

Name: Kelly

Date: _____

UNIT 2

REVIEW

REVIEW FOR TEST#2 – RIGID MOTIONS

1. What is **line** symmetry? Drawing a line + dividing a figure in 2 \cong parts

True or False: Orientation is preserved under line symmetry? False

2. What is **rotational** symmetry? Rotating about a figures center $< 360^\circ$ to map onto itself

True or False: Orientation is preserved under rotational symmetry? True

3. What is **point** symmetry? 180° rotational symmetry

True or False: Orientation is preserved under point symmetry? True

4. Which letter has both point and line symmetry?

- (1) Z
- (2) T
- (3) C
- (4) H

5. Which letter has point symmetry but *not* line symmetry?

- (1) H
- (2) S
- (3) T
- (4) X

6. Which of the following will produce the same result as a rotation of 270° counterclockwise?

- 1) A reflection over a vertical line
- 2) A reflection over a horizontal line
- 3) A translation to the left and down.
- (4) A rotation of 90° clockwise.

7. Which of the following transformations produces the same result as a reflection over the x-axis followed by a reflection over the y-axis?

- 1) A reflection in the line $y = x$.
- 2) A reflection in the line $y = -x$.
- 3) A rotation in the origin of -90° .
- (4) A rotation in the origin of 180° .

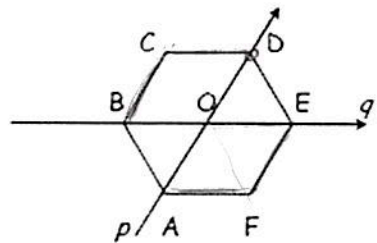
8. In the accompanying figure, p and q are lines of symmetry for regular hexagon ABCDEF intersecting at point O, the center of the hexagon. Determine the image of **each** rigid motion:

a) Reflect point A over line q = C

b) Reflect \overline{CB} over line p = EF

c) Reflect point D over line p = D

d) Reflect \overline{AF} over line q then over line p = DE

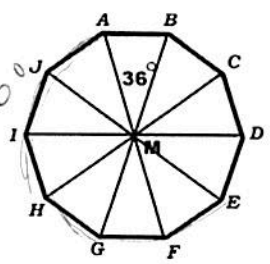


9. Determine the images of the following transformations in this regular decagon.

a) How many degrees are in a minimum rotation to map the decagon onto itself? $\frac{360}{10} = 36^\circ$

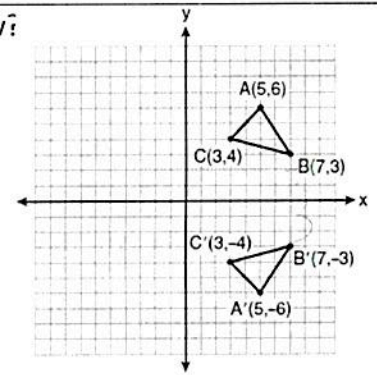
b) How many degrees are between point A and point G in a counter clockwise direction? $36 \times 4 =$

b) How many degrees are between point C and point E in a counter clockwise direction? $36 \times 8 =$



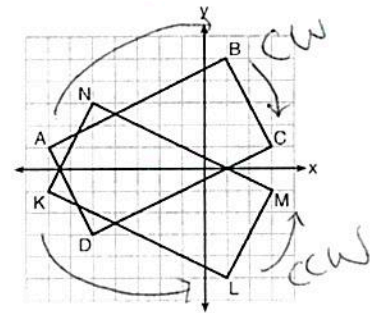
10. Which expression best describes the transformation shown in the diagram below?

- 1) Orientation is preserved; reflection
- 2) Orientation is not preserved; reflection
- 3) Orientation is preserved; translation
- 4) Orientation is not preserved; translation



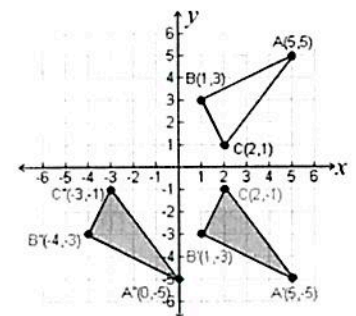
11. On the set of axes below, rectangle $ABCD$ can be proven congruent to rectangle $KLMN$ using which transformation?

- 1) rotation
- 2) translation
- 3) reflection over the x -axis
- 4) reflection over the y -axis



12. $\triangle A''B''C''$ is the image of $\triangle ABC$, as shown in the graph at the right. Which statement represents the sequence of transformations in this situation?

