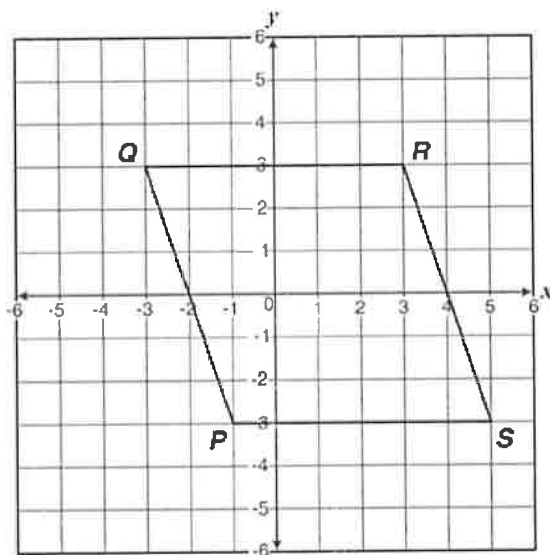
12. Two congruent figures, A and B , are shown on a coordinate plane below.



Which of these reflection(s) map figure A onto figure B ?

- A. a reflection over the line $y = x$
- B. a reflection over the line $y = -x$
- C. a reflection over the line $x = 0$ followed by a reflection over the line $x = 0$
- D. a reflection over the line $x = 0$ followed by a reflection over the line $y = 0$

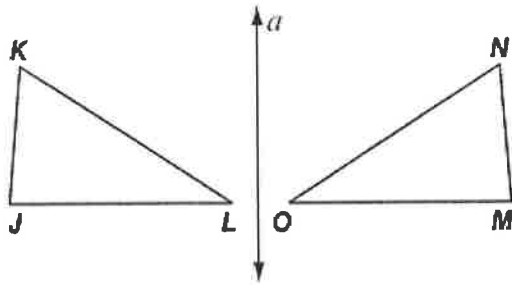
13. Parallelogram $PQRS$ is shown on the coordinate grid.



If $PQRS$ is reflected across the y -axis to produce $P'Q'R'S'$, what will be the coordinates of P' ?

- A. $(-3, -1)$
- B. $(-1, 3)$
- C. $(1, -3)$
- D. $(1, 3)$

14. Use the given triangles to answer the question.



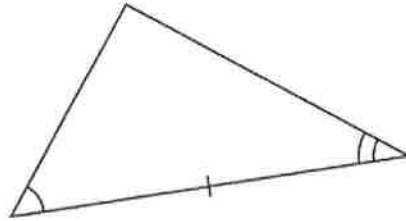
Triangle JKL is reflected across line a to form triangle MNO . Which one of these is **true**?

- A. $\overline{JK} \cong \overline{MO}$, $\overline{KL} \cong \overline{NO}$, and $\angle L \cong \angle M$
- B. $\overline{JK} \cong \overline{MN}$, $\overline{JL} \cong \overline{OM}$, and $\angle J \cong \angle N$
- C. $\overline{JK} \cong \overline{NO}$, $\overline{KL} \cong \overline{MN}$, and $\angle L \cong \angle O$
- D. $\overline{JK} \cong \overline{MN}$, $\overline{KL} \cong \overline{NO}$, and $\angle K \cong \angle N$

15. Triangle DEF is mapped onto Triangle JKL by Transformation T . Which set of statements does **NOT** require that T be a rotation, a reflection, or a translation?

