Transformations Study Guide

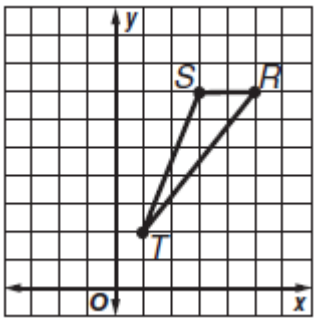
Multiple Choice
Identify the choice that best completes the statement or answers the question.

1. Triangle PQR has vertices P (3, 7), Q (-1, 11) and R (2, 13). What are the coordinates of the vertices of the image of triangle PQR after a translation of 5 units right and 3 units down?

   a. $P'(8, 4), Q'(4, 8), R'(7, 10)$
   b. $P'(8, -2), Q'(4, 2), R'(7, 4)$
   c. $P'(0, 6), Q'(-4, 10), R'(-1, 12)$
   d. $P'(-2, -2), Q'(-6, 2), R'(-3, 4)$

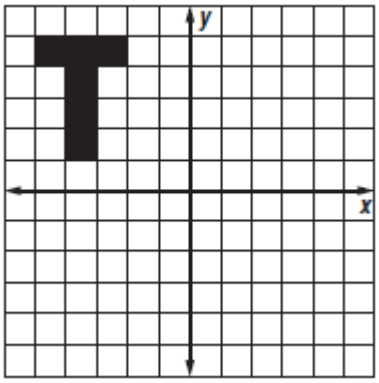
2. Triangle *EFG* has vertices *E*(–3, 1), *F*(1, 1), and *G*(4, 5). Find the coordinates of the image of point *G* after a reflection across the *x*-axis.
   a. (4, 5)
   b. (-4, 5)
   c. (4, -5)
   d. (-4, -5)

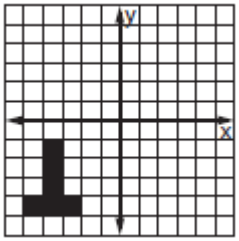
3. What are the coordinates of the vertices of the image of triangle RST after a rotation of 180° about the origin.

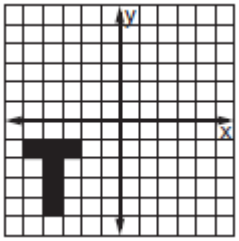


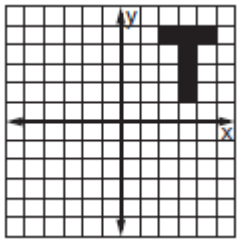
   a. $R'(-7, 5), S'(-7, 3), T'(-2, 1)$
   b. $R'(5, -7), S'(3, -7), T'(1, -2)$
   c. $R'(-5, 7), S'(-3, 7), T'(-1, 2)$
   d. $R'(-5, -7), S'(-3, -7), T'(-1, -2)$

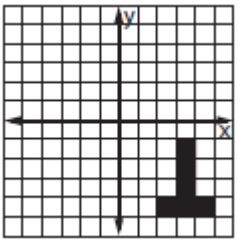
4. Which of the following shows the letter T reflected over the y-axis?



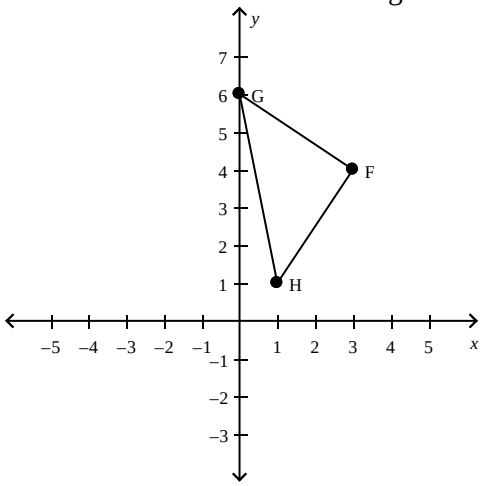
a. 

c. 

b. 

d. 