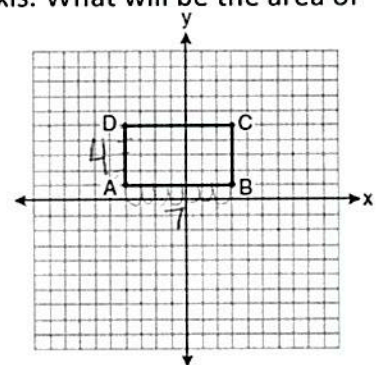
- 1) A reflection over the x -axis followed by a translation of left 5 units
- 2) A translation of 5 units down followed by a reflection over the x -axis
- 3) A reflection over the x -axis followed by a translation of right 5 units
- 4) A translation of 5 units right followed by a reflection over the x -axis



13. On the set of axes below, Geoff drew rectangle $ABCD$. He will transform the rectangle by using the translation of right two units, up one unit followed by a reflection over the x -axis. What will be the area of the rectangle after these transformations?

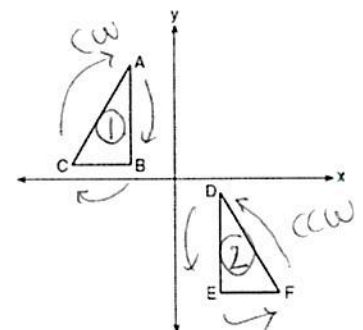
- 1) exactly 28 square units
- 2) less than 28 square units
- 3) greater than 28 square units
- 4) It cannot be determined from the information given

size doesn't change \rightarrow area doesn't change!
 $A = l \cdot w$
 $A = 4 \times 7 = 28$



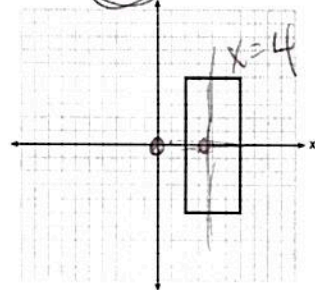
14. In the diagram below, $\triangle ABC \cong \triangle DEF$. Which sequence of transformations maps $\triangle ABC$ onto $\triangle DEF$?

- 1) a reflection over the x -axis followed by a translation
- 2) a rotation of 180° about the origin followed by a translation
- 3) a reflection over the y -axis followed by a translation
- 4) a counterclockwise rotation of 90° about the origin followed by a translation



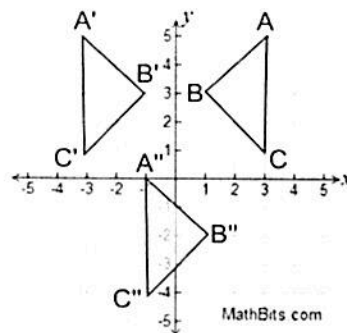
15. As shown in the graph below, the quadrilateral is a rectangle. Which transformation would not map the rectangle onto itself?

- 1) a reflection over the x -axis ✓
- 2) a reflection over the line $x = 4$ ✓
- 3) a rotation of 180° about the origin → OUTSIDE OF RECTANGLE
- 4) a rotation of 180° about the point $(4, 0)$ ✓ CENTER!



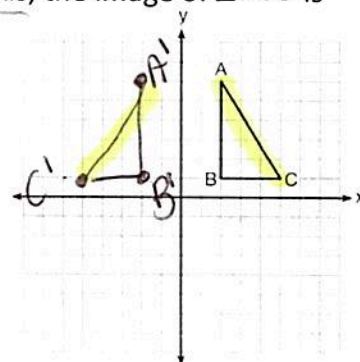
16. Which of the following descriptions pertaining to the graph at the right is true?

- 1) $\triangle A''B''C''$ is a translation of $\triangle ABC$.
- 2) $\triangle A''B''C''$ is a translation of $\triangle A'B'C'$.
- 3) $\triangle A''B''C''$ is a dilation in the origin of scale factor 2 of $\triangle ABC$
- 4) $\triangle A'B'C'$ is a translation of $\triangle ABC$



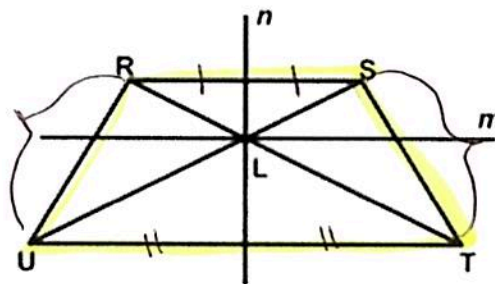
17. Right triangle ABC is shown in the graph below. After a reflection over the y -axis, the image of $\triangle ABC$ is $\triangle A'B'C'$. Which statement is not true?

