
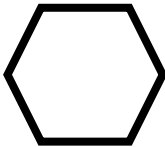



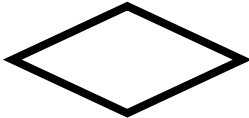

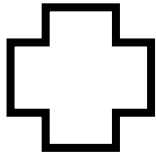


## 9.1 & 9.2 – Exploring Symmetry, Translations, & Vectors

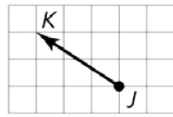
- 1) Draw and identify the lines of symmetry for the letters shown below. Write *vertical*, *horizontal*, or *both* to indicate the kind of symmetry. If there are no lines of symmetry, write *none*.

A	B	C	D	E	F	G
H	I	J	K	L	M	N
O	P	Q	R	S	T	U
V	W	X	Y	Z		

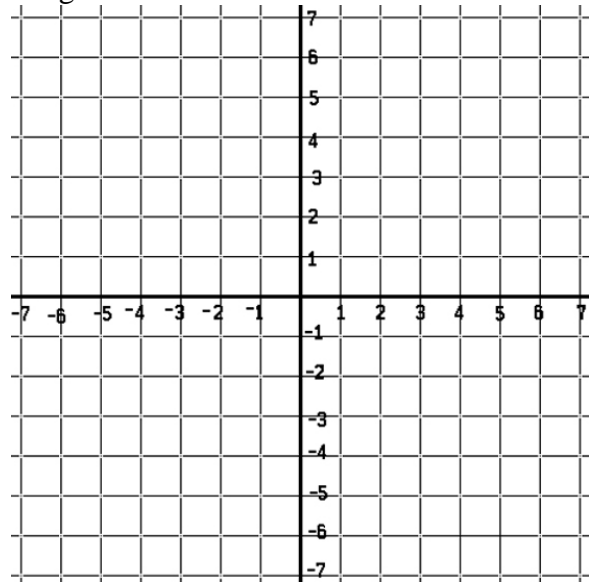
- 2) Looking at the following shapes, indicate if they either have *linear*, *rotational* (point) symmetry, or *both*. If it does have rotational symmetry, indicate the *angle of rotation* for the figure.

3) Name the vector and write its component form.



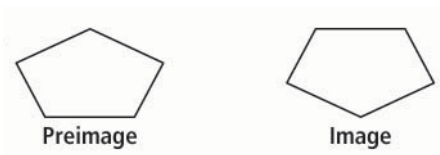
5) The vertices of  $\triangle ABC$  are  $A(2, 3)$ ,  $B(-1, 2)$ , and  $C(0, 1)$ . Translate  $\triangle ABC$  using the vector  $\langle 1, -4 \rangle$ . Graph  $\triangle ABC$  and its image.



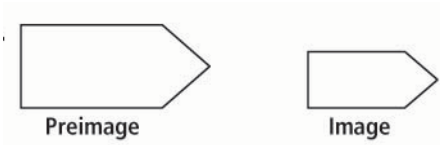
4) Find the component form of the vector that translates  $A(3, -2)$  to  $A'(-1, 4)$ .

Tell whether the transformation appears to be an isometry. Explain.

5)



6)

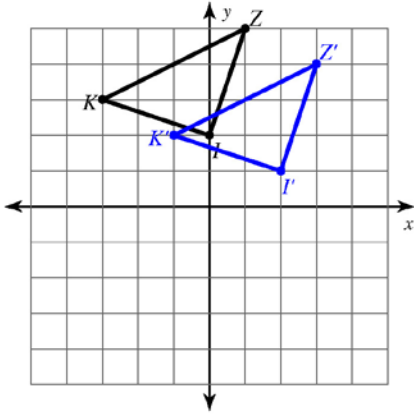


7)  $\triangle XYZ$  has coordinates  $X(2, 3)$ ,  $Y(1, 4)$ , and  $Z(8, 9)$ . A translation maps  $X$  to  $X'(4, 7)$ . What are the coordinates for  $Y'$  and  $Z'$  for this translation?

The blue figure is a translation image of the black-lined figure. Write a rule to describe each translation. For example,  $(x, y) \rightarrow (x + ?, y + ?)$ . Afterwards, write the component form of the vector  $\langle ?, ? \rangle$  that would also produce the translation.

