



Name _____

Lesson 17: Translations

Warm Up

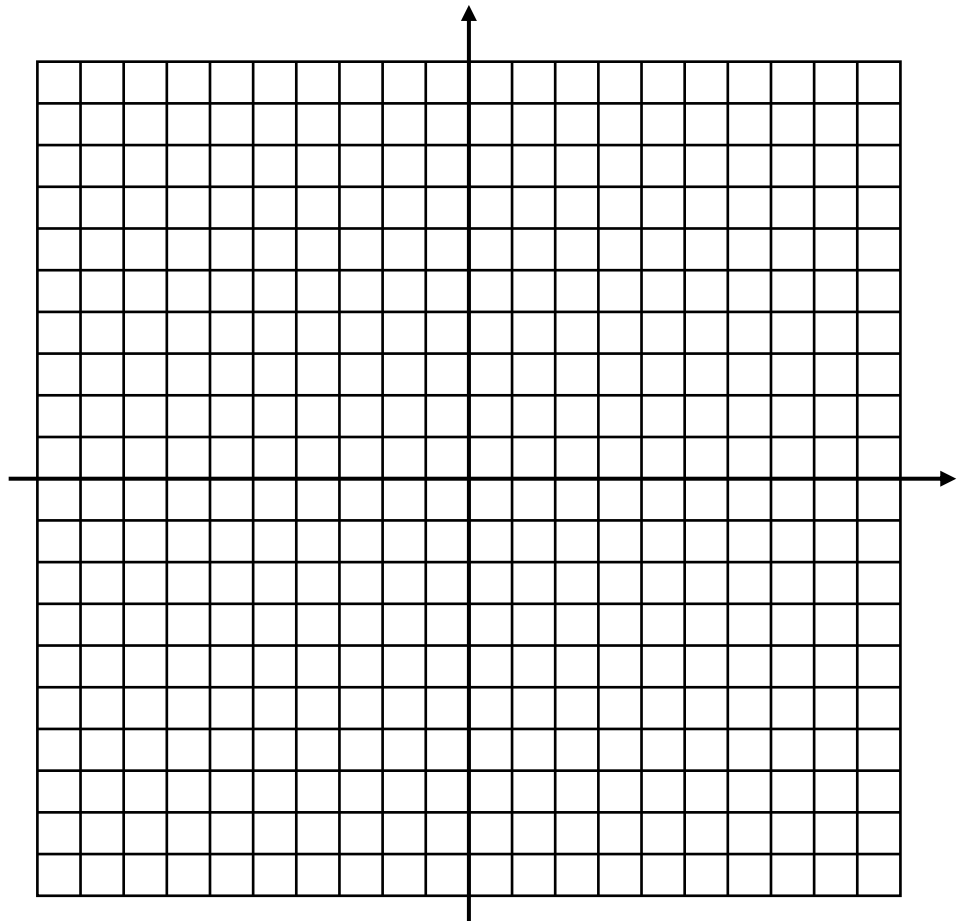
LEARNING TARGETS

I CAN define the vector that describes a translation.

a. Graph $\triangle ABC$, $A(4, 4)$, $B(9, 5)$, $C(3, 8)$

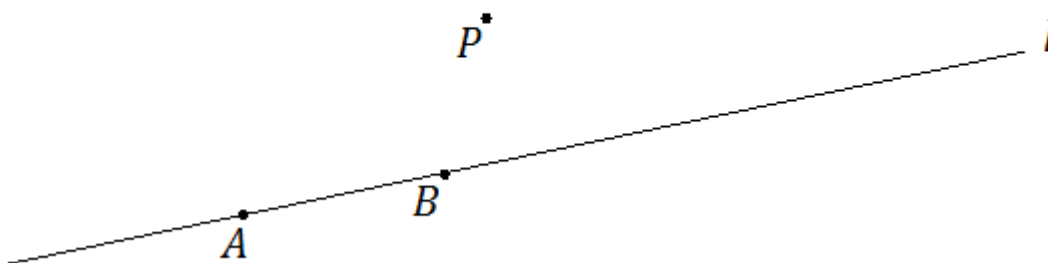
b. Graph and state the coordinates of $\triangle A'B'C'$ after $T_{-10,8}$ of $\triangle ABC$.

c. Graph and state the coordinates of $\triangle A''B''C''$ after R_{90} of $\triangle A'B'C'$.



