

## 2.2 Solving Simple Equations

## Solutions

Solve each equation and check your solutions.	
<p>1. <math>x + 9 = 5</math></p> $\begin{array}{r} x + 9 = 5 \\ -9 \quad -9 \\ \hline x = -4 \end{array}$ <p style="text-align: center;"><span style="border: 1px solid red; padding: 2px;">{-4}</span></p>	<p>Check:</p> $\begin{array}{l} x + 9 = 5 \\ -4 + 9 = 5 \text{ ?} \\ 5 = 5 \text{ Yes} \end{array}$
<p>3. <math>x - 3 = 16</math></p> $\begin{array}{r} x - 3 = 16 \\ +3 \quad +3 \\ \hline x = 19 \end{array}$ <p style="text-align: center;"><span style="border: 1px solid red; padding: 2px;">{19}</span></p>	<p>Check:</p> $\begin{array}{l} x - 3 = 16 \\ 19 - 3 = 16 \text{ ?} \\ 16 = 16 \text{ Yes} \end{array}$
<p>5. <math>9 = x + 2</math></p> $\begin{array}{r} 9 = x + 2 \\ -2 \quad -2 \\ \hline 7 = x \end{array}$ <p style="text-align: center;"><span style="border: 1px solid red; padding: 2px;">{7}</span></p>	<p>Check:</p> $\begin{array}{l} 9 = x + 2 \\ 9 = 7 + 2 \text{ ?} \\ 9 = 9 \text{ Yes} \end{array}$
<p>7. <math>8 = -5 + x</math></p> $\begin{array}{r} 8 = -5 + x \\ +5 \quad +5 \\ \hline 13 = x \end{array}$ <p style="text-align: center;"><span style="border: 1px solid red; padding: 2px;">{13}</span></p>	<p>Check:</p> $\begin{array}{l} 8 = -5 + x \\ 8 = -5 + 13 \\ 8 = 8 \text{ Yes} \end{array}$
<p>2. <math>y + 3 = -10</math></p> <p>Check:</p>	<p>4. <math>m - 9 = 4</math></p> <p>Check:</p>
<p>6. <math>-8 = x + 4</math></p> <p>Check:</p>	<p>8. <math>12 = 5 + a</math></p> <p>Check:</p>
<p>Answers: 1. {-4}; 3. {19}; 5. {7}; 7. {13}</p>	

Solve each equation and check your solutions.	
<p>9. <math>x - 5.6 = -3.2</math>      Check:</p> $\begin{array}{r} +5.6 \quad +5.6 \\ x - 5.6 = -3.2 \\ x = 2.4 \end{array}$ <p><math>2.4 - 5.6 = -3.2 ?</math> <math>-3.2 = -3.2</math> Yes</p> <p><span style="border: 1px solid red; padding: 2px;">{2.4}</span></p>	<p>10. <math>y - 51.9 = -4.6</math>      Check:</p>
<p>11. <math>-5.0 = p + 4.3</math>      Check:</p> $\begin{array}{r} -4.3 \quad -4.3 \\ -5.0 = p + 4.3 \\ -9.3 = p \end{array}$ <p><math>-5 = -9.3 + 4.3 ?</math> <math>-5 = -5</math> Yes</p> <p><span style="border: 1px solid red; padding: 2px;">{-9.3}</span></p>	<p>12. <math>-9 = y + 1.5</math>      Check:</p>
<p>13. <math>4.3 + m = 4.3</math>      Check:</p> $\begin{array}{r} -4.3 \quad -4.3 \\ 4.3 + m = 4.3 \\ m = 0 \end{array}$ <p><math>4.3 + 0 = 4.3 ?</math> <math>4.3 = 4.3</math> Yes</p> <p><span style="border: 1px solid red; padding: 2px;">{0}</span></p>	<p>14. <math>-2 + x = -2</math>      Check:</p>
<p>Answers: 9. {2.4}; 11. {-9.3} 13. {0}</p>	

