Exercise 14

For the following exercises, solve the equations below and express the answer using set notation.

$$2|4 - x| = 7$$

Solution

Isolate the absolute value term by dividing both sides by 2.

$$|4 - x| = \frac{7}{2}$$

Remove the absolute value sign by placing $\pm$ (read as "plus or minus") on the right side.

$$4 - x = \pm\frac{7}{2}$$

$$4 - x = \frac{7}{2} \quad \text{or} \quad 4 - x = -\frac{7}{2}$$

$$x = 4 - \frac{7}{2} \quad \text{or} \quad x = 4 + \frac{7}{2}$$

$$x = \frac{1}{2} \quad \text{or} \quad x = \frac{15}{2}$$

Therefore,

$$x = \left\{\frac{1}{2}, \frac{15}{2}\right\}.$$