


# Transformations

G.CO.A.2.3.4

Review Chapter 19

Name \_\_\_\_\_

TRUE/FALSE

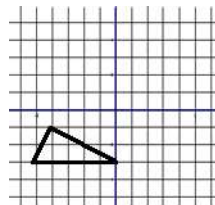
- T 1. A rotation is an isometry.
- T 2.  $T(x, y) \rightarrow (x, y + 5)$  is an isometric transformation.
- F 3. A rotational symmetry of order 2 means that the angle of the order is ~~90°~~ 180°.
- F 4. It is impossible to have a shape with 3 lines of symmetry. 
- F 5. If  $\triangle MNP$  is mapped to  $\triangle M'P'N'$  by a single transformation, then it had to be a reflection.
- T 6. If  $T_{\langle 6,0 \rangle}(\triangle ABC) = \triangle DEF$  then  $BE = 6$  units.
- T 7.  $T(x, y) \rightarrow (x + 2, y)$  moves every point in the plane to a new location.

MULTIPLE CHOICE

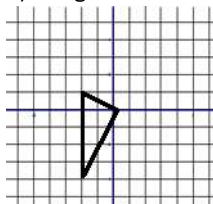
- D 8. Which shape property is not guaranteed in an isometric transformation?
- A) Distances
  - B) Angles
  - C) Collinearity
  - D) Location

9. Determine if the following are isometric or not.

Pre-Image

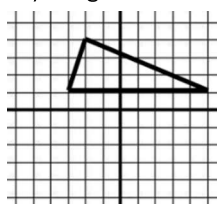


a) Image



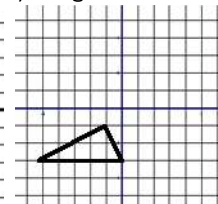
Isometry?  
Y or N

b) Image



Isometry?  
Y or N

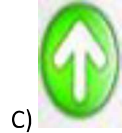
c) Image



Isometry?  
Y or N

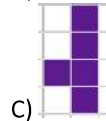
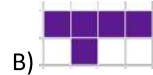
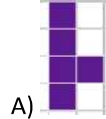
A, B, D 10. Which of the following is an

isometric transformation of ? Choose all that apply.



A, B, C 11. Which of the following is an

isometric transformation of :

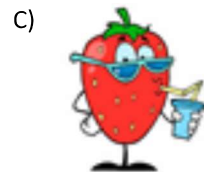
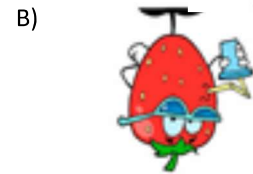


- C 12. Which term describes a transformation that does not alter a figure's shape or size?
- A) Symmetry
  - B) Similarity
  - C) Isometry
  - D) Transformation

A, B, C 13. Which of the following is an isometric transformation of the pre-image? Choose all that apply.



Pre-Image



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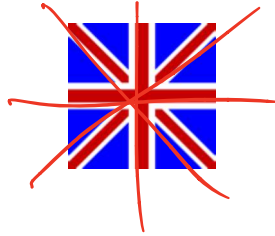
Review Chapter 19

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- A 14. When a line divides a shape into two congruent parts that line is known as:
- A) the line of symmetry
  - B) the line of axis
  - C) the dividing line
  - D) the transversal line

- C 15. How many lines of symmetry does the shape have?

- A) 1 lines of symmetry
- B) 2 line of symmetry
- C) 4 lines of symmetry
- D) 8 lines of symmetry



- B 16. This shape has:

- A) Only Rotational Symmetry
- B) Only Reflectional Symmetry
- C) Both Rotational & Reflectional Symmetries
- D) Neither symmetry



- B 17. What is the angle of rotational symmetry when the order is 10?

- A) 18°
- B) 36°
- C) 45°
- D) 72°

- D 18. Which of the following would have the greatest lines of symmetry?

- A) A Square 4
- B) Irregular Hexagon Less than 6
- C) Equilateral Triangle 3
- D) Regular Hexagon 6

- B, C, D 19. Which of the follow have both rotational and reflectional symmetry? Choose all that apply.

- A) Parallelogram
- B) Rhombus
- C) Equilateral Triangle
- D) Rectangle

- B 20. Which flag has 2 lines of symmetry and an order 2 rotational symmetry?

A) Bahama's



C) Bouvet Island



B) Austria



D) Canada

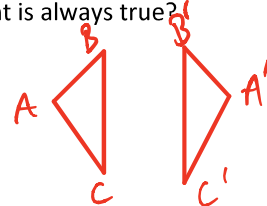


- B 21. If an 8 sided polygon had 8 lines of symmetry and a rotational order of 8, the best name for it would be:

- A) Symmetrical
- B) Regular
- C) Special
- D) Perfect

- D 22.  $\triangle ABC$  is reflected to create image  $\triangle A'B'C'$ . Which statement is always true?

- A)  $\overline{AB} \parallel \overline{A'B'}$  F
- B)  $\overline{AA'} \perp \overline{BB'}$  F
- C)  $\overline{AB} \perp \overline{A'B'}$  F
- D)  $\overline{AA'} \parallel \overline{BB'}$  T



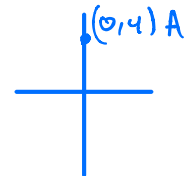
- A, B, C 23. If  $R_{O, 180^\circ}(H) = T$ , which of the below statement is true. Choose all that apply.

