

# ONE-STEP EQUATIONS IN REAL-LIFE

p.45

Equations can be used to find missing information and solve problems.

1. The charge for a microwave repair visit was \$81.21, including tax. If the tax was \$6.70, then how much was the repair visit?

|  |   |       |      |   |  |
|--|---|-------|------|---|--|
| <b>i KNOW:</b> tax 6.70<br>total 81.21   | <b>i NEED TO KNOW:</b><br>x - how much microwave repair |       |      |   |  |
| <b>PLAN AND WORK:</b><br><div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 10px;"> <table style="border-collapse: collapse;"> <tr><td style="border: none;"></td><td style="border: none; text-align: center;">81.21</td></tr> <tr><td style="border: none; text-align: center;">6.70</td><td style="border: none; text-align: center;">x</td></tr> </table> </div> <p>Algebraic equation! <math>x + 6.70 = 81.21</math></p> <p>The cost of the microwave repair before tax was \$74.51.</p> |   | 81.21 | 6.70 | x | <b>MY SOLUTION:</b><br>$\begin{array}{r} x + 6.70 = 81.21 \\ -6.70 \quad -6.70 \\ \hline x = 74.51 \end{array}$ <p style="text-align: center;">I<br/>B<br/>C</p> $\begin{aligned} x + 6.70 &= 81.21 \\ 74.51 + 6.70 &= 81.21 \\ 81.21 &= 81.21 \checkmark \end{aligned}$ |
|  | 81.21   |       |      |   |  |
| 6.70   | x   |       |      |   |  |

2. On Friday afternoon <sup>3</sup> Maggie and her two friends washed their neighbors cars in order to make some money. They split the payment equally and each walked away with \$3.50. How much did the neighbor pay them for washing the cars?

|  |  |      |      |      |   |
|--|--|------|------|------|---|
| <b>i KNOW:</b> 3 friends<br>\$3.50 each  | <b>i NEED TO KNOW:</b><br>x - how much neighbor paid |      |      |      |   |
| <b>PLAN AND WORK:</b><br><div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 10px;"> <table style="border-collapse: collapse;"> <tr><td style="border: none; text-align: center;">x</td></tr> <tr><td style="border: none; text-align: center;">3.50</td><td style="border: none; text-align: center;">3.50</td><td style="border: none; text-align: center;">3.50</td></tr> </table> </div> $\frac{x}{3} = 3 \cdot 3.50$ <p>The neighbor paid \$10.50 for washing the cars.</p> | x  | 3.50 | 3.50 | 3.50 | <b>MY SOLUTION:</b><br>$(3) \frac{x}{3} = 3.50(3)$ $x = 10.5$ $\frac{x}{3} = 3.50$ $\frac{10.5}{3} = 3.50$ $3.50 = 3.50 \checkmark$ |
| x  |  |      |      |      |   |
| 3.50   | 3.50   | 3.50 |      |      |   |

Read each problem, define a variable, write an equation, and solve for the missing number.

3. A fence surrounds two sides of the backyard. The total length of the fence is 86 feet, with the longest portion measuring 51.5 ft. What is the length of the second side?

Variable: X - length 2<sup>nd</sup> side

Equation:  $X + 51.5 = 86$

Work: 

|          |
|----------|
| 86       |
| X + 51.5 |

$$\begin{array}{r} X + 51.5 = 86 \\ -51.5 \quad -51.5 \\ \hline X = 24.5 \end{array}$$

Check:  $X + 51.5 = 86$   
 $24.5 + 51.5 = 86$   
 $86 = 86 \checkmark$

Target Statement: The second side of the fence is 24.5 ft long.

4. A deck of cards was dealt equally among 6 players. Each player received 7 cards. How many cards were dealt?

Variable: X - # Cards dealt

Equation:  $\frac{X}{6} = 7$

Work: 

|             |
|-------------|
| X           |
| 7 7 7 7 7 7 |

$$\begin{array}{r} \frac{X}{6} = 7 \\ \times 6 \quad \times 6 \\ \hline X = 42 \end{array}$$

Check:  $\frac{X}{6} = 7$   
 $\frac{42}{6} = 7$   
 $7 = 7 \checkmark$

Target Statement: The number of cards dealt was 42.

5. The perimeter of a square measures 26 cm. What is the length of the square?

Variable: X - Side length

Equation:  $4x = 26$

Work: 

|               |
|---------------|
| 26            |
| x   x   x   x |

$$\begin{array}{r} 4x = 26 \\ \div 4 \quad \div 4 \\ \hline x = 6.5 \end{array}$$

Check:  $4x = 26$   
 $4(6.5) = 26$   
 $26 = 26 \checkmark$

Target Statement: Each side of the square equals 6.5 cm.

6. Your little sister is too small to stand on the scale. You decide to get on the scale with her and find your combined weight to be 112 pounds. You know that you weigh 94 pounds. How much does your little sister weigh?

Variable: X = little sister's weight

Equation:  $X + 94 = 112$

Work: 

|        |
|--------|
| 112    |
| 94   X |

$$\begin{array}{r} X + 94 = 112 \\ -94 \quad -94 \\ \hline X = 18 \end{array}$$

Check:  $X + 94 = 112$   
 $18 + 94 = 112$   
 $112 = 112 \checkmark$

Target Statement: The little sister weighs 18 pounds.

## ONE-STEP EQUATIONS IN REAL-LIFE

Complete the table below by defining a variable, writing an equation, and then solving.

| PROBLEM   | EQUATION                        | WORK/SOLUTION |
|---|---------------------------------|---------------|
| <p>1. Hank and his two friends are attending a concert. They purchase tickets and parking for a total of \$129.00. They decide it is easiest to split it evenly. How much does each person owe?</p> | <p>V: _____</p> <p>E: _____</p> |               |
| <p>2. A rectangle has an area of 135 ft<sup>2</sup>. What is the length, if the width is 9 ft?</p>  | <p>V: _____</p> <p>E: _____</p> |               |
| <p>3. Jose has \$34 to spend at the Texas State Fair. If the entrance ticket costs \$12, then how much money does Jose have to spend on food and games?</p>   | <p>V: _____</p> <p>E: _____</p> |               |
| <p>4. Paul rode his bike 79 miles last month. He rode 23 miles during the last half of the month. How many miles did he ride during the first half of the month?</p>                                | <p>V: _____</p> <p>E: _____</p> |               |
| <p>5. A wood beam is divided into four equal segments. Each segment measures 3.5 feet long. What is the length of the wood beam?</p>  | <p>V: _____</p> <p>E: _____</p> |               |