2-4 Equations and Their Solutions

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An **equation** is a mathematical statement that two quantities are equal. You can think of a correct equation as a balanced scale.

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Equations may contain variables. If a value for a variable makes an equation true, that value is a **solution** of the equation.

$s + 15 = 27$

$s = 12$?

$12 + 15 = 27$ Yes

$s = 12$ is a solution because $12 + 15 = 27$.

$s = 10$ NO

$10 + 15 \neq 27$

$s = 10$ is not a solution because $10 + 15 \neq 27$.

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Determine whether the given value of the variable is a solution.

$b - 447 = 1{,}203$ for $b = 1{,}650$

$1{,}650 - 447 = 1{,}203$

Yes

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Determine whether the given value of the variable is a solution.

$u + 56 = 139$ for $u = 73$

$73 + 56 \neq 129$

$73 + 56 = 129$ no

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Determine whether the given value of the variable is a solution.

$45 \div g = 3$ for $g = 15$

$45 \div 15 = 3$ yes

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Determine whether the given value of the variable is a solution.

27x = 1,485 for x = 54

$$\begin{array}{r} {}^{2}54 \\ \times 27 \\ \hline 378 \\ +1080 \\ \hline 1458 \end{array}$$

no

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Determine whether the given value of the variable is a solution.

$s \div 4 = 5$, when $s = 24$

$24 \div 4 \neq 5$

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Determine whether the given value of the variable is a solution.

$b \cdot 5 = 20$, when $b = 3$

$3 \cdot 5 \neq 20$

no

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Paulo says that his yard is 19 yards long. Jamie says that Paulo's yard is 664 inches long. Determine if these two measurements are equal.

36 • yd = in.

19 yd = 664 in

12 in = 1 ft

3 ft = 1 yd

no

$$\begin{array}{r} {}^{5}36 \\ \times 19 \\ \hline 324 \\ +360 \\ \hline 684 \end{array}$$

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Anna says that the table is 7 feet long. John says that the table is 84 inches long. Determine if these two measurements are equal.

12 • ft = in.

$12 \cdot 7 = 84$

Yes

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Determine whether the given value of each variable is a solution.

1. 85 = 13x for x = 5 $\begin{array}{r} {}^{1}13 \\ \times 5 \\ \hline 65 \end{array}$ no

2. w + 38 = 210 for w = 172 $172 + 38 = 210$

3. 8y = 88 for y = 11 $8 \cdot 11 = 88$ yes $\begin{array}{r} 172 \\ +38 \\ \hline 210 \end{array}$ yes

4. 16 = $w \div 6$ for w = 98 $98 \div 6 = 16$ NO

5. The local pizza shop charged Kylee $172 for 21 medium pizzas. The price of a medium pizza is $8. Determine if Kylee paid the correct amount of money. (*Hint*: $8 • pizzas = total cost.)

$$6\overline{)98}\ \ 6 \quad 38$$

$$\begin{array}{r} 21 \\ \times 8 \\ \hline 168 \end{array}$$

no

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