

Direction: With your partner, construct the following figure(s) on a piece of graph paper by following the instructions below.

Be EXTREMELY precise in your construction (aka use a ruler.)

- 1) Construct point A (-5, 5).
- 2) Construct \overrightarrow{AB} , with point B (-7, 7).
- 3) Construct \overleftarrow{BC} , with point C (-9, 2).
- 4) Use a highlighter or color pencil to outline the perimeter of $\triangle ABC$.
- 5) Measure $\angle ABC$ using a protractor. $m\angle ABC = \underline{\hspace{2cm}}$
- 6) Measure $\angle BCA$ using a protractor. $m\angle BCA = \underline{\hspace{2cm}}$
- 7) Measure $\angle BAC$ using a protractor. $m\angle BAC = \underline{\hspace{2cm}}$
- 8) What is the total angle measure of $\triangle ABC$? $\underline{\hspace{2cm}}$
- 9) Does the answer to 8) make sense? If not, what can be a factor that contributed to this error? (hint: how many degrees are in any triangle?)
- 10) Using $\angle ABC$, what angle measurement will be needed to complete a supplementary angle using $\angle ABC$ as 1 of the 2 angles.

The angle measure that completes the supplementary angle is $\underline{\hspace{2cm}}$ degrees.

- 11) Using $\angle BAC$, what angle measurement will be needed to complete a complementary angle using $\angle BAC$ as 1 of the 2 angles.

The angle measure that completes the complementary angle is $\underline{\hspace{2cm}}$ degrees.

- 12) **Reflect** $\triangle ABC$ about the line $y = x$.
- 13) Label the transformed triangle $A'B'C'$. AND label the coordinate of A' , B' , and C' on the graph paper.
- 14) **Translate** $\triangle A'B'C'$ such that A'' is at $(-5, -5)$.
- 15) Label the transformed triangle $A''B''C''$. AND label the coordinate of A'' , B'' , and C'' on the graph paper.
- 16) **Rotate** $\triangle A''B''C''$ 180 degrees about the origin.
- 17) Label the transformed triangle $A'''B'''C'''$. AND label the coordinate of A''' , B''' , and C''' on the graph paper.
- 18) Mark ALL the congruent parts of ALL 4 triangles. Using color pencil or highlighters is not a bad idea to think about.
- 19) Write out ALL the congruent parts from the graph paper.

$$\overline{AB} \cong \underline{\hspace{2cm}} \cong \underline{\hspace{2cm}} \cong \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \cong \underline{\hspace{2cm}} \cong \overline{BC} \cong \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \cong \underline{\hspace{2cm}} \cong \underline{\hspace{2cm}} \cong \underline{\hspace{2cm}}$$

$$\angle ABC \cong \underline{\hspace{2cm}} \cong \underline{\hspace{2cm}} \cong \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \cong \underline{\hspace{2cm}} \cong \underline{\hspace{2cm}} \cong \angle B'''A'''C'''$$

$$\underline{\hspace{2cm}} \cong \angle B'C'A' \cong \underline{\hspace{2cm}} \cong \underline{\hspace{2cm}}$$