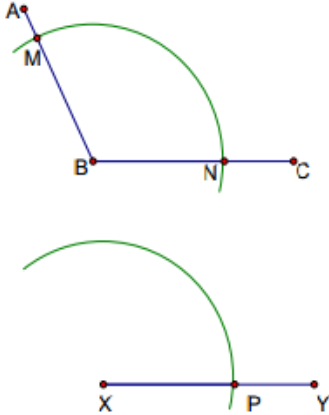


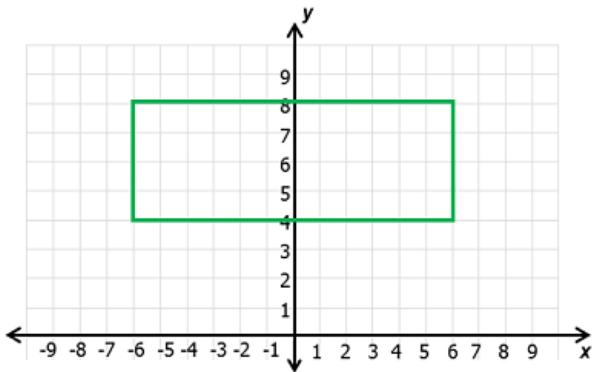
Geometry Magic 20 - Set 3

1. Tina is constructing an angle congruent to $\angle ABC$. What is her next step?



- Using MN as the radius, place the center of the compass on P and construct an intersecting arc.
- Using MB as the radius, place the center of the compass on P and construct an intersecting arc.
- Using MN as the radius, place the center of the compass on Y and construct an intersecting arc.
- Using MN as the radius, place the center of the compass on X and construct the intersecting arc.

2. A rectangle is shown.



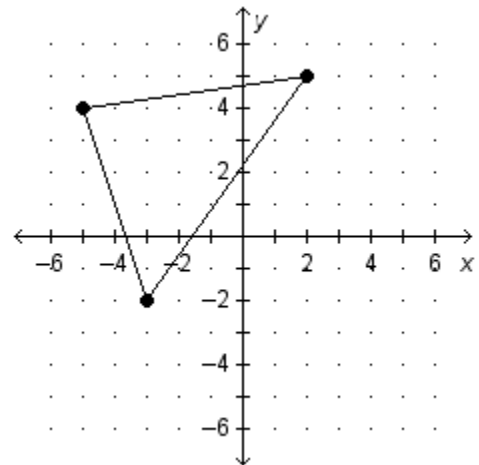
Which transformation will **NOT** map the rectangle onto itself?

- A reflection over the y -axis
- A rotation of 180° about the point $(0,6)$
- A rotation of 90° about the origin
- A reflection over the line $y = 6$

3. Which of the following best describes the correct definition of the term?

- A line has no dimension and is one of the undefined terms of geometry.
- A ray is a straight arrangement of points extending without end in opposite directions.
- A point is part of a line that consists of a point called an endpoint and all points on the line that extend in one direction.
- A line segment is a part of a line that consists of two points called endpoints and all of the points between those endpoints.

4. Which of the following are the vertices of the image of the figure below under the translation $(x, y) \rightarrow (x + 4, y - 2)$?



Choose all that apply.

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

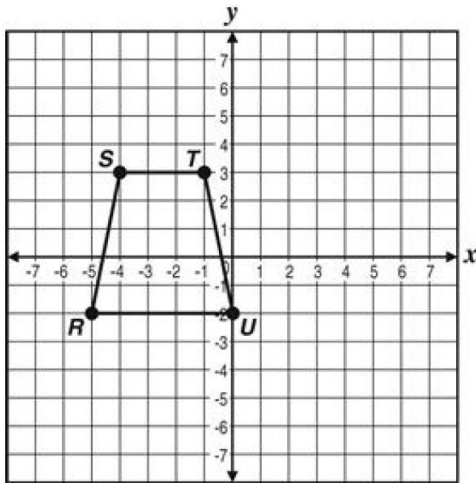
5. The equation of a line is $2x + 3y = 4$. Select **three** lines that are parallel to the given line.

- A. $2x + 3y = 2$
- B. $2x + 5y = 15$
- C. $9y = -6x + 15$
- D. $3y = -2x - 12$
- E. $3x - 2y = 15$

6. Triangle $FX Y$ is rotated and then translated to a new location and named triangle $A B C$. Which of the following is true?