Solve each equation and check your solutions.		
<p>15. <math>\frac{-4x}{-4} = \frac{36}{-4}</math></p> <p><math>x = -9</math></p> <p><math>\{-9\}</math></p>	<p>Check:</p> <p><math>-4x = 36</math></p> <p><math>-4 \cdot -9 = 36?</math></p> <p><math>36 = 36</math> Yes</p>	<p>16. <math>-2x = 52</math></p> <p>Check:</p>
<p>17. <math>4 \cdot \frac{x}{4} = 2.9 \cdot 4</math></p> <p><math>x = 11.6</math></p> <p><math>\{11.6\}</math></p>	<p>Check:</p> <p><math>\frac{x}{4} = 2.9</math></p> <p><math>\frac{11.6}{4} = 2.9?</math></p> <p><math>2.9 = 2.9</math> Yes</p>	<p>18. <math>\frac{x}{5} = -1.4</math></p> <p>Check:</p>
<p>19. <math>\frac{4}{1} \cdot \frac{1}{4}x = \frac{3}{8} \cdot \frac{4}{1}</math></p> <p><math>x = \frac{3}{2}</math></p> <p><math>\{\frac{3}{2}\}</math></p>	<p>Check:</p> <p><math>\frac{1}{4}x = \frac{3}{8}</math></p> <p><math>\frac{1}{4} \cdot \frac{3}{2} = \frac{3}{8}?</math></p> <p><math>\frac{3}{8} = \frac{3}{8}</math> Yes</p>	<p>20. <math>-\frac{3}{5}y = \frac{2}{3}</math></p> <p>Check:</p>
<p>21. <math>3 \cdot -7.1 = \frac{x}{3} \cdot 3</math></p> <p><math>-21.3 = x</math></p> <p><math>\{-21.3\}</math></p>	<p>Check:</p> <p><math>-7.1 = \frac{x}{3}</math></p> <p><math>-7.1 = \frac{-21.3}{3}?</math></p> <p><math>-7.1 = -7.1</math> Yes</p>	<p>22. <math>14 = \frac{y}{-2}</math></p> <p>Check:</p>
<p>23. <math>-x = 5</math></p> <p><math>-1 \cdot -x = 5 \cdot -1</math></p> <p><math>x = -5</math></p> <p><math>\{-5\}</math></p>	<p>Check:</p> <p><math>-x = 5</math></p> <p><math>-(-5) = 5?</math></p> <p><math>5 = 5</math> Yes</p>	<p>24. <math>4.3 = -y</math></p> <p>Check:</p>
<p>25. <math>\frac{1}{3} \cdot 3x = -\frac{2}{3} \cdot \frac{1}{3}</math></p> <p><math>x = -\frac{2}{9}</math></p> <p><math>\{-\frac{2}{9}\}</math></p>	<p>Check:</p> <p><math>3x = -\frac{2}{3}</math></p> <p><math>3 \cdot -\frac{2}{9} = -\frac{2}{3}?</math></p> <p><math>-\frac{2}{3} = -\frac{2}{3}</math> Yes</p>	<p>26. <math>5x = \frac{1}{2}</math></p> <p>Check:</p>
<p>Answers: 15. <math>\{-9\}</math>; 17. <math>\{11.6\}</math>; 19. <math>\{\frac{3}{2}\}</math>; 21. <math>\{-21.3\}</math>; 23. <math>\{-5\}</math>; 25. <math>\{-\frac{2}{9}\}</math></p>		

Translate each mathematical sentence into an equation and solve. Check your solution.

27. The product of  $-5$  and a number is  $27$

$$\boxed{-5 \cdot x = 27}$$

Check:

$$-5 \cdot -\frac{27}{5} = 27?$$

$$27 = 27 \text{ Yes}$$

$$\frac{-5x}{-5} = \frac{27}{-5}$$

$$\boxed{x = -\frac{27}{5}}$$

28. The product of  $12$  and a number is  $48$ .

29. The sum of  $10$  and a number is  $-45$ .

$$\boxed{10 + x = -45}$$

Check:

$$10 + -55 = -45?$$

$$-45 = -45 \text{ Yes}$$

$$\frac{-10}{-10} \quad \frac{-10}{-10}$$

$$\boxed{x = -55}$$

30. The sum of  $1.5$  and a number is  $5$ .

31. Ten less than a number is  $38$ .

$$\boxed{x - 10 = 38}$$

Check:

$$48 - 10 = 38?$$

$$38 = 38 \text{ Yes}$$

$$\frac{+10}{+10} \quad \frac{+10}{+10}$$

$$\boxed{x = 48}$$

32. Twelve less than a number is  $3$ .

Answers: 27.  $-5x = 27$ ,  $x = -\frac{27}{5}$ ; 29.  $10 + x = -45$ ,  $x = -55$ ; 31.  $x - 10 = 38$ ,  $x = 48$