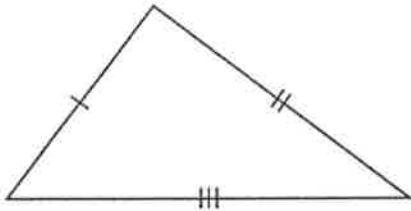
- A. $\overline{DE} \cong \overline{JK}$, $\overline{EF} \cong \overline{KL}$, $\overline{DF} \cong \overline{JL}$
- B. $\angle D \cong \angle J$, $\angle E \cong \angle K$, $\angle F \cong \angle L$
- C. $\angle D \cong \angle J$, $\angle E \cong \angle K$, $\overline{EF} \cong \overline{KL}$
- D. $\angle D \cong \angle J$, $\overline{DE} \cong \overline{JK}$, $\angle E \cong \angle K$

16. A triangle is shown below.

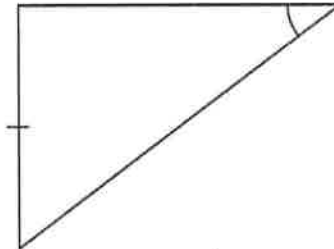


Which triangle is congruent to the triangle above?

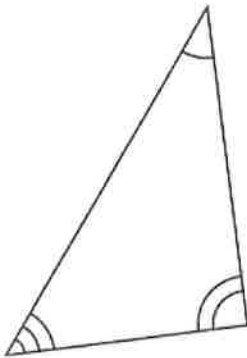
A.



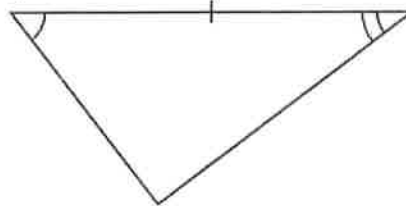
B.



C.



D.

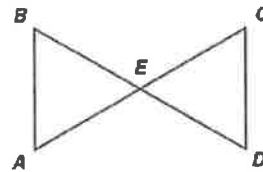


17. Javier is writing the following proof:

Given: E is the midpoint of \overline{BD} .
 $\overline{AE} \cong \overline{EC}$

Prove: $\triangle ABE \cong \triangle CDE$

Proof:



Statements	Reasons
1. E is the midpoint of \overline{BD} .	1. Given
2. $\overline{AE} \cong \overline{EC}$	2. Given
3. $\angle BEA \cong \angle DEC$	3. Vertical angles are congruent.
4. $\overline{BE} \cong \overline{ED}$	4. Definition of midpoint
5. $\triangle AEB \cong \triangle CED$	5.

Which of the following is the reason for Statement 5?

A. SSS

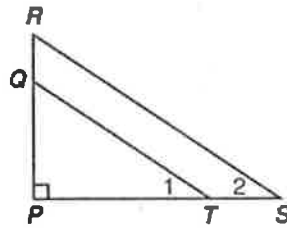
B. SAS

C. ASA

D. AAS

18. Part of a two-column proof is shown with just the statements filled in.

Given: $\triangle PRS$; $\triangle PQT$
 $\angle 1 \cong \angle 2$;
 $\angle P$ is a right angle



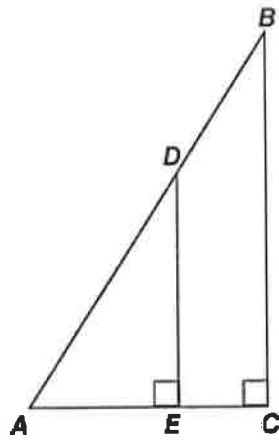
Prove: $\sin \angle 1 = \sin \angle 2$

Statements
1. $\triangle PRS$; $\triangle PQT$ $\angle 1 \cong \angle 2$; $\angle P$ is a right angle
2. $\angle P \cong \angle P$
3. $\triangle PQT \sim \triangle PRS$
4. $\frac{QP}{QT} = \frac{RP}{RS}$
5. $\sin \angle 1 = \frac{QP}{QT}$
6. $\sin \angle 2 = \frac{RP}{RS}$
7. $\sin \angle 1 = \sin \angle 2$

Which reason CANNOT be used as a justification for any of the statements?

- A. definition of sine
- B. AA Similarity Theorem
- C. Corresponding sides of similar triangles are proportional.
- D. Corresponding parts of congruent triangles are congruent.

19. The right triangles shown below are similar.



Which equation involving $\cos A$ is correct?