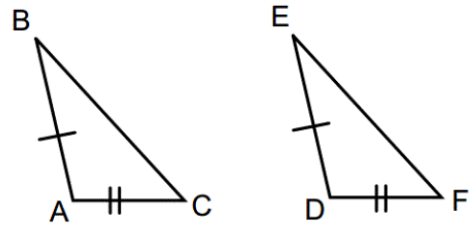
- A. $\Delta F X Y$ is congruent to $\Delta A B C$ because only rigid motions were performed.
- B. $\Delta F X Y$ is congruent to $\Delta A B C$ because non-rigid motions were performed.
- C. $\Delta F X Y$ is not congruent to $\Delta A B C$ because only rigid motions were performed.
- D. $\Delta F X Y$ is not congruent to $\Delta A B C$ because non-rigid motions were performed.

7. Which is closest to the perimeter of Figure $R S T U$?



- A. $8 + \sqrt{26}$
- B. 18
- C. 20
- D. $8 + 2\sqrt{26}$

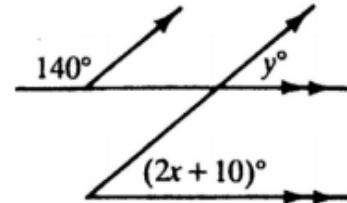
8. Veronica is trying to prove $\Delta A B C \cong \Delta D E F$.



Which statement would not help to prove the two triangles congruent?

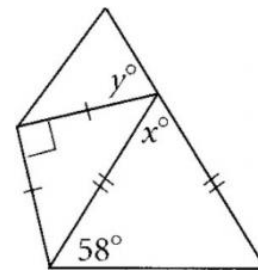
- A. $\angle C \cong \angle F$
- B. $BC \cong EF$
- C. $\angle A \cong \angle D$
- D. $DE \cong AB$

9. Find the values of x and y .



$x =$

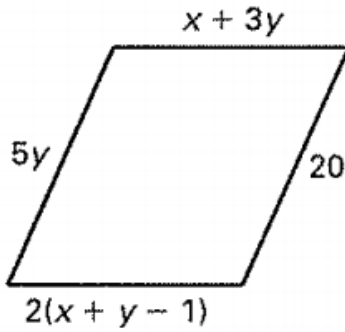
$y =$



$x =$

$y =$

10. What value of x and y will make the polygon a parallelogram?



$x =$

$y =$

11. Point S is reflected about the x -axis in the coordinate plane and then rotated 90° counterclockwise about the origin to create Point S' . Which relationship between S' and S must be true?

- A. S' is the same point as S .
- B. S' is S reflected about the y -axis.
- C. S' is S reflected about the line $y = -x$.
- D. S' is the result of switching coordinates of S .

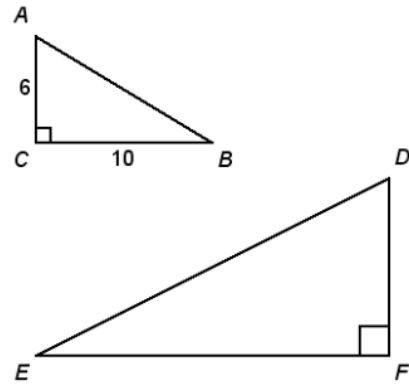
12. If one line passes through the points $(-3, 8)$ & $(1, 9)$, and a perpendicular line passes through the point $(-2, 4)$, what is another point that would lie on the 2nd line. Select all that apply.

- A. $(-1, 0)$
- B. $(2, 5)$
- C. $(5, 2)$
- D. $(-6, 3)$
- E. $(8, -3)$
- F. $(-3, 8)$

13. The center of a circle is at $(-7, 2)$ and the point $(-6, 3)$ is on the circle. Which is the equation for the circle.

- A. $(x - 7)^2 + (y + 2)^2 = 2$
- B. $(x - 7)^2 + (y + 2)^2 = 4$
- C. $(x + 7)^2 + (y - 2)^2 = 2$
- D. $(x + 7)^2 + (y - 2)^2 = 4$

14. In the figure below, $\triangle ABC \sim \triangle DEF$. Find the ratio $\frac{EF}{DF}$.



- A. $\frac{3}{5}$
- B. $\frac{\sqrt{34}}{5}$
- C. $\frac{5}{3}$
- D. $\frac{\sqrt{34}}{3}$

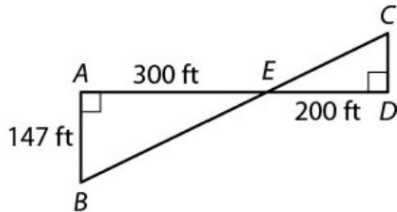
15. If $\sin 52^\circ \approx 0.788$, what is the approximate value of $\cos 38^\circ$?