5. What are the coordinates of triangle FGH after a dilation centered at the origin with a scale factor of 2?



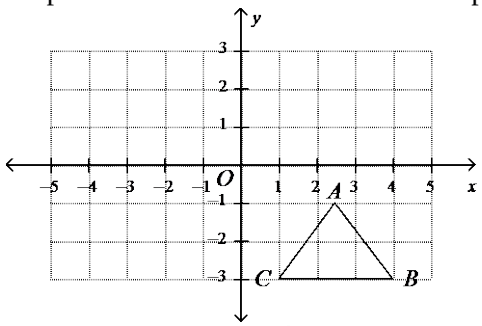
a. $F'(6, 8), G'(0, 12), H'(2, 2)$

b. $F'(-6, 8), G'(2, 12), H'(3, 3)$

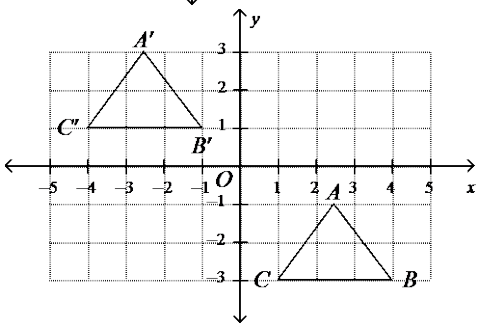
c. $F'(-5, 6), G'(2, 8), H'(3, 3)$

d. $F'(-6, 8), G'(0, 12), H'(2, 2)$

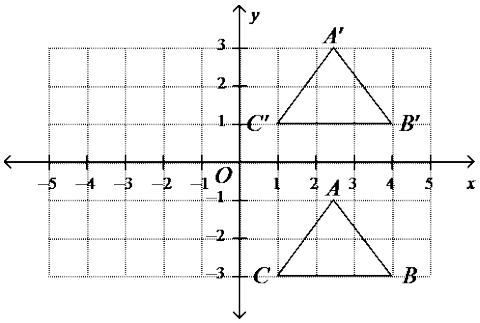
6. Graph the translation of ΔABC 3 units up and 6 units left.



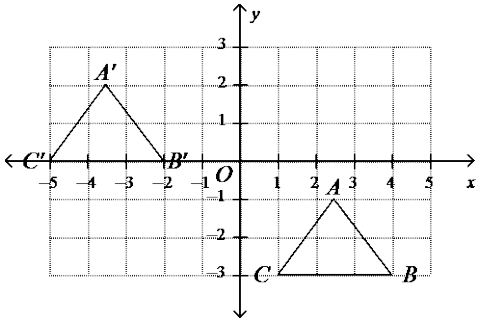
a.



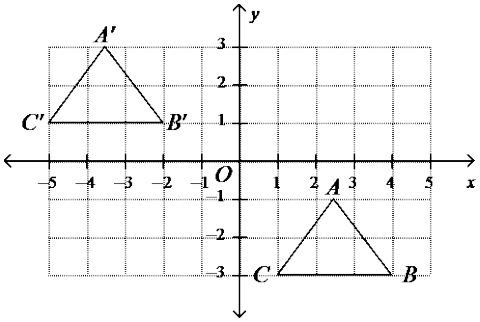
c.



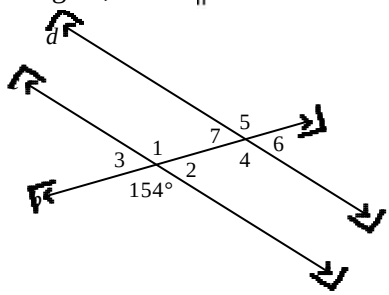
b.



d.

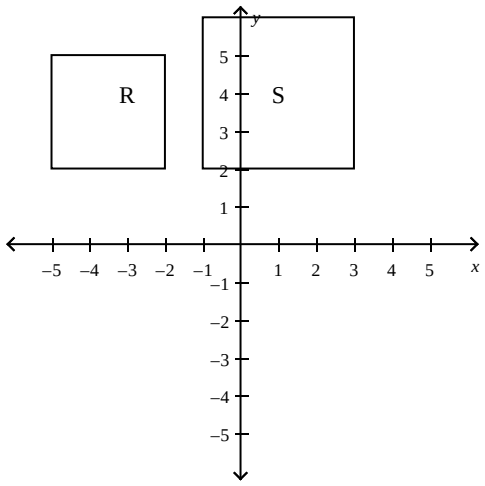


7. In the figure, line $d \parallel$ line c. Find the measure of $\angle 7$.



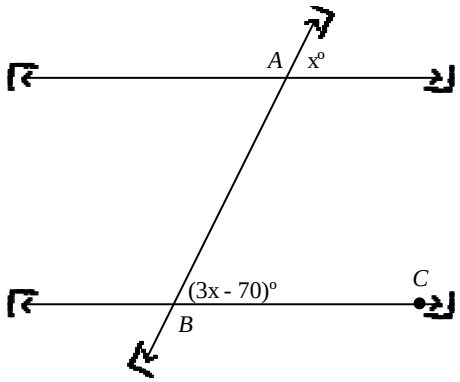
a. 144°
b. 36°
c. 154°
d. 26°

8. Which best describes the transformation of the square from R to S?



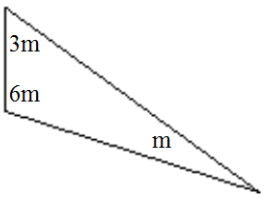
a. translation and rotation
b. rotation and reflection
c. translation and dilation
d. translation and reflection