A. $\cos A = \frac{AE}{AD} = \frac{AC}{AB}$

B. $\cos A = \frac{DE}{AD} = \frac{BC}{AB}$

C. $\cos A = \frac{DE}{AE} = \frac{BC}{AC}$

D. $\cos A = \frac{DE}{AD} = \frac{BC}{DB}$

20. In $\triangle XYZ$, $m \angle Y = 90^\circ$. Which ratio represents the tangent of $\angle Z$?

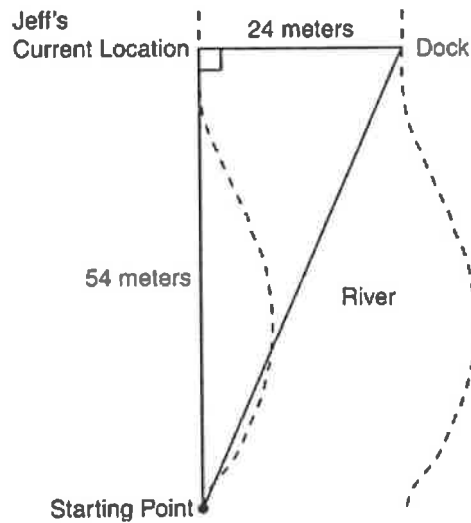
A. $\frac{ZY}{XY}$

B. $\frac{XY}{ZY}$

C. $\frac{ZY}{XZ}$

D. $\frac{XY}{XZ}$

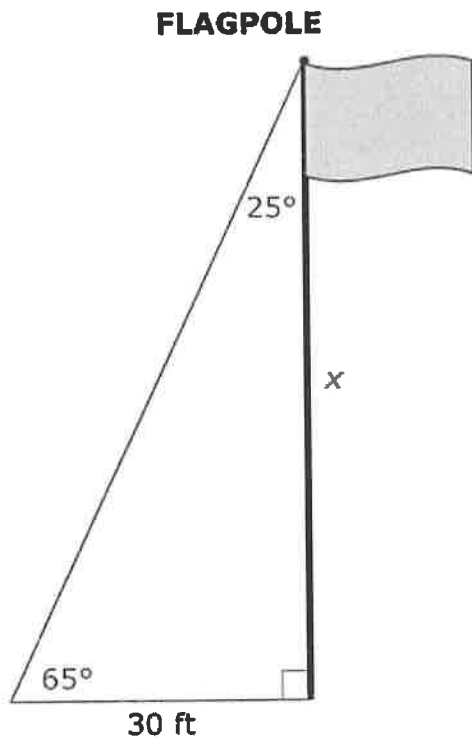
21. Jeff walked 54 meters along a river bank and saw a dock directly opposite him on the other side of the river. The river is 24 meters wide at the point where he saw the dock, as shown in the diagram below.



Which measurement is closest to the distance, in meters, of Jeff's starting point from the dock?

- A. 30.0
B. 48.4
C. 59.1
D. 78.0
22. For which value of θ is the statement $\sin 40^\circ = \cos \theta$ true?
- A. 40°
B. 50°
C. 60°
D. 140°

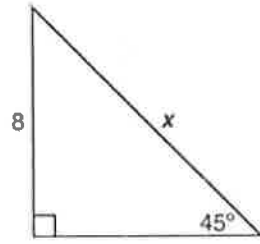
23. Two students measure the angle between the ground and the top of a flagpole at a distance of 30 feet from the base of the flagpole, as shown in the diagram.



Which equation could be used to find the height of the flagpole?