Mini Lesson

Construct the line parallel to a given line AB through a given point P .



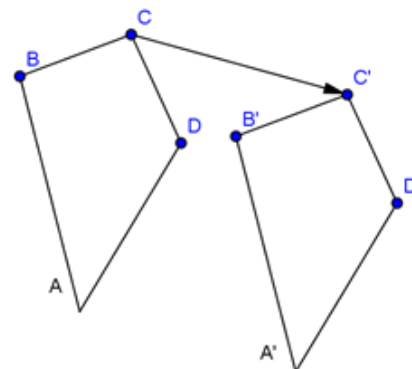
Translation:

Let us investigate the definition of translation.

For vector \overrightarrow{AB} , the *translation along \overrightarrow{AB}* is the transformation $T_{\overrightarrow{AB}}$ of the plane defined as follows:

1. For any point P on the line AB , $T_{\overrightarrow{AB}}(P)$ is the point Q on \overrightarrow{AB} so that \overrightarrow{PQ} has the same length and the same direction as \overrightarrow{AB} , and
2. For any point P not on \overrightarrow{AB} , $T_{\overrightarrow{AB}}(P)$ is the point Q obtained as follows. Let l be the line passing through P and parallel to \overrightarrow{AB} . Let m be the line passing through B and parallel to line AP . The point Q is the intersection of l and m .

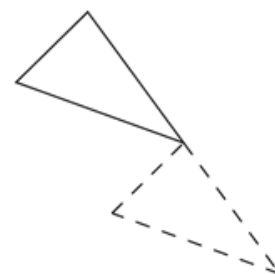
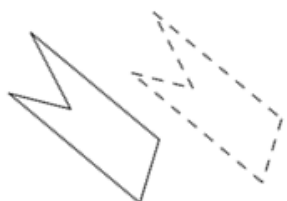
In the figure to the right, quadrilateral $ABCD$ has been translated the length and direction of vector $\overrightarrow{CC'}$. Notice that the distance and direction from each vertex to its corresponding vertex on the image are identical to that of $\overrightarrow{CC'}$.



Work Time:

Exercise 1:

Draw the vector that defines each translation below.

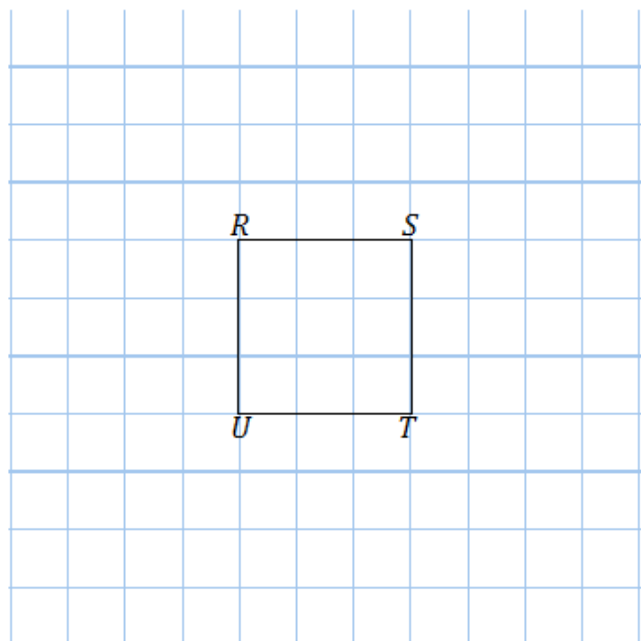


Exercise 2:

Translate each figure according to the instructions provided.

