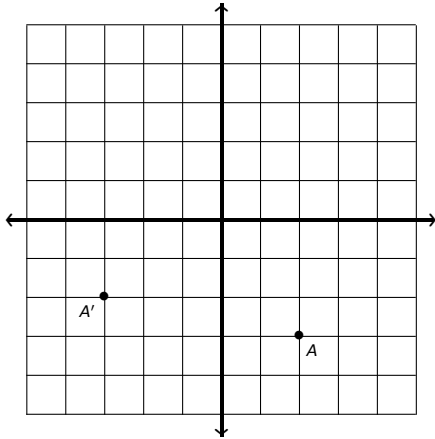


Name: \_\_\_\_\_

Date: \_\_\_\_\_

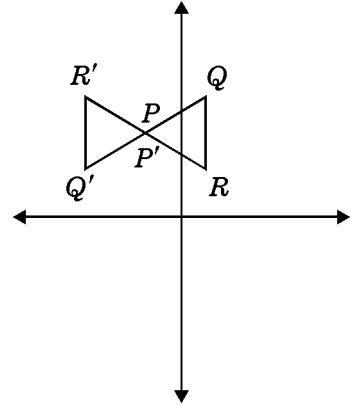
1.  $A'$  is the image of  $A$ . Which of the following rotations could be used to perform this transformation?
- I.  $90^\circ$  clockwise
  - II.  $90^\circ$  counterclockwise
  - III.  $270^\circ$  clockwise
  - IV.  $270^\circ$  counterclockwise



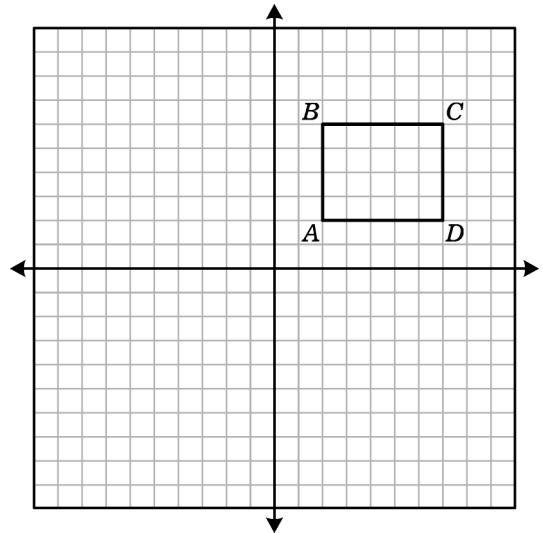
- A. I only                      B. I and II  
 C. I and III                  D. I and IV
2. What are the coordinates of  $(1, 2)$  after a translation down 2 units and then a rotation of  $180^\circ$  in a counterclockwise direction about  $(0, 0)$ ?
- A.  $(0, 1)$     B.  $(0, -1)$     C.  $(-1, 0)$     D.  $(1, 0)$
3. Which shape, if rotated  $90^\circ$ , will coincide with itself? ("Coincide" means means there's an exact match between the set of points, or one shape will lay perfectly on top of the other.)
- A. rectangle                  B. equilateral triangle  
 C. parallelogram            D. square
4. Which shape, if rotated  $120^\circ$ , will coincide with itself? ("Coincide" means means there's an exact match between the set of points, or one shape will lay perfectly on top of the other.)
- A. trapezoid                  B. equilateral triangle  
 C. isosceles triangle        D. square

5. In the diagram,  $\triangle P'Q'R'$  is the image of  $\triangle PQR$ . Which type of transformation is shown?

- A. reflection  
 B. rotation  
 C. translation  
 D. dilation



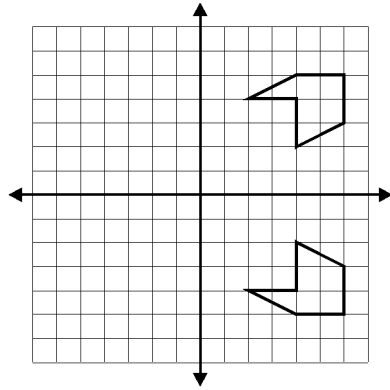
- 6.



Using the coordinate plane, which of the following statements would result in figure  $ABCD$  being in Quadrant II?

