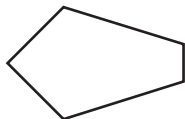


# Chapter Standardized Test

**TEST-TAKING STRATEGY** Sketch graphs or figures in your test booklet to help you solve the problems. Even though you must keep your answer sheet neat, you can make any kind of mark you want in your test booklet.

1. **MULTIPLE CHOICE** How many lines of symmetry does the polygon at the right have?

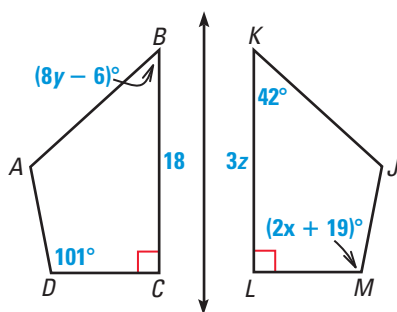


- (A) 0      (B) 1      (C) 2  
(D) 3      (E) More than 3
2. **MULTIPLE CHOICE** The point  $P(-2, -11)$  is reflected in the line  $y = -1$ . What are the coordinates of  $P'$ ?
- (A)  $(-2, -11)$    (B)  $(-2, -9)$    (C)  $(-2, 10)$   
(D)  $(-2, 9)$       (E)  $(-2, 11)$

3. **MULTIPLE CHOICE** Suppose  $\triangle ABC$  has vertices  $A(-8, -2)$ ,  $B(-5, -2)$ , and  $C(-8, -7)$ . If  $\triangle ABC$  is rotated  $90^\circ$  counterclockwise about the origin, what are the coordinates of the vertices of  $\triangle A'B'C'$ ?

- (A)  $A'(2, -5)$ ,  $B'(2, -8)$ ,  $C'(7, -8)$   
(B)  $A'(2, -8)$ ,  $B'(2, -5)$ ,  $C'(8, -7)$   
(C)  $A'(7, -8)$ ,  $B'(2, -8)$ ,  $C'(2, -5)$   
(D)  $A'(-8, 2)$ ,  $B'(-5, 2)$ ,  $C'(-8, 7)$   
(E)  $A'(2, -8)$ ,  $B'(2, -5)$ ,  $C'(7, -8)$

4. **MULTIPLE CHOICE** The transformation below is an isometry. What are the values of the variables?

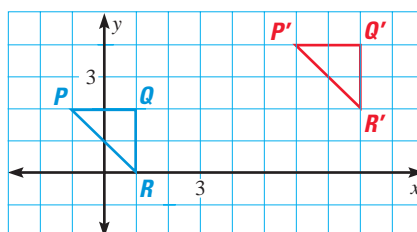


- (A)  $x = 41$ ,  $y = 6$ ,  $z = 6$   
(B)  $x = 40$ ,  $y = 6$ ,  $z = 9$   
(C)  $x = 50$ ,  $y = 6$ ,  $z = 6$   
(D)  $x = 6$ ,  $y = 40$ ,  $z = 6$   
(E)  $x = 41$ ,  $y = 8$ ,  $z = 6$

5. **MULTIPLE CHOICE**  $\triangle WXY$  has vertices  $W(3, 8)$ ,  $X(7, 6)$ , and  $Y(5, 2)$ . What are the coordinates of the vertices of  $\triangle W'X'Y'$  after the translation  $(x, y) \rightarrow (x - 8, y - 10)$ ?

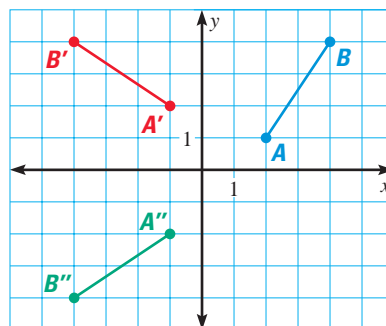
- (A)  $W'(-5, 18)$ ,  $X'(-3, 12)$ ,  $Y'(-1, 16)$   
(B)  $W'(-5, -2)$ ,  $X'(-1, -4)$ ,  $Y'(-3, -8)$   
(C)  $W'(11, -2)$ ,  $X'(15, -4)$ ,  $Y'(13, -8)$   
(D)  $W'(-2, -5)$ ,  $X'(-1, 4)$ ,  $Y'(-3, -8)$   
(E)  $W'(11, 18)$ ,  $X'(15, 16)$ ,  $Y'(13, 12)$

6. **MULTIPLE CHOICE** Name the vector that describes the translation in the diagram.



- (A)  $\langle -7, 2 \rangle$       (B)  $\langle 7, 1 \rangle$       (C)  $\langle 6, 2 \rangle$   
(D)  $\langle 7, 2 \rangle$       (E)  $\langle 6, 3 \rangle$

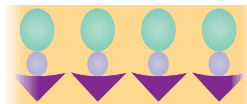
7. **MULTIPLE CHOICE** What two transformations were performed to obtain  $A''B''$  in the diagram?



- (A) A rotation and a translation  
(B) A reflection and a translation  
(C) A translation and a translation  
(D) A rotation and a reflection  
(E) A rotation and a rotation

8. **MULTIPLE CHOICE** What are the isometries that map the Seminole Indian frieze pattern onto itself?

- (A) translation, horizontal line reflection
- (B) translation, horizontal glide reflection
- (C) translation, vertical line reflection
- (D) translation,  $180^\circ$  rotation, vertical line reflection
- (E) translation,  $180^\circ$  rotation, horizontal glide reflection



9. **MULTIPLE CHOICE** Using the composition shown, what are the coordinates of the endpoints of  $S''T''$ ?

$S(-6, -2), T(-3, -5)$

**Reflection:** in  $y = 1$

**Rotation:**  $90^\circ$  clockwise about the point  $(-3, 2)$

- (A)  $S''(2, 2), T''(-1, 5)$
- (B)  $S''(-1, 4), T''(2, 2)$
- (C)  $S''(-3, 5), T''(2, 0)$
- (D)  $S''(-6, 4), T''(-3, 7)$
- (E)  $S''(-1, 5), T''(2, 2)$

**MULTI-STEP PROBLEM** Use the alphabet displayed in the typeface below.



- 10. Which letters have a vertical line of symmetry?
- 11. Which letters have a horizontal line of symmetry?
- 12. Which letters have rotational symmetry?

**MULTI-STEP PROBLEM** Use the diagram at the right.

- 13. Describe the translation using (a) coordinate notation and (b) a vector in component form.
- 14. A translation that maps figure  $J'K'L'M'$  onto figure  $WXYZ$  can be described as follows:  $(x, y) \rightarrow (x + 7, y - 2)$ . What are the coordinates of the vertices of figure  $WXYZ$ ?
- 15. A transformation that maps figure  $J'K'L'M'$  onto figure  $PQRS$ , so that figure  $PQRS$  has the following vertices:  $P(6, -2), Q(6, -4), R(3, -5)$ , and  $S(3, 0)$ . Describe the transformation.
- 16. Give an example of a transformation that maps figure  $J'K'L'M'$  onto figure  $J''K''L''M''$ , so that figure  $JKLM$  maps onto figure  $J''K''L''M''$  by a glide reflection.

