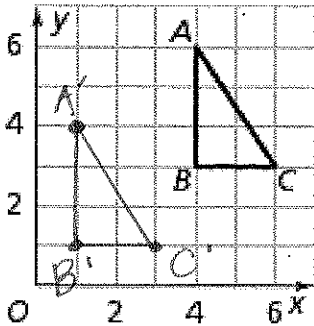


Sliding Around 1.3

A **transformation** is the change in the size or position of a figure. A **translation** is a transformation in which each point of a figure moves the same distance and in the same direction.

A. Translate $\triangle ABC$ to become $\triangle A'B'C'$ using the steps below.



1. From A, count down 2 units and to the left 3 units. Label the new point A' (A-prime).
2. Find and label points B' and C' by counting down 2 units and left 3 units.
3. Draw $\triangle A'B'C'$.

B. Compare the lengths of the three line segments. What do you notice about each of these segments?

Segment AB 3 units Segment A'B' 3 units
 Segment BC 2 units Segment B'C' 2 units
 Segment AC 2 cm Segment A'C' 2 cm.

Corresponding side lengths are congruent.

1. What does this tell you about the effect that translations have on side lengths?

There is no effect on the side lengths.

2. Using the definition of translation above, explain why $\triangle A'B'C'$ is a translation of $\triangle ABC$.

All points were moved the same distance & same direction, 2 down & 3 to the left.

C. Using a protractor, measure the angles of $\triangle ABC$ and $\triangle A'B'C'$.

$m\angle A$ 35° $m\angle A'$ 35° $m\angle B$ 90° $m\angle B'$ 90° $m\angle C$ 55° $m\angle C'$ 55°

1. Compare $\angle A$ to $\angle A'$, $\angle B$ to $\angle B'$ and $\angle C$ to $\angle C'$. What do you notice about each angle pair?

Corresponding angles are congruent.

2. What does this tell you about the effect that translations have on angles?

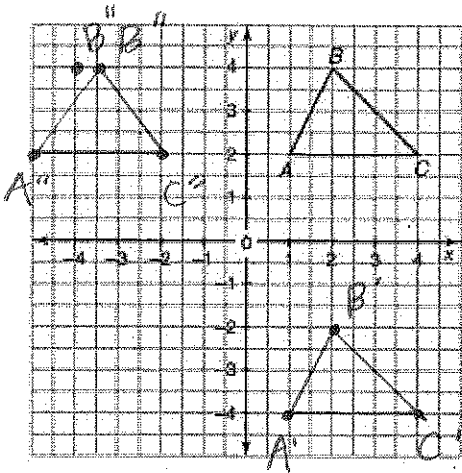
There is no effect on angles.

D. When **translating** a figure, what can you summarize about each of the following?

The corresponding angles are congruent

The corresponding side lengths are congruent.

E. Look at the triangle shown on the coordinate plane.



Pay close attention to the intervals

* each box is 1/2 units.

1. List the ordered pairs for the vertices of triangle ABC.

- A (1, 2)
- B (2, 4)
- C (4, 2)

-6 vertically means down (-) six units (12 boxes)

2. Translate triangle ABC by shifting each of the vertices -6 units vertically. Draw the new triangle and label the vertices A', B', and C'. List the ordered pairs for the vertices of triangle A'B'C'.

- A' (1, -4) B' (2, -2) C' (4, -4)

3. What do you notice about the ordered pairs after you translated vertically? Did both coordinates change? By how much?

x value remained the same & y value decreased by 6.

4. Translate triangle ABC -6 units horizontally instead. Draw the new triangle and label the vertices A'', B'', and C''. List the ordered pairs for the vertices of triangle A''B''C''.

- A'' (-5, 2) B'' (-4, 4) C'' (-2, 2)

5. What do you notice about the ordered pairs after you translated horizontally? Did both coordinates change? By how much?

y values remained the same & x value decreased by 6.

6. IF you were to translate triangle ABC 10 units vertically to form triangle DEF, what would be the ordered pairs of the corresponding vertices? (Hint: You shouldn't NEED the graph to answer this question)

- D (1, 12) E (2, 14) F (4, 12) * I would keep x & add ten to y value.

7. IF you were to translate triangle ABC 10 units horizontally to form triangle DEF, what would be the ordered pairs of the corresponding vertices? (Hint: You shouldn't NEED the graph to answer this question)

- D (11, 2) E (12, 4) F (14, 2) * I would keep y & add 10 to x value.