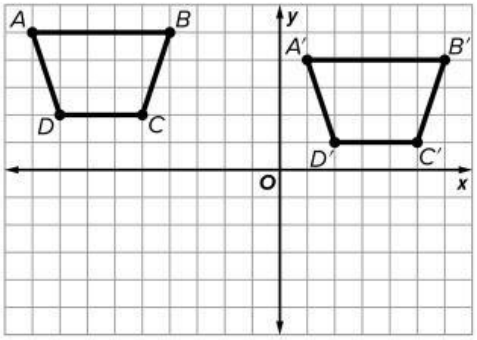
Name _____ Date _____ Period _____

Unit 2

Unit Assessment: Form A

Answer each question.

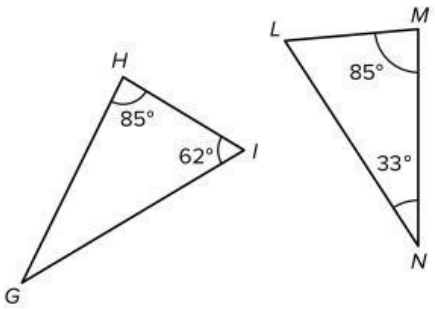
1. Trapezoid *ABCD* represents the location of a picture on Sandy's wall. Sandy moves the picture to a new location, shown by trapezoid *A′B′C′D′*.



Describe the translation of the picture.

Trapezoid *ABCD* is translated 10 units to the right and 1 unit down.

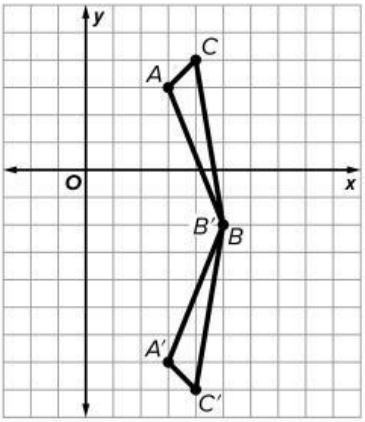
2. Consider triangles *GHI* and *LMN*.



Determine if the two triangles are similar. If so, write the similarity statement.

yes; Sample answer: Both triangles have angle measures of 33°, 62°, and 85°. △*GHI* ~△*NML*

3. Consider the graph of △*ABC* and its image △*A′B′C′*.



Which statements about the transformation shown are true? Select all that apply.

A. △*A′B′C′* is the image of a reflection of △*ABC* across the *x*-axis.

B. △*A′B′C′* is the image of a reflection of △*ABC* across the line $y = -2$.

C. The *x*-coordinates of the vertices of △*ABC* and its image △*A′B′C′* are the same.

D. The *x*-coordinates of the vertices of △*ABC* and its image △*A′B′C′* are opposites.

E. The *y*-coordinates of the vertices of △*ABC* and its image △*A′B′C′* are the same.

F. The *y*-coordinates of the vertices of △*ABC* and its image △*A′B′C′* are opposites.

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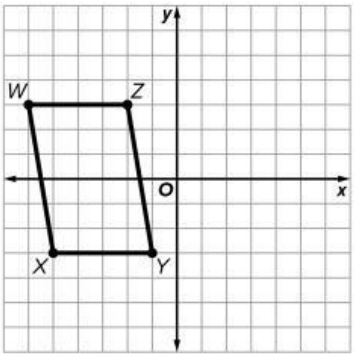
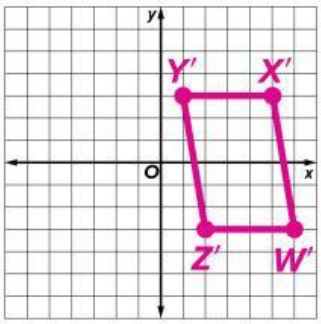
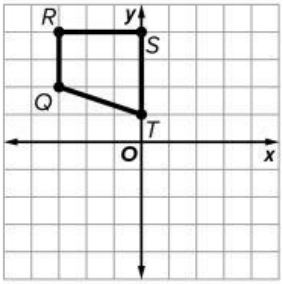
4. Parallelogram *WXYZ* is rotated 180° counterclockwise about the origin.



Graph the image of the rotation on the coordinate plane.



5. Trapezoid *QRST* represents a game piece. Jim rotates the trapezoid so that point *R′* is located at (4, 3).



Which describes the rotation that was performed?

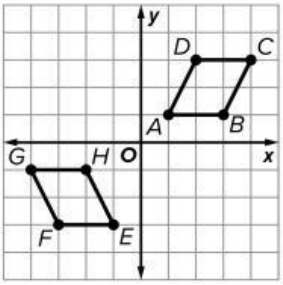
A. 270° counterclockwise about point *T*

B. 180° counterclockwise about point *T*

C. 180° clockwise about the origin

D. 90° clockwise about the origin

6. Consider quadrilaterals *ABCD* and *EFGH*.



What transformations are used to show that the two quadrilaterals are congruent? Explain.

Sample answer: *ABCD* is reflected over the *y*-axis and then translated down 4 units. The sequence of transformations does not change the size of *ABCD* and all 4 vertices map onto *EFGH*.

7. Triangle *QRS* has vertices *Q*(2, 4), *R*(5, 4) and *S*(4, 1). Triangle *TUV* has vertices *T*(6, 4), *U*(9, 4) and *V*(8, 1). Determine if △*QRS* and △*TUV* are congruent. Explain your reasoning using transformations.

Sample answer: A translation 4 units to the right maps △*QRS* onto △*TUV*, so △*QRS* is congruent to △*TUV*.