- 1) $\overline{BC} \cong \overline{B'C'}$ ✓
- 2) $\overline{A'B'} \perp \overline{B'C'}$ ✓
- 3) $AB = A'B'$ ✓
- 4) $\overline{AC} \parallel \overline{A'C'}$



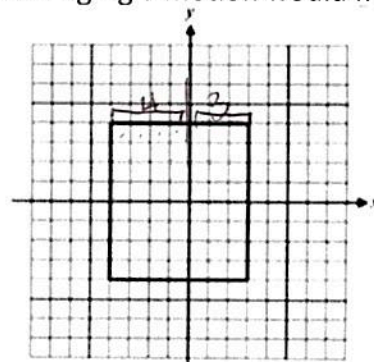
18. Trapezoid $RSTU$ is drawn below with $\overline{RU} \cong \overline{ST}$. Line n is the perpendicular bisector of \overline{RS} and \overline{UT} and line m is perpendicular to n through L . Which of the following rigid motion would carry $RSTU$ onto itself?

- 1) a rotation about L by 180
- 2) a rotation about L by 90
- 3) a reflection across line n
- 4) a reflection across line m



19. In a rectangle shown below on the coordinate grid below, which of the following rigid motion would map the figure onto itself?

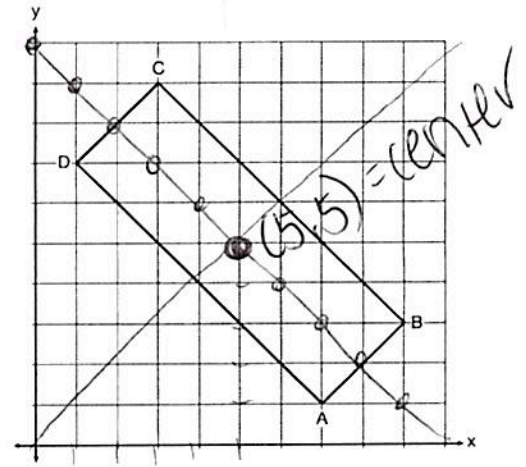
- 1) a reflection across the x -axis ✓
- 2) a reflection across the y -axis
- 3) an 180 rotation about the origin
- 4) an 90 rotation about the origin



20. In the diagram below, rectangle $ABCD$ has vertices whose coordinates are $A(7, 1)$, $B(9, 3)$, $C(3, 9)$, and $D(1, 7)$.

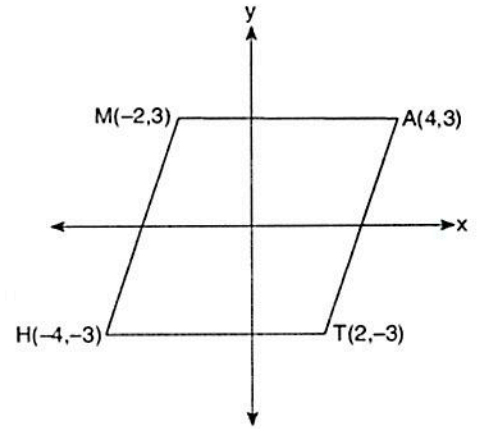
Which transformation will *not* carry the rectangle onto itself?

- 1) a reflection over the line $y = x$ ✓
- 2) a reflection over the line $y = -x + 10$ ✓
- 3) a rotation of 180° about the point $(6, 6)$ ✓
- 4) a rotation of 180° about the point $(5, 5)$ ✓ *not center*

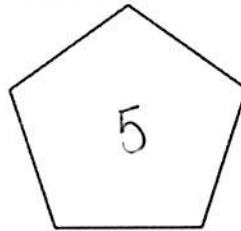


21. Which transformation carries the parallelogram below onto itself?

- 1) a reflection over $y = x$
- 2) a reflection over $y = -x$
- 3) a rotation of 90° counterclockwise about the origin
- 4) a rotation of 180° counterclockwise about the origin



22. The regular polygon below is rotated about its center.



$$\frac{360}{5} = 72, 144, 216$$

Which angle of rotation will carry the figure onto itself?