9. Find m$\angle ABC$.



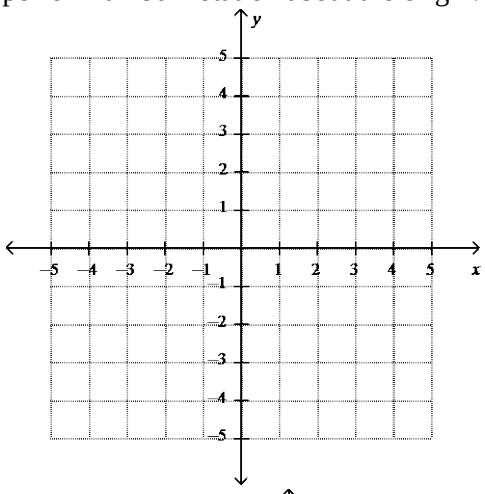
a. m$\angle ABC$ = 40°
b. m$\angle ABC$ = 45°
c. m$\angle ABC$ = 35°
d. m$\angle ABC$ = 50°

10. Find the angle measures in the scalene triangle.

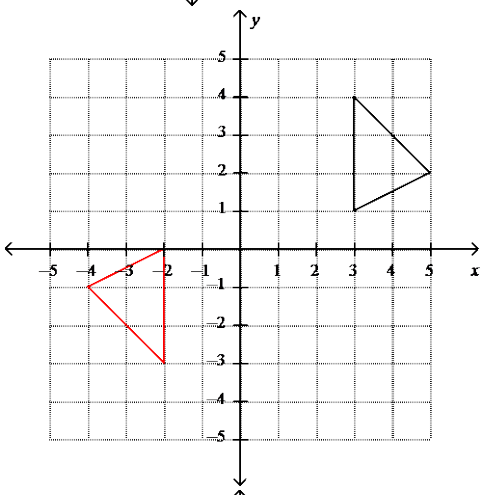


a. m = 18°, 3m = 54°, 6m = 108°
b. m = 25°, 3m = 75°, 6m = 175°
c. m = 36°, 3m = 108°, 6m = 216°
d. m = 9°, 3m = 27°, 6m = 54°

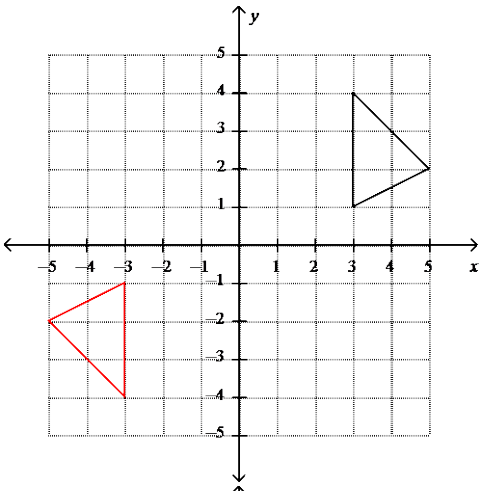
11. Draw the image of a triangle with vertices (1, 3), (2, 5), and (4, 3). Then perform the following transformation: perform a 180° rotation about the origin.



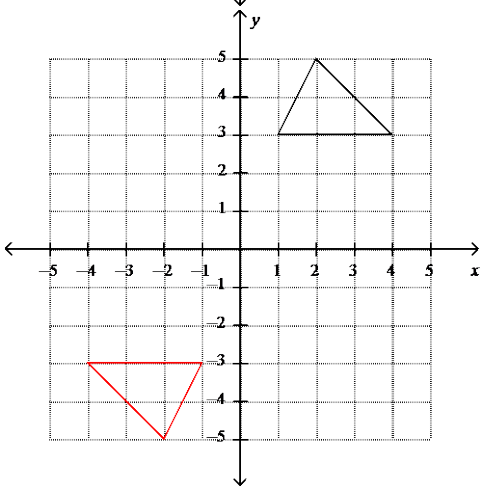
a.