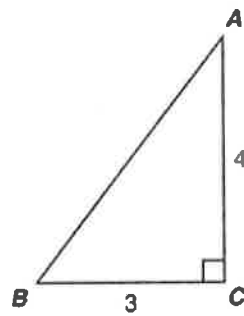
- A. $\sin(65^\circ) = \frac{x}{30}$
- B. $\cos(65^\circ) = \frac{x}{30}$
- C. $\tan(65^\circ) = \frac{x}{30}$
- D. $\sin(25^\circ) = \frac{30}{x}$
24. When the angle of elevation of the sun is 42° , a flagpole casts an 18-meter shadow. How tall is the flagpole, to the nearest hundredth of a meter?
- A. 19.99
- B. 16.21
- C. 13.38
- D. 12.04
25. A radio tower is 100 feet high. A support cable 140 feet long is fastened to the top of the tower and is anchored in the ground. How far from the base of the tower will the cable be anchored? Give your answer to the nearest foot.
- A. 40 feet
- B. 98 feet
- C. 120 feet
- D. 172 feet

26. What is the value of x in the triangle below?



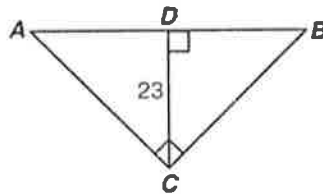
- A. 4
- B. 8
- C. $4\sqrt{2}$
- D. $8\sqrt{2}$

27. What is the sine of $\angle A$ for the figure below?



- A. $\frac{3}{5}$
- B. $\frac{3}{4}$
- C. $\frac{4}{5}$
- D. $\frac{5}{4}$

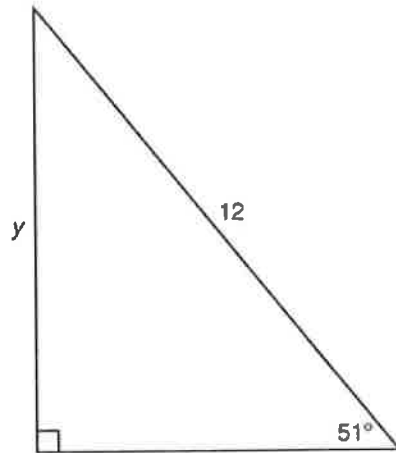
28. The figure below shows $\triangle ABC$.



If $\triangle ABC$ is an isosceles triangle, what is the approximate length of \overline{BC} ?

- A. 23
- B. 32
- C. 39
- D. 46

29. A right triangle is shown below with the dimensions given in units.



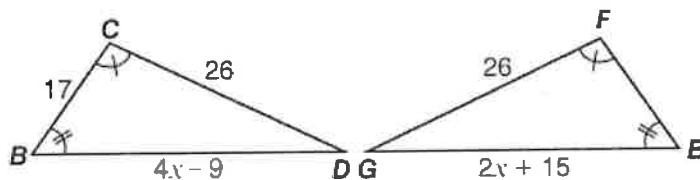
Which measurement is closest to the value of y in units?

- A. 7.6
- B. 9.3
- C. 9.7
- D. 14.8

30. Omar is setting up a proof of the Pythagorean theorem. He draws a scalene right triangle and plans to use similar triangles in his proof. What else should he draw?

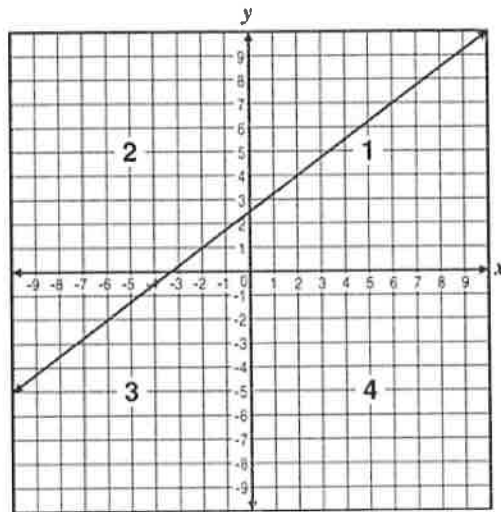
- A. the perpendicular bisector of the triangle's hypotenuse
- B. the angle bisector of the triangle's right angle
- C. the median from the triangle's right angle
- D. the altitude to the triangle's hypotenuse