- 1) 60°
- 2) 108°
- 3) 216°
- 4) 540°

23. Which rotation about its center will carry a regular decagon onto itself?

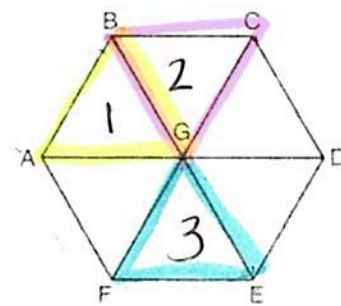
- 1) 54°
- 2) 162°
- 3) 198°
- 4) 252°

10 sides

$$\frac{360}{10} = 36, 72, 108, 144, 180, 216, 252$$

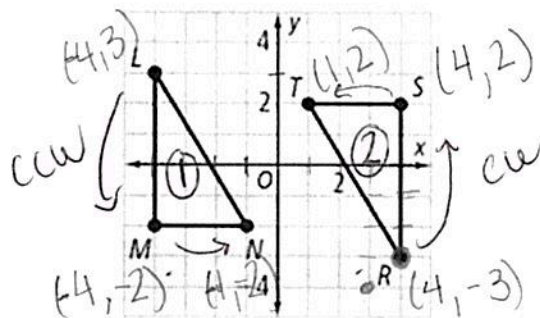
24. In regular hexagon ABCDEF shown below, \overline{AD} , \overline{BE} & \overline{CF} all intersect at G.

When $\triangle ABG$ is reflected over \overline{BG} and the rotated 180° about point G, $\triangle ABG$ is mapped onto which triangle?



$\triangle EFG$

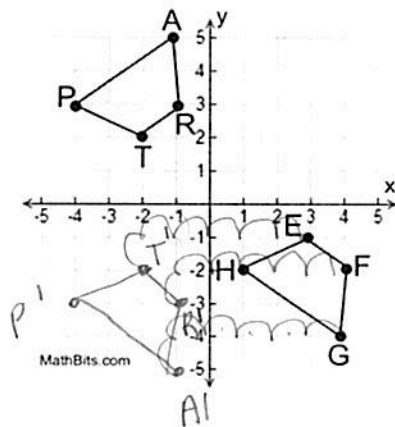
25. The graph below shows $\triangle LMN$ and its image, $\triangle RST$. Describe a sequence of rigid motion(s) which would map $\triangle LMN$ onto $\triangle RST$. Use the properties of rigid motion to explain your answer.



Rule: $(x, y) \rightarrow (-x, -y)$
 ROTATION 180°

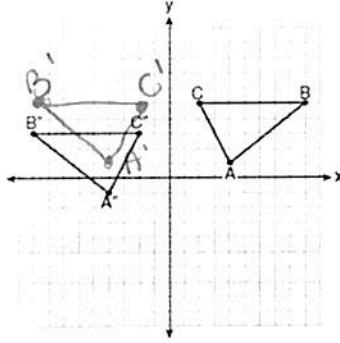
A rotation 180° about the origin. $\triangle LMN \cong \triangle RST$ b/c
 a rotation is a rigid motion which preserves distance &
 angle measure

26. The graph below shows quadrilaterals PART and its image, HGFE. Describe a sequence of rigid motion which would map PART onto HGFE. Use the properties of rigid motion to explain your answer.



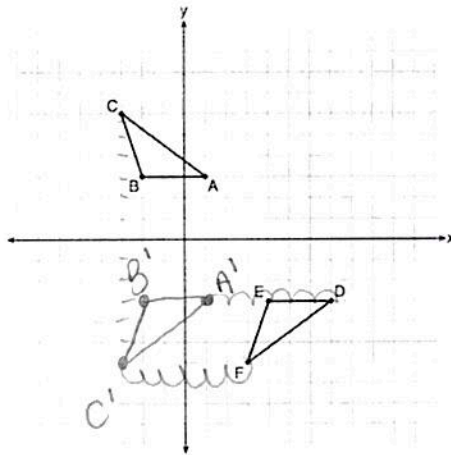
A reflection over the x-axis followed by a translation
 of up 1 unit, right 5 units. Quad PART \cong Quad HGFE
 b/c reflections & translations are rigid motions which
 preserve distance & measure

27. The graph below shows $\triangle ABC$ and its image, $\triangle A''B''C''$. Describe a sequence of rigid motions, which would map $\triangle ABC$ onto $\triangle A''B''C''$. Use the properties of rigid motion to explain your answer.



A reflection over the y-axis followed by a translation of down 2 units, $\triangle ABC \cong \triangle A''B''C''$ b/c a reflection and a translation are rigid motions which preserve distance & measure

28. The graph below shows $\triangle ABC$ and its image, $\triangle DEF$. Describe a sequence of rigid motions, which would map $\triangle ABC$ onto $\triangle DEF$. Use the properties of rigid motion to explain your answer.



A reflection over the x-axis followed by a translation of 6 units right, $\triangle ABC \cong \triangle DEF$ b/c a reflection + translation are rigid motions which preserve distance & measure