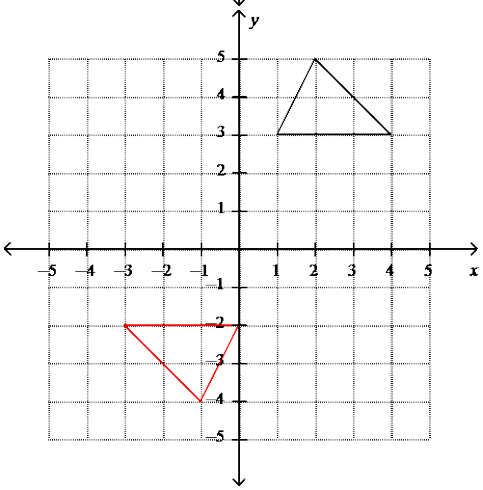
c.



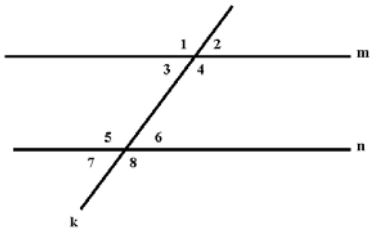
b.



d.

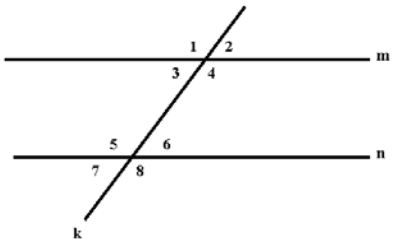


12. In the diagram below, which angles are alternate interior angles?



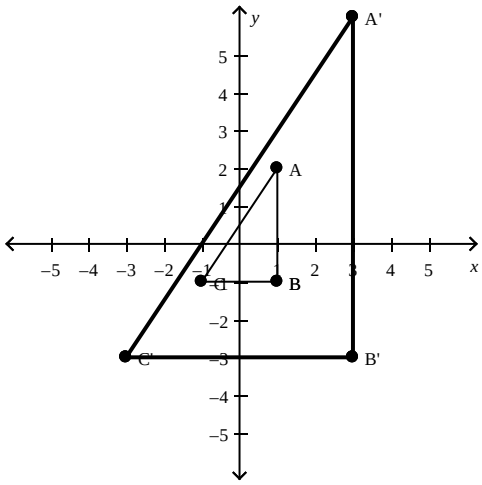
a. $\angle 1 and \angle 8$
b. $\angle 1 and \angle 5$
c. $\angle 2 and \angle 7$
d. $\angle 3 and \angle 6$

13. In the diagram above, which angles are consecutive angles?



a. $\angle 4 and \angle 5$
b. $\angle 1 and \angle 5$
c. $\angle 1 and \angle 8$
d. $\angle 4 and \angle 6$

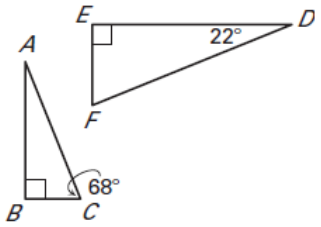
14. The graph below represents the dilation from ABCD to A'B'C'D'. What is the scale factor of the dilation?



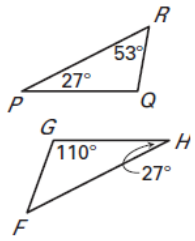
a. 3
b. 2
c. $\frac{1}{2}$
d. $\frac{1}{3}$

15. Use the Angle-Angle Similarity Postulate to determine which pair of triangles is *not* similar.

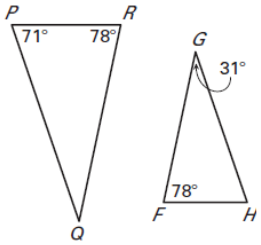
a.



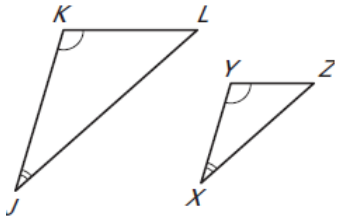
b.



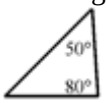
c.

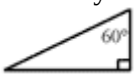


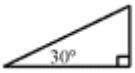
d.

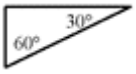


16. Which triangle is NOT similar to any of the others?

a. 

