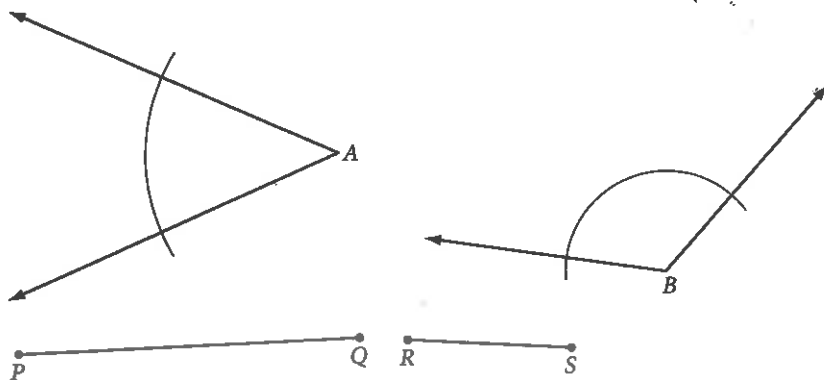# Lesson 3.1 • Duplicating Segments and Angles

Name _____ Period _____ Date _____

In Exercises 1–3, use the segments and angles below.

1. Using only a compass and straightedge, duplicate each segment and angle. There is an arc in each angle to help you. *on another sheet*

2. Construct a line segment with length $3PQ - 2RS$.

3. Duplicate the two angles so that the angles have the same vertex and share a common side and the nonshared side of one angle falls inside the other angle. Then use a protractor to measure the three angles you created. Write an equation relating their measures.

4. Use a compass and straightedge to construct an isosceles triangle with two sides congruent to $\overline{AB}$ and base congruent to $\overline{CD}$.

5. Repeat Exercise 4 with patty paper and a straightedge.

6. Construct an equilateral triangle with sides congruent to $\overline{CD}$.

7. Draw an acute angle and a segment on the top half of your paper. On the bottom half, construct an isosceles triangle using the angle and segment. How many different (noncongruent) isosceles triangles could you construct with those parts?

Lesson 3.2 • Constructing Perpendicular Bisectors

Name _____ Period _____ Date _____

1. Draw a segment and construct its perpendicular bisector.

2. Construct two congruent segments that are the perpendicular bisectors of each other. Form a quadrilateral by connecting the four endpoints. What type of quadrilateral does this seem to be?

3. Duplicate $\overline{AB}$. Then construct a segment with length $\frac{5}{4}AB$.

A •————————————————————• B

4. In $\triangle ABC$ with $A(0, 0)$, $B(9, 0)$, and $C(6, 12)$, find the midpoint of each side and the slope of each midsegment.

5. Draw a segment; label it $\overline{CM}$. $\overline{CM}$ is a median of $\triangle ABC$. Construct $\triangle ABC$. Is $\triangle ABC$ unique? If not, construct a different triangle, $\triangle A'B'C$, also having $\overline{CM}$ as a median.

6. Draw a segment; label it $\overline{PQ}$. $\overline{PQ}$ is a midsegment of $\triangle ABC$. Construct $\triangle ABC$. Is $\triangle ABC$ unique? If not, construct a different triangle, $\triangle A'B'C'$, also having $\overline{PQ}$ as a midsegment.

7. Construct a right triangle. Label it $\triangle ABC$ with right angle B. Construct median $\overline{BD}$. Compare BD, AD, and CD.

8. Complete each statement as fully as possible.

   a. L is equidistant from _____.

   b. M is equidistant from _____.

   c. N is equidistant from _____.

   d. O is equidistant from _____.