8. Triangle *JKL* has vertices *J*(3, –7), *K*(7, –3) and *L*(3, 7). What are the coordinates of point *J* after a 270° rotation counterclockwise about the origin?

J′(**–7** , **–3**)

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9. Figure *ABCD* has vertices *A*(–2, –2), *B*(1, 1), *C*(0, 4), and *D*(–3, 5). The figure is translated 2 units to the right and 1 unit down. Then it is translated 3 units to the left and 4 units up. What are the coordinates of image *A″B″C″D″* after both translations?

A″(**–3**, **1**)

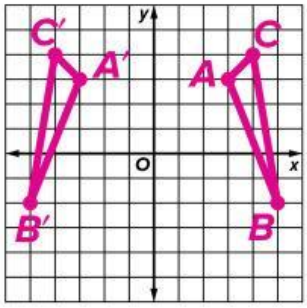
B″(**0**, **4**)

C″(**–1**, **7**)

D″(**–4**, **8**)

10. Triangle *ABC* has coordinates *A*(3, 3), *B*(5, –2), and *C*(4, 4).

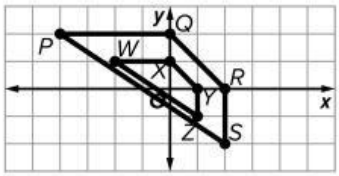
Part A Graph the preimage and image of the triangle after it is reflected across the *y*-axis.



Part B Explain how to write the coordinates of the vertices of the reflected triangle.

Sample answer: Use the rule $(x, y) \rightarrow (-x, y)$. Point *A* becomes *A′*(–3, 3), point *B* becomes *B′*(–5, –2) and point *C* becomes *C′*(–4, 4).

11. Which statement accurately describes the dilation of quadrilateral *PQRS*? Select all that apply.



A. The coordinates of quadrilateral *PQRS* are half of the coordinates of quadrilateral *WXYZ*.

B. The coordinates of quadrilateral *PQRS* are twice the coordinates of quadrilateral *WXYZ*.

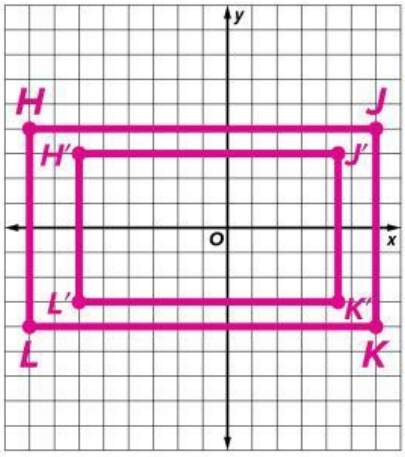
C. The dilation is an enlargement.

D. The dilation is a reduction.

E. Quadrilateral *PQRS* is dilated by a scale factor of 2.

F. Quadrilateral *PQRS* is dilated by a scale factor of $\frac{1}{2}$.

12. A figure has vertices *H*(–8, 4), *J*(6, 4), *K*(6, –4), and *L*(–8, –4). Graph the figure and the image of the figure after a dilation with a scale factor of $\frac{3}{4}$.



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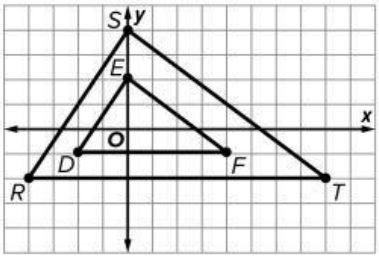
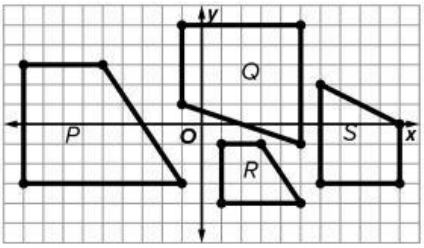
13. Consider triangles *RST* and *DEF*.



Why are the triangles similar? Describe the transformation in your answer.

Sample answer: Triangles *DEF* and *RST* are similar because a dilation with a scale factor of $\frac{1}{2}$ reduces the size of $\triangle RST$ so each vertex maps onto $\triangle DEF$.

14. Which figures represent a pair of similar figures?



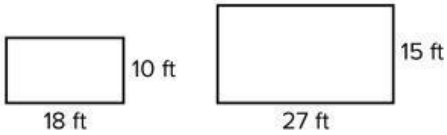
A. *P* and *Q*

B. *P* and *R*

C. *R* and *S*

D. *Q* and *S*

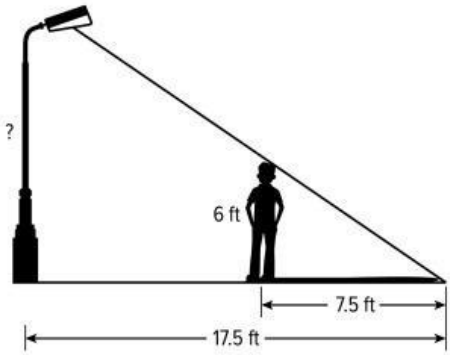
15. A farmer is planning to fence in a smaller plot of land for her sheep and a larger plot of land for her cows.



Are these similar shapes? Explain.

yes; Sample answer: The side lengths are in proportion to each other. The sides of the larger plot are 1.5 times greater than the sides of the smaller plot.

16. A street light pole casts a 17.5-foot shadow. At the same time, Mr. Brennen casts a 7.5-foot shadow.



If Mr. Brennen is 6 feet tall, what is the height of the street light pole?

14 feet

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