- A. 0.212
- B. 0.384
- C. 0.616
- D. 0.788

16. An iron paperweight has the shape of a cube with side length 5 cm. Iron has a density of 7.874 grams per cubic centimeter. What is the mass of the paperweight?

- A. 15.88 g
- B. 39.37 g
- C. 196.85 g
- D. 984.25 g

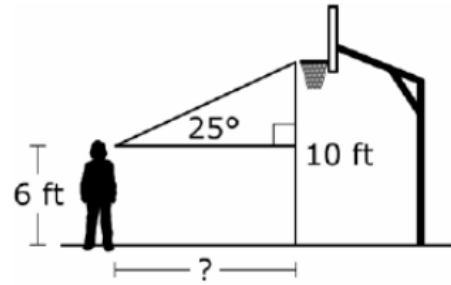
17. Andy wants to find the distance across a river. In order to find the distance CD , Andy stands at point D , directly across from point C , and walks 200 feet to the left, placing a marker at a point E . Andy continues walking another 300 feet to point A , and then follows the path to the left, walking until the markers at points E and C line up. Andy marks this location B and measures AB . What is CD ?



- A. 33 ft
 B. 47 ft
 C. 98 ft
 D. 108 ft
18. $\triangle EFG$ has vertices $E(-4, 0)$, $F(-4, 4)$, and $G(0, 0)$. $\triangle HIJ$ has vertices $H(3, 2)$, $I(3, -3)$, and $J(-2, 2)$. Are $\triangle EFG$ and $\triangle HIJ$ similar? Select the transformations that map EFG to HIJ , and can be used to determine whether or not the triangles are similar.

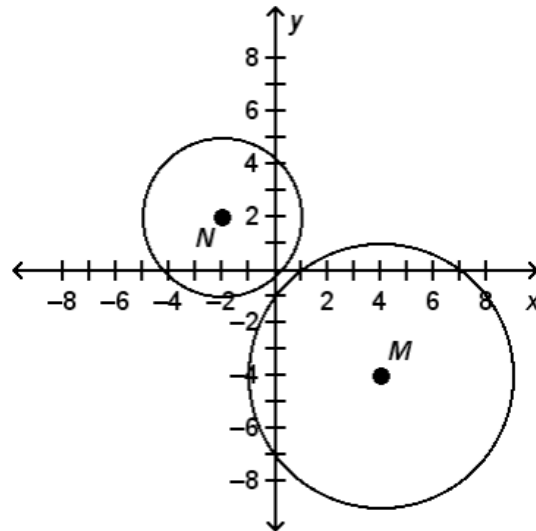
- A. Rotate 90° counterclockwise around $(3, 2)$.
 B. Rotate 180° clockwise around $(3, 2)$.
 C. $(x, y) \rightarrow (x - 7, y - 2)$
 D. $(x, y) \rightarrow (x - 2, y - 7)$
 E. $(x, y) \rightarrow \left(\frac{4}{5}x, \frac{4}{5}y\right)$
 F. $(x, y) \rightarrow (4x, 4y)$
 G. $(x, y) \rightarrow (5x, 5y)$

19. A basketball player looks directly at the rim that is 10 feet high. The angle of elevation from her eye level, which is 6 feet above the ground, to the rim is 25 degrees. To the nearest foot, how far away from the rim is she standing?



- A. 6 ft.
 B. 9 ft.
 C. 21 ft.
 D. 25 ft.

20. Which sequences of transformations will map circle M onto circle N ?



- A. a reflection across the line $x = 2$ followed by a translation 6 units to the left.
 B. a reflection across the line $y = -1$ followed by a translation 6 units to the left.
 C. a reflection across the line $y = x - 2$, followed by a dilation with center N and scale factor $\frac{3}{5}$.
 D. a translation 6 units up and 6 units to the left, followed by a dilation with center N and scale factor $\frac{3}{5}$.
 E. a dilation with center M and scale factor $\frac{5}{3}$ followed by a translation 6 units up and 6 units to the left.