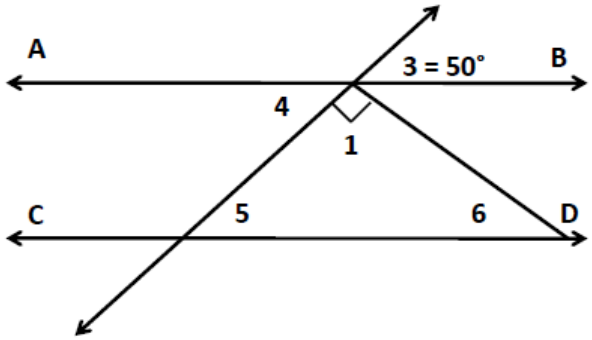
b. 

c. 

d. 

Short Answer

17. In the figure below, lines *AB* and *CD* are parallel. The measure of angle 3 is 50º. Find the measures of angles 1, 5 and 6. **(6 points; 2 points each part)**

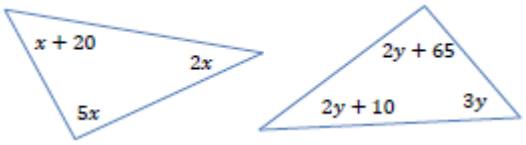


a. measure of angle 1 = _____ Explain:

b. measure of angle 5 = _____ Explain:

c. measure of angle 6 = _____ Explain:

18. Are the two triangles similar? EXPLAIN your reasoning. **(5 points)**



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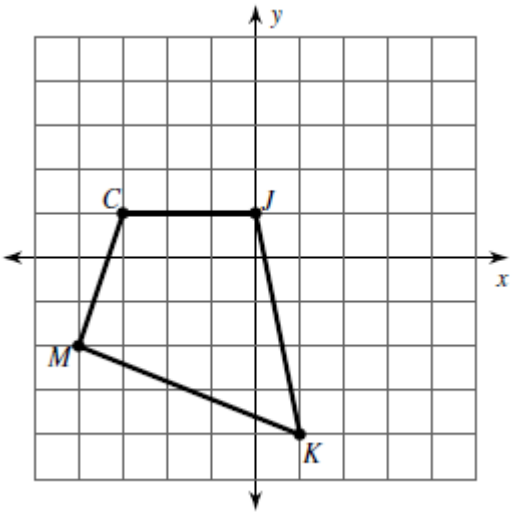
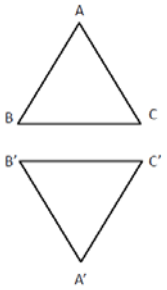
19. Graph the image of the quadrilateral after it is reflected across the y-axis and then translated up 4 units and left 2 units. **(4 points)**

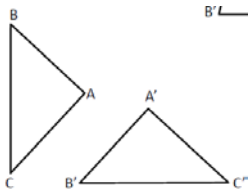


20. Identify each transformation as a translation, reflection, rotation, dilation or none of these. **(5 points; 1 point each part)**

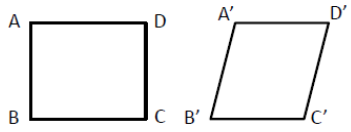
a.



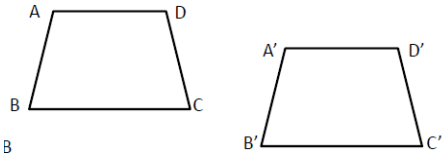
b.



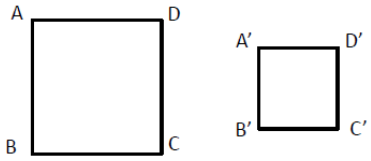
c.



d.



e.



Transformations Study Guide
Answer Section

MULTIPLE CHOICE

1. A
2. C
3. D
4. B
5. A
6. B
7. D
8. C
9. C
10. A
11. B
12. D
13. D
14. A
15. B
16. A

SHORT ANSWER

17. **a.** Angle 1 = 90º; the symbol in the diagram indicates that it is a right angle.
    b. Angle 5 = 50º; explanations will vary; some students may use an angle ruler to measure, and others may apply what they know about supplementary angles, alternate interior angles and the fact that the sum of the angles in a triangle is 180º.
    c. Angle 6 = 40º; explanations will vary. The reasoning used for angle 5 also works with angle 6.
18. The triangles are NOT similar.
    x = 20; y = 15
    The angles measure are not the same.
19. K' (-3, 0)
    J' (5, -2)
    C' (1, 5)
    M' (2, 2)
20. a. reflection
    b. rotation
    c. none of these
    d. translation
    e. dilation