31. In the figure below, determine the perimeter of $\triangle EFG$.



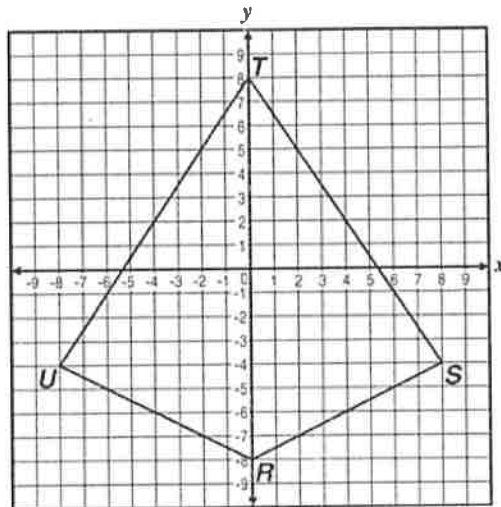
- A. 39 units
- B. 55 units
- C. 66 units
- D. 82 units

32. The grid below includes a line that will be dilated about a point, P . The dilation will include the same points as the original line.



Point P CANNOT be located in which numbered quadrant of the graph?

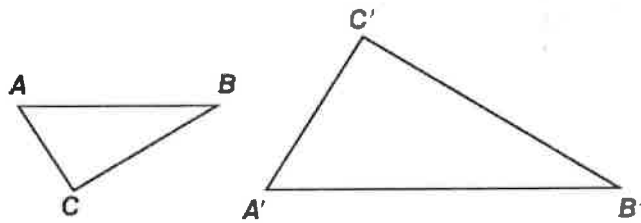
- A. 1
 B. 2
 C. 3
 D. 4
33. Consider the figure below.



What are the coordinates of Point S after a dilation with the center at the origin and a scale factor of $\frac{1}{2}$?

- A. $(2, -1)$
 B. $(4, -2)$
 C. $(8, -4)$
 D. $(16, -8)$

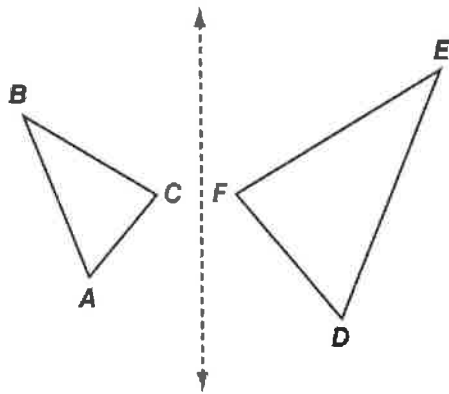
34. Martin dilated $\triangle ABC$ and then reflected it to produce $\triangle A'B'C'$.



Which statement must be **true**?

- A. $\angle A \cong \angle C'$
- B. $\angle C \cong \angle A'$
- C. $\triangle ABC \sim \triangle A'B'C'$
- D. $\triangle ABC \cong \triangle A'B'C'$

35. Examine the following figure in which $\triangle ABC$ was dilated and then reflected across the given line to create $\triangle DEF$.

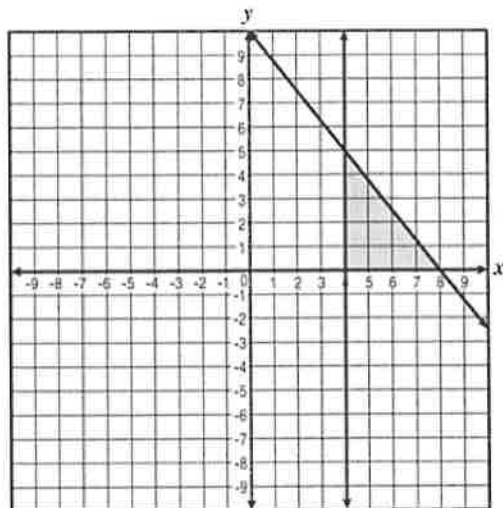


If $m\angle A = 57^\circ$ and $m\angle E = 35^\circ$, which statement must be true?