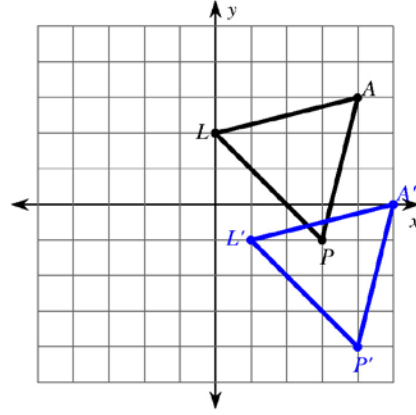
8) Rule: \_\_\_\_\_

Component Form: \_\_\_\_\_



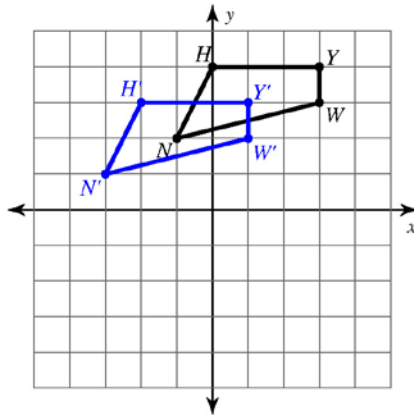
9) Rule: \_\_\_\_\_

Component Form: \_\_\_\_\_



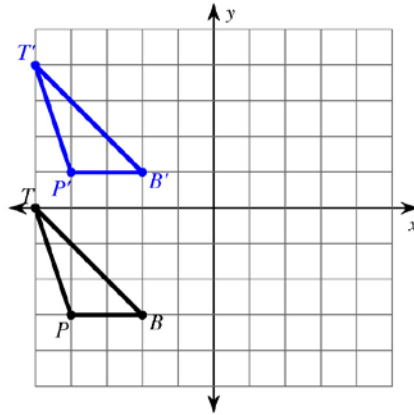
10) Rule: \_\_\_\_\_

Component Form: \_\_\_\_\_



11) Rule: \_\_\_\_\_

Component Form: \_\_\_\_\_

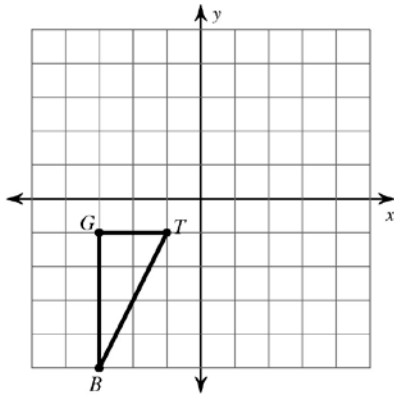


12) You are visiting Washington, D.C. From the American History Museum you walk 5 blocks east and 1 block south to the Air and Space Museum. Then you walk 8 blocks west to the Washington Monument. Where is the Washington Monument in relation to the American History Museum?

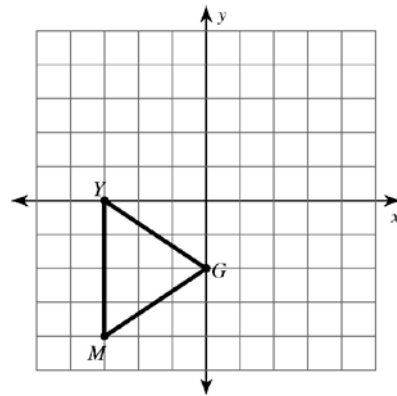
13) You and some friends go to a book fair where booths are set out in rows. You buy drinks at the refreshment stand and then walk 8 rows north and 2 rows east to the science fiction booth. Then you walk 1 row south and 2 rows west to the children's book booth. Where is the children's book booth in relation to the refreshment stand?

Graph the images according to the rule or the vector component.

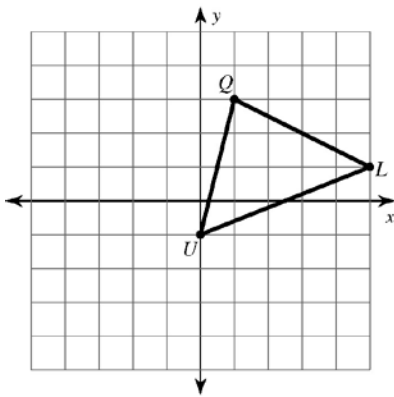
14)  $(x, y) \rightarrow (x+5, y+1)$



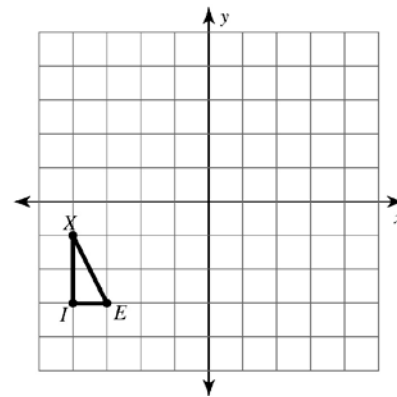
15)  $\langle -1, 2 \rangle$



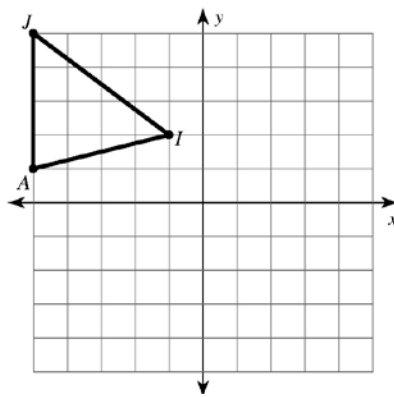
16)  $(x, y) \rightarrow (x, y-3)$



17)  $\langle 5, 2 \rangle$



18)  $(x, y) \rightarrow (x+4, y-4)$



19)  $\langle 2, 3 \rangle$