- I. Figure  $ABCD$  is reflected across the  $x$ -axis.
  - II. Figure  $ABCD$  is reflected across the  $y$ -axis.
  - III. Figure  $ABCD$  is translated 4 units to the left and 2 units down.
  - IV. Figure  $ABCD$  is rotated  $90^\circ$  about point  $B$ .
- A. I only    B. II only    C. III only    D. IV only

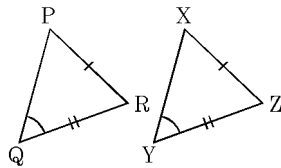
7. Which of the following is the correct mapping for shape A to shape B?



- A.  $(x, y) \rightarrow (-x, -y)$       B.  $(x, y) \rightarrow (-x, y)$   
 C.  $(x, y) \rightarrow (x, -y)$       D.  $(x, y) \rightarrow (x - 3, y)$

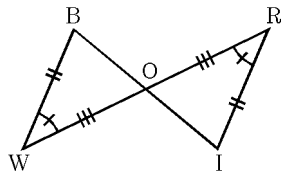
8. State the congruence relation for  $\triangle XYZ$  and  $\triangle PQR$ .

- A. AAA  
 B. SSA  
 C. SAS  
 D. not necessarily congruent



9. State the congruence relation for  $\triangle BWO$  and  $\triangle IRO$ . Use only the markings in the diagram.

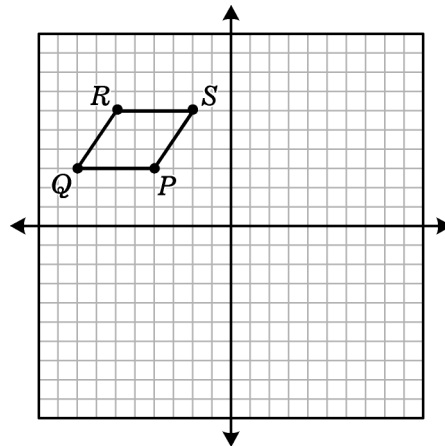
- A. ASA  
 B. SSA  
 C. SAS  
 D. not necessarily congruent



10. Marcus wants to move triangle  $PQR$  in such a way that vertex  $P$  is moved from the point  $(-2, 5)$  to  $(-3, -3)$ . What are the steps that can be used for this translation?

- A. Move the triangle one unit up and eight units down.  
 B. Move the triangle eight units to the left and one unit down.  
 C. Move the triangle eight units to the left and one unit up.  
 D. Move the triangle one unit to the left and down eight.

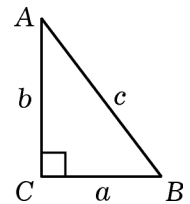
11. If the parallelogram translated to the right 4 units, then reflected over the  $x$ -axis, what would be the coordinates of point  $P$ ?



- A.  $(0, -3)$       B.  $(-1, 1)$       C.  $(0, -1)$       D.  $(3, -1)$

12. Given the triangle shown, which of the following is true?

- A.  $\sin B = \frac{c}{b}$       B.  $\cos A = \frac{c}{b}$   
 C.  $\tan A = \frac{b}{a}$       D.  $\sin B = \frac{b}{c}$

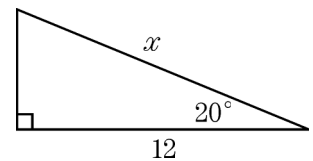


13. The sides of a right triangle are 5, 12, and 13. The sine of the smallest angle is

- A.  $\frac{5}{12}$       B.  $\frac{5}{13}$       C.  $\frac{12}{13}$       D.  $\frac{13}{5}$

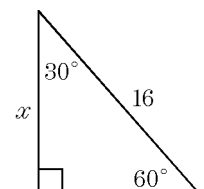
14. Which equation can be used to find the value of  $x$  in the right triangle shown?

- A.  $\cos 20^\circ = \frac{x}{12}$   
 B.  $\sin 20^\circ = \frac{12}{x}$   
 C.  $\cos 20^\circ = \frac{12}{x}$   
 D.  $\cos 70^\circ = \frac{x}{12}$



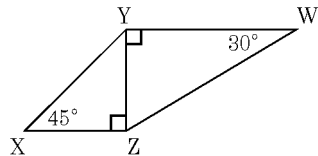
15. Approximate  $x$  to the nearest tenth.