- A. $m\angle B = 57^\circ$ and $m\angle D = 35^\circ$
- B. $m\angle B = 35^\circ$ and $m\angle D = 57^\circ$
- C. $\overline{BC} \cong \overline{EF}$, $\overline{BA} \cong \overline{ED}$ and $m\angle B = 35^\circ$
- D. $\overline{BC} \cong \overline{EF}$, $\overline{BA} \cong \overline{ED}$ and $m\angle D = 35^\circ$

TEST NAME: Math 2 - Fall2017 - N/O & ARI Standards
TEST ID: 2097086
GRADE: 09 - Ninth Grade - 12 - Twelfth Grade
SUBJECT: Mathematics
TEST CATEGORY: My Classroom

5. The graph of a system of inequalities is shown.



What are the constraints to the system?

A.
$$\begin{cases} x \geq 4 \\ y \geq 0 \\ 5x - 4y \leq 40 \end{cases}$$

B.
$$\begin{cases} x \geq 0 \\ y \geq 4 \\ 5x + 4y \leq 40 \end{cases}$$

C.
$$\begin{cases} x \geq 4 \\ y \geq 0 \\ 5x + 4y \leq 40 \end{cases}$$

D.
$$\begin{cases} x \geq 0 \\ y \geq 4 \\ 5x - 4y \leq 40 \end{cases}$$

6. The equation $2x^2 - 5x = -12$ is rewritten in the form of $2(x - p)^2 + q = 0$. What is the value of q ?

A. $\frac{167}{16}$

B. $\frac{71}{8}$

C. $\frac{25}{8}$

D. $\frac{25}{16}$

7. What are the solutions to the equation below?

$$3x^2 - 2x - 8 = 0$$

A. $x = -\frac{4}{3}, x = 2$

B. $x = \frac{4}{3}, x = -2$

C. $x = -\frac{2}{3}, x = 4$

D. $x = \frac{2}{3}, x = -4$

8. Charles solved the following system of equations and found the values of x to be 5 and $\frac{26}{5}$.

$$\begin{cases} y = x^2 - 10x + 23 \\ y = \frac{1}{5}x - 3 \end{cases}$$

Which statement BEST describes the reasonableness of these solutions?

- A. The solutions are unreasonable because the solutions cannot be fractions.
- B. The solutions are reasonable because both values make the linear equation true.
- C. The solutions are unreasonable because the graph of the linear equation can only intersect the graph of the quadratic equation in 1 point.
- D. The solution is reasonable because the graph of the linear equation will intersect the graph of the quadratic equation at $(5, -2)$ and $(\frac{26}{5}, -1\frac{24}{25})$.
9. What is the solution set for the equation $x + 2 = \sqrt{4x + 13}$?
- A. $\{-3, 3\}$
- B. $\{3\}$
- C. $\{-2, 3\}$
- D. $\{2\}$
10. Consider the expression $(3j - 5)[3(2j + 7) - 4k(6j - 8)]$.

Which expression represents a factor of the given expression?

- A. $(2j + 7)$
- B. $(6j - 8)$
- C. $(3 - 4k)$
- D. $(3j - 5)$
11. Given the expression $(x - y - z)^2 - (x + y + z)^2$, which statement BEST describes the base of each term?
- A. The base of each term is a binomial with two variables.
- B. The base of each term is a trinomial with two variables.
- C. The base of each term is a binomial with three variables.
- D. The base of each term is a trinomial with three variables.
12. The quadratic functions $f(x) = 3x^2 - 12x + 7$ and $f(x) = 3(x - 2)^2 - 5$ are equivalent. What is the vertex of this function?
- A. $(0, 7)$
- B. $(7, 0)$
- C. $(2, -5)$
- D. $(-2, -5)$
13. Which of the following is equivalent to $(-125)^{\frac{2}{3}}$?
- A. $25i$
- B. $5i$
- C. 5
- D. 25

