3.1 Classwork: Modeling angle situations with a drawing and equation

Do Not Solve! Make a drawing on the right, an equation to the left, and circle where it states what to find.

1. The point Q is the midpoint of $\overline{PR}$, $PQ = 12$, and $QR = x + 3$. Find x.

2. Given $\overline{PQR}$, with $PQ = 2x - 5$, $QR = x + 3$, and $PR = 19$. Find x.

3. Given that Q bisects $\overline{PR}$. $PQ = 2x - 5$, $QR = x + 3$. Find PR.

4. The points P, Q, and R are collinear, with $PQ = 3x + 14$, $QR = 2x + 2$, and $PR = 6x + 12$. Find PQ.

5. Angles P and Q are supplementary. $m\angle P = x + 57$ and $m\angle Q = 3x - 11$. Find $m\angle Q$.

6. Given two complementary angles, $m\angle A = 5x + 14$ and $m\angle B = 3x - 9$. Find the measure of $\angle B$.

7. Given $P \cong Q$. $m\angle P = 3x + 20$ and $m\angle Q = 2x - 10$. Find $m\angle Q$.

For the following problem, calculate the length.

8. Given $\overline{DEFG}$, $DE = 3\frac{3}{7}$, $EF = 4\frac{3}{14}$, and $FG = 2\frac{5}{14}$. (diagram not to scale)
   Find DG.