- T A)  $\overline{OH}$  and  $\overline{OT}$  are opposite rays
- T B)  $m\angle TOH = 180^\circ$
- T C) T is on  $\overline{OH}$
- F D)  $\angle HTO$  is a straight angle



- A 24. If  $A(0,4)$ , which of the following transformation would map  $A = A'$ ?

- a)  $R_{A, 180^\circ}$  ✓
- b) Translate by  $\langle -3, 0 \rangle$  X
- c)  $r_x$  axis X
- d)  $r_x = 4$  X



- B 25. A figure is transformed in a plane such that no point maps to itself. Which transformation must it be?

- A) Reflection
- B) Translation
- C) Rotation
- D) Dilation

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**SHORT ANSWER**

26. Given coordinate rule,  $T(x, y) \rightarrow (x - 5, 2y)$  determine the image of  $A(-9, 3)$ ?  $x'$   $y'$

$$A(-9, 3) \rightarrow A'((-9) - 5, 2(3))$$

$$A(-9, 3) \rightarrow A'(-14, 6)$$

27. Given coordinate rule,  $T(x, y) \rightarrow (x, x + y)$  determine the image of  $A(-4, 5)$ ?

$$A(-4, 5) \rightarrow (-4, -4 + 5)$$

$$A(-4, 5) \rightarrow A'(-4, 1)$$

28. Given coordinate rule,  $T(x, y) \rightarrow (-x^2, x - 5)$  determine the image of  $A(-2, 2)$ ?

$$A(-2, 2) \rightarrow A'(-(-2)^2, -2 - 5)$$

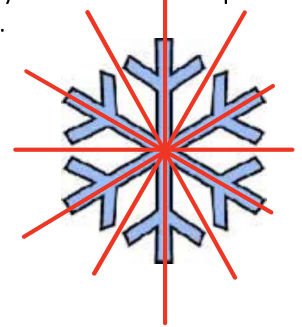
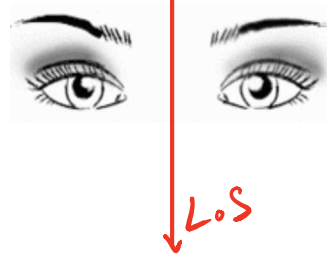
$$A(-2, 2) \rightarrow A'(-4, -7)$$

29. Given coordinate rule,  $T(x, y) \rightarrow (x + 2, y - 6)$  determine the pre-image of  $A'(-2, 2)$ ?

$$A'(-2, 2) = (x + 2, y - 6)$$

$$\left. \begin{array}{l} x' = x + 2 \\ -2 = x + 2 \\ -4 = x \end{array} \right\} \begin{array}{l} y' = y - 6 \\ 2 = y - 6 \\ 8 = y \end{array}$$

30. Draw in the lines of symmetry for each of the shapes. If none, leave the diagram blank.

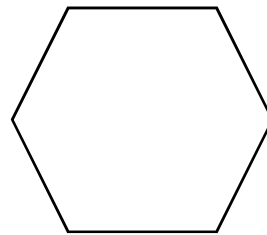


31. Determine the rotational symmetry order and angle of rotation for each diagram. If none, write 1.



Order = 2

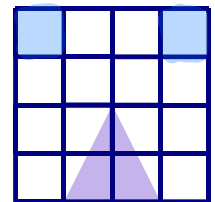
Angle = 180°



Order = 6

Angle = 60°

32. Given the shape, shade it so it has exactly one line of symmetry



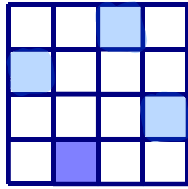
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33. Given the shape, shade it so that it has rotational symmetry of order 4



34. If point A is reflected over line  $m$  and  $A = A'$ . What do we know about the location of point A?

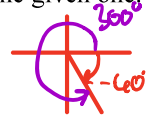
Point A is on line  $m$

35.  $\triangle ABC$  is reflected over line  $g$  to create the image  $\triangle A'B'C'$ . What is the relationship between  $\overline{AA'}$ ,  $\overline{BB'}$  and  $\overline{CC'}$ ?

$\overline{AA'} \parallel \overline{BB'} \parallel \overline{CC'}$

36. Determine the smallest positive angle of rotation that would perform the same rotation as the given one.

a)  $R_{O,-60^\circ} = R_{O, \underline{300}^\circ}$



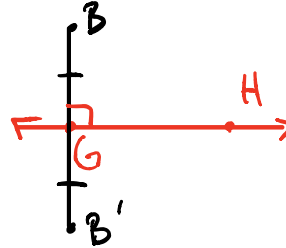
b)  $R_{O,721^\circ} = R_{O, \underline{1}^\circ}$



c)  $R_{O,-90^\circ} = R_{O, \underline{270}^\circ}$



37. Point B is reflected over  $\overleftrightarrow{GH}$  resulting in G being the midpoint of  $\overline{BB'}$ . What is the  $m\angle BGH$ ? Draw a diagram and explain your answer.



$\overleftrightarrow{GH}$  is the  $\perp$  bisector of  $\overline{BB'}$   
 $\therefore m\angle BGH = 90^\circ$