14. Which expression is equivalent to $x^{\frac{2}{5}}$?

A. $-x^{\frac{5}{2}}$

B. $5x^2$

C. $\frac{2x}{5}$

D. $\sqrt[5]{x^2}$

15. What is the exponential form of $(\sqrt{m})^{12}$?

A. m^{10}

B. m^6

C. $\frac{1}{m^6}$

D. $\frac{1}{m^{12}}$

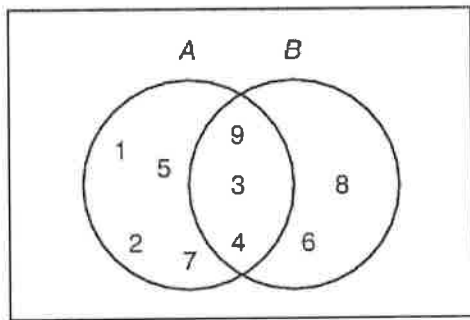
TEST NAME: Math 2 - Fall 2017 - Stats Review
TEST ID: 2097131
GRADE: 09 - Ninth Grade - 12 - Twelfth Grade
SUBJECT: Mathematics
TEST CATEGORY: My Classroom

Student: _____
 Class: _____
 Date: _____

1. Zenny is using a standard deck of 52 cards to determine the outcome of events involving cards. Event A involves selecting a black card from this deck of cards where half of the cards are black cards and the other half are red cards. Event B is the selection of a number card from the same deck which has a total of 36 number cards, each color having the same amount of number cards. How many cards should Zenny say are in the event $A \cup B$?

- A. 18
- B. 35
- C. 44
- D. 52

2. Using the Venn diagram below, what is the complement of set A ?



- A. {6, 8}
- B. {3, 4, 9}
- C. {1, 2, 5, 7}
- D. {3, 4, 6, 8, 9}

3. The conditional probability $P(B | A)$ is the probability that Event B occurs given that Event A has occurred. Which formula can be used to determine this conditional probability?

- A. $P(B | A) = \frac{P(B)}{P(A)}$
- B. $P(B | A) = \frac{P(A)}{P(B)}$
- C. $P(B | A) = \frac{P(A \text{ and } B)}{P(A)}$
- D. $P(B | A) = \frac{P(A \text{ or } B)}{P(A)}$

4. Events T and Q are independent. Which statement about their probabilities is NOT necessarily true?

- A. $P(T | Q) = P(T)$
- B. $P(Q | T) = P(Q)$
- C. $P(T | Q) = P(Q | T)$
- D. $P(T \text{ and } Q) = P(T) \times P(Q)$

7. Which event could BEST be represented with conditional probabilities?
- A. the probability that a science chemical is salt given that the chemical is white
- B. the probability that a student is tardy to school on Monday given that the student was tardy to school on Friday
- C. the probability that a student will take Advanced Algebra as a sophomore given that the student took Biology as a freshman
- D. the probability that a pink card is drawn twice from a deck of 40 cards where 14 of the cards are pink given that the first card is replaced
8. In Lincoln High School, 8% of the students are in the math club, 16% are in the science club, and 3% are in both clubs. What is the probability that a randomly selected student is in the math club, given that the same student is in the science club?
- A. 0.1875
- B. 0.24
- C. 0.375
- D. 0.50
9. A survey taken during class revealed 30% of the students in a class bring their lunch to school. If the probability that a randomly selected student is a boy given that the student brings their lunch is 40%, what is the probability that a randomly selected student will be a boy that brings his lunch to school?
- A. 10%
- B. 12%
- C. 70%
- D. 75%
10. There are 25 students in Maggie's science class. Her teacher will randomly choose 2 students to give their oral reports on Monday and 4 different students to give their reports on Tuesday. What is the probability that Maggie will be chosen to give her report on Monday or Tuesday?
- A. $\frac{2}{25}$
- B. $\frac{4}{25}$
- C. $\frac{146}{575}$
- D. $\frac{288}{575}$
11. Based on past experiences, Miss Olenik knows that $\frac{1}{5}$ of the mistakes on the essays she grades are grammar mistakes, $\frac{1}{8}$ of the mistakes are spelling mistakes, and $\frac{1}{12}$ of the mistakes are both grammar and spelling mistakes. If an essay is selected at random, what is the probability that the essay contains a grammar mistake or a spelling mistake?
- A. $\frac{19}{120}$
- B. $\frac{29}{120}$
- C. $\frac{39}{120}$
- D. $\frac{49}{120}$