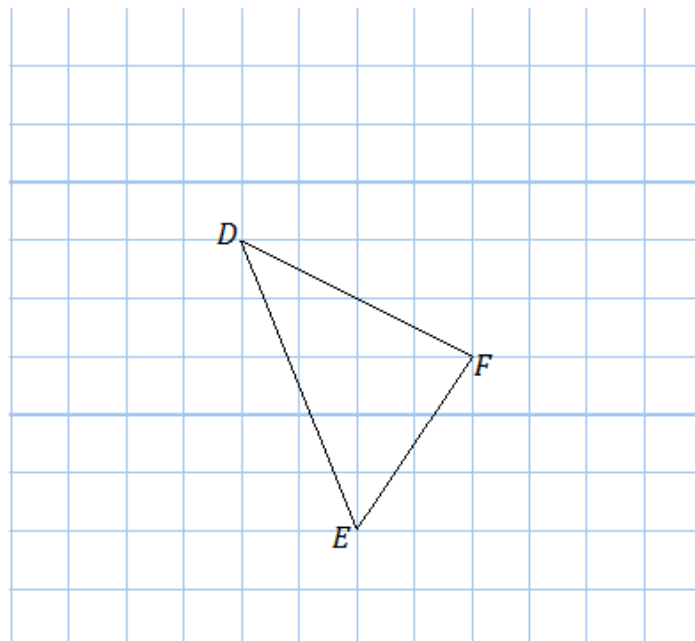
- 2 units down and 3 units left.

Draw the vector that defines the translation.



- 1 unit up and 2 units right.

Draw the vector that defines the translation.



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Classwork/Homework

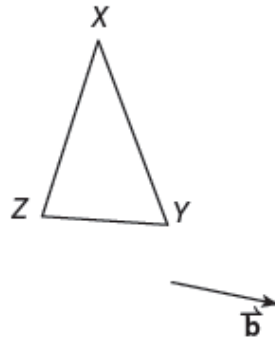
Lesson 17: Translations

Use the figure and the given translation vector. Then draw the translation of the figure along the given translation vector.

1.

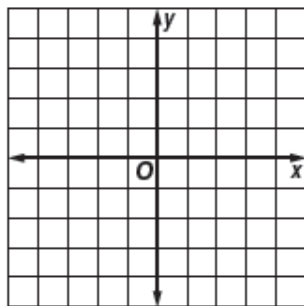


2.

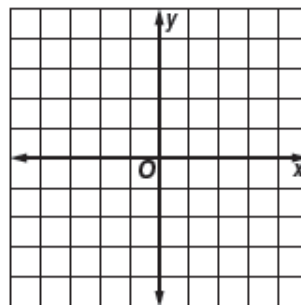


COORDINATE GEOMETRY Graph each figure and its image under the given reflection.

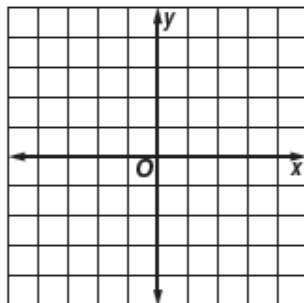
5. $\triangle ABC$ with vertices $A(-3, 2)$, $B(0, 1)$, and $C(-2, -3)$ in the line $y = x$



6. trapezoid $DEFG$ with vertices $D(0, -3)$, $E(1, 3)$, $F(3, 3)$, and $G(4, -3)$ in the y -axis



7. parallelogram $RSTU$ with vertices $R(-2, 3)$, $S(2, 4)$, $T(2, -3)$ and $U(-2, -4)$ in the line $y = x$



8. square $KLMN$ with vertices $K(-1, 0)$, $L(-2, 3)$, $M(1, 4)$, and $N(2, 1)$ in the x -axis

