1.3 Extension: The distributive property of multiplication over addition

1. Simplify each expression. (use fractions, not decimals)

   (a) $\frac{1}{7} + \frac{3}{7}$

   (c) $\frac{5}{3} - \frac{1}{6}$

   (b) $4(\frac{1}{4}x + 2)$

   (d) $\frac{2}{3}(6x + 15)$

Solve each equation twice, for (a) first distribute, and for (b)multiply both sides of the equation by the fraction's denominator first.

Distribute first

Multiply by the denominator first

2. (a) $\frac{1}{5}(x + 8) = 2$

   (b) $\frac{1}{5}(x + 8) = 2$

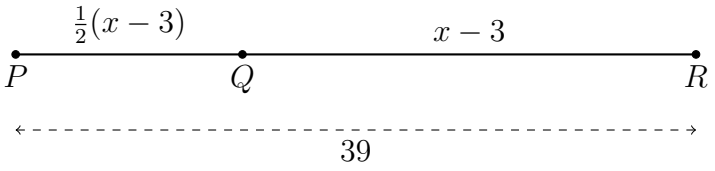
3. (a) $\frac{1}{6}(6x + 18) = 11$

   (b) $\frac{1}{6}(6x + 18) = 11$

4. Write down a rule for under what conditions is it more efficient to first distribute versus multiply by the denominator when solving an algebra equation.

A check is required for all algebra solutions

5. Given the segment $\overline{PQR}$ with $PQ = \frac{1}{2}(x-3)$, $QR = x-3$, $QR = 39$. Find x.



6. Given $x = -2$ simplify each expression. (Do these problems in your head.)

   (a) $|x+3| =$

   (b) $|10-x| =$

   (c) $2 \times |x| =$

   (d) $|-8| + x =$

7. Find all values of x that satisfy each equation. (show the check)

   (a) $|x+2| = 5$

   (b) $|x-4| = 12$