12. There are 8 cans of cola, 6 cans of ginger ale, 4 cans of root beer, and 2 cans of orange soda in an ice chest. If Luis reaches in and pulls out one can at random, sets it aside, then pulls out another without looking, what is the probability he will select 2 cans of ginger ale?

A. $\frac{1}{10}$
C. $\frac{3}{38}$

B. $\frac{1}{30}$
D. $\frac{3}{40}$

13. Jess will flip a two-sided coin and roll a number cube with numbers 1, 2, 3, 4, 5, 6 one time. What is the probability that the coin will land on tails and the number cube will show a number greater than 4 on the top face?

A. $\frac{1}{6}$
C. $\frac{2}{3}$

B. $\frac{1}{4}$
D. $\frac{5}{6}$

14. The table shows the number of votes received by 4 candidates for mayor in a city election.

Mayoral Election Results

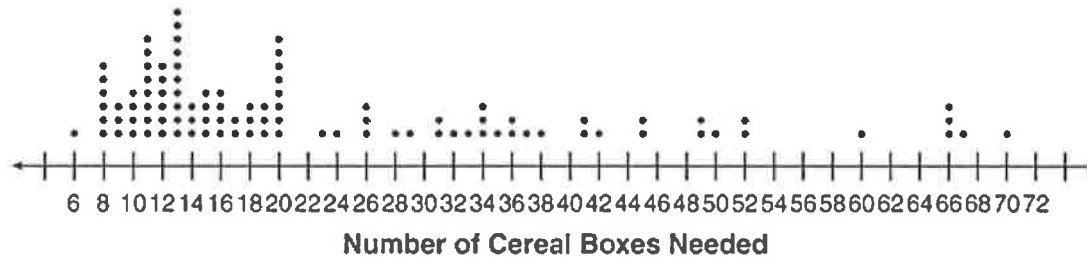
Candidate	Number of Votes
Nava	88,107
Jensen	87,922
Moretti	44,050
Chang	43,967

Stephen wants to simulate the random selection of a voter from this city. Which method would be the MOST accurate simulation?

- A. Roll a number cube, and assign outcomes as follows: 1 or 2 = Nava; 3 or 4 = Jensen; 5 = Moretti; 6 = Chang
- B. Roll a number cube, and assign outcomes as follows: 1, 2, or 3 = Nava; 4 = Jensen; 5 = Moretti; 6 = Chang
- C. Flip a coin twice, and assign outcomes as follows: HH = Nava; HT = Jensen; TH = Moretti; TT = Chang
- D. Flip a coin three times, and assign outcomes as follows: HHH, HHT, or HTH = Nava; HTT, THH, or THT = Jensen; TTH = Moretti; TTT = Chang

15. A label on a cereal box states that there is 1 of 6 different prizes inside each box. A student is interested in collecting all 6 prizes and assumes that the prizes are equally distributed among the boxes. On the 48th box of cereal selected, the student finally had at least 1 of each prize. In order to test his assumption that the prizes were equally distributed, he simulated the situation 100 times.

Cereal Box Prize Simulation



Key: • = outcome of 1 simulation

Based on the outcome of this simulation, should he conclude that the prizes were equally or not equally distributed and why?

- A. He should conclude that the prizes were not equally distributed because 48 boxes did not happen in any of the simulations.
- B. He should conclude that the prizes were equally distributed because 48 boxes might have been the result of the next simulation.
- C. He should conclude that the prizes were equally distributed because needing 48 or more boxes to collect all six prizes is common.
- D. He should conclude that the prizes were not equally distributed because most of the outcomes from the simulations were under 20 boxes to collect all six prizes.