- A. 8      B. 10.7  
 C. 11.4      D. 13.9



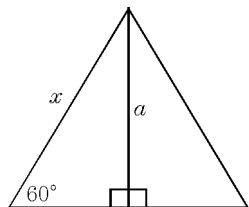
16. If the length of  $\overline{YW}$  is  $\sqrt{3}$ , what is the length of  $\overline{XY}$ ?

- A.  $\sqrt{2}$
- B.  $2\sqrt{2}$
- C.  $3\sqrt{2}$
- D.  $3\sqrt{6}$



17. Solve for the altitude  $a$  in terms of  $x$ .

- A.  $3\sqrt{x}$
- B.  $\frac{3\sqrt{2}}{2}$
- C.  $\frac{x\sqrt{2}}{2}$
- D.  $\frac{x\sqrt{3}}{2}$



18. Determine the domain for the following function.

$$f(x) = -\sqrt{x-9} + 5$$

- A.  $[-5, \infty)$
- B.  $[5, \infty)$
- C.  $(-\infty, 9]$
- D.  $[9, \infty)$

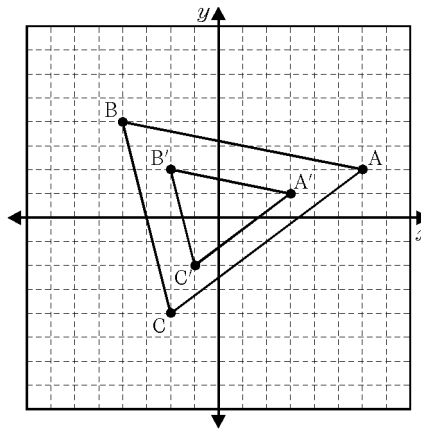
19. The hang time (in seconds) for a football that has been kicked into the air is given by the function

$$T(h) = \frac{\sqrt{h}}{2}$$

where  $h$  represents the maximum height of the football. Which of the following is the most reasonable domain for this situation?

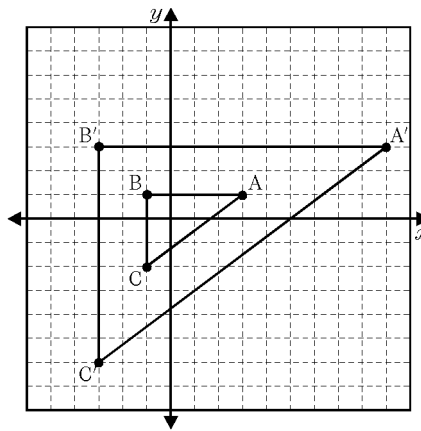
- A. all real numbers
- B.  $[0, \infty)$
- C.  $(0, \infty)$
- D.  $[0, 60]$

20. What is the scale factor of the dilation that maps  $\triangle ABC \rightarrow \triangle A'B'C'$ ?



- A.  $\frac{1}{2}$
- B. 3
- C. 4
- D. 6

21. What is the scale factor of the dilation that maps  $\triangle ABC \rightarrow \triangle A'B'C'$ ?



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

22. The shortest side of a triangle has length 4. The other sides have lengths  $x$  and  $x + 1$ . Find the value of  $x$  that makes the triangle a right triangle.

- A.  $7\frac{1}{2}$
- B. 8
- C. 15
- D. 16

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1.  
Answer: D  
Objective: G.CO.2

2.  
Answer: C  
Objective: G.CO.2

3.  
Answer: D  
Objective: G.CO.3

4.  
Answer: B  
Objective: G.CO.3

5.  
Answer: B  
Objective: G.CO.5

6.  
Answer: B  
Objective: G.CO.5

7.  
Answer: C  
Objective: G.CO.6

8.  
Answer: D  
Objective: G.CO.7

9.  
Answer: C  
Objective: G.CO.7

10.  
Answer: D  
Objective: G.03C

11.  
Answer: A  
Objective: G.03B

12.  
Answer: D  
Objective: G.09A

13.  
Answer: B  
Objective: G.09A

14.  
Answer: C  
Objective: G.09A

15.  
Answer: D  
Objective: G.09B

16.  
Answer: A  
Objective: G.09B

17.  
Answer: D  
Objective: G.09B

18.  
Answer: D  
Objective: L.07I

19.  
Answer: D  
Objective: L.07I

20.  
Answer: A  
Objective: G.2D.1.9

21.  
Answer: C  
Objective: G.2D.1.9

22.  
Answer: A  
Objective: G.8