

Lesson 1.1

Solving One-Step Equations

Learning Targets

- Solving one-step equations
- Solve equations with decimals
- Solve equations with fractions
- Solve equation with π

REVIEW

Key Ideas

Addition Property of Equality

Words Adding the same number to each side of an equation produces an equivalent equation.

Algebra If $a = b$, then $a + c = b + c$.

Subtraction Property of Equality

Words Subtracting the same number from each side of an equation produces an equivalent equation.

Algebra If $a = b$, then $a - c = b - c$.

REVIEW

Key Ideas

Multiplication Property of Equality

Words Multiplying each side of an equation by the same number produces an equivalent equation.

Algebra If $a = b$, then $a \cdot c = b \cdot c$.

Division Property of Equality

Words Dividing each side of an equation by the same number produces an equivalent equation.

Algebra If $a = b$, then $a \div c = b \div c$, $c \neq 0$.

Learning Target: Solve Simple Equations

Use the opposite or inverse operation

$$\begin{array}{r} x + 5 = -4 \\ -5 \quad -5 \\ \hline x = -9 \end{array}$$

$$\begin{array}{r} m - 12 = 10 \\ +12 \quad +12 \\ \hline m = 22 \end{array}$$

$$\begin{array}{r} 8b = -24 \\ \frac{8}{8} \quad \frac{-24}{8} \\ b = -3 \end{array}$$

$$\begin{array}{r} -3 \left(\frac{w}{-3} \right) = 7(-3) \\ w = -21 \end{array}$$

~~-3~~

Learning Target: Solve Equations with Decimals

$$\begin{array}{r} y + 3.4 = 0.5 \\ -3.4 \quad -3.4 \\ \hline y = -2.9 \end{array}$$

$$\begin{array}{r} -0.5w = -2.04 \\ \hline -0.5 \quad -0.5 \\ w = 4.08 \end{array}$$

Learning Target: Solve Equations with Fractions

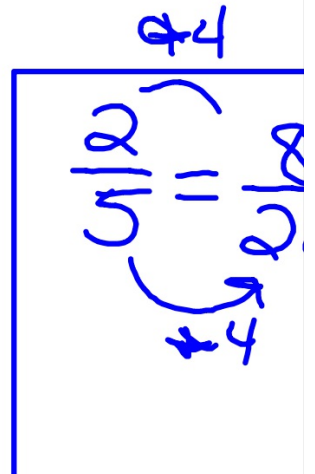
$$x + \frac{2}{5} = \frac{3}{4}$$

$$x + \frac{8}{20} = \frac{15}{20}$$

$$- \frac{8}{20} \quad - \frac{8}{20}$$

$$x = \frac{7}{20}$$

To add or subtract fractions, you must have common denominators. Don't forget to simplify!



Learning Target: Solve Equations with Fractions

$$\frac{3}{4}d = \frac{30}{1}$$

To cancel a fraction coefficient, multiply by the reciprocal

$$\cancel{\frac{4}{3}} \cdot \cancel{\frac{3}{4}} d = \frac{30}{1} \cdot \frac{4}{\cancel{3}} \quad d = \frac{120}{3}$$

$$d = 40$$

Learning Target: Solve Equations with π

New This Year!

$$\begin{array}{r} h + 2\pi = 5\pi \\ - 2\pi \quad - 2\pi \\ \hline h = 3\pi \end{array}$$

$$\begin{array}{r} h + 2 = 5 \\ - 2 \quad - 2 \\ \hline h = 3 \end{array}$$

$$\begin{array}{r} X - 6\pi = 40 \\ + 6\pi \quad + 6\pi \\ \hline X = 40 + 6\pi \end{array}$$

$$y = mx + b$$

$$y = 3x + 10$$

Learning Target: Solve Equations with pi

$$\frac{\cancel{\pi} \cdot m}{\cancel{\pi}} = \frac{23\cancel{\pi}}{\cancel{\pi}}$$

$$m = 23$$

$$\cancel{\pi} \cdot \frac{k}{\cancel{\pi}} = -4 \cdot \pi$$

$$k = -4\pi$$

You have 4 minutes to solve these with your partner.

pg. 5

Solve the equation. Check your solution.

1. $b + 2 = -5$

2. $g - 1.7 = -0.9$

3. $-3 = k + 3$

4. $r - \pi = \pi$

5. $t - \frac{1}{4} = -\frac{3}{4}$

6. $5.6 + z = -8$

1. $b = -7$ 2. $g = 0.8$ 3. $k = -6$

4. $r = 2\pi$ 5. $t = -1/2$ 6. $z = -13.6$

**Solve with
Addition &
Subtraction**

You have 4 minutes to copy these problems in your notebook and solve them

pg 5

Solve the equation. Check your solution.

7. $\frac{y}{4} = -7$

8. $6\pi = \pi x$

9. $0.09w = 1.8$

7. $y = -28$

8. $x = 6$

9. $w = 20$



**Solve with
Multiplication
& Division**

More Examples (Time permitting)

What value of k makes the equation $k + 4 \div 0.2 = 5$ true?

(A) -15

(B) -5

(C) -3

(D) 1.5

Notes: Changing words into equations:
is means = (equals)
of means * (multiply)

EXAMPLE 4 Real-Life Application

| | | |
|----------|---------|---------|
| Se | Br | Kr |
| Selenium | Bromine | Krypton |
| 78.96 | 79.904 | 83.798 |
| 34 | 35 | 36 |
| 53 | 54 | Xe |
| Iodine | Xenon | |
| 126.905 | 131.29 | 131.29 |
| 53 | 54 | 54 |

The melting point of bromine is -7°C .

The *melting point* of a solid is the temperature at which the solid becomes a liquid. The melting point of bromine is $\frac{1}{30}$ of the melting point of nitrogen. Write and solve an equation to find the melting point of nitrogen.

You have 5 minutes to copy these problems in your notebook and solve them

 **Now You're Ready**
Exercises 33–38

 **On Your Own**

10. Solve $p - 8 \div \frac{1}{2} = -3$.

11. Solve $q + |-10| = 2$.

12. The melting point of mercury is about $\frac{1}{4}$ of the melting point of krypton. The melting point of mercury is -39°C . Write and solve an equation to find the melting point of krypton.

10. $p = \square$

11. $q = \square$

12. \square

$k = \square$

Homework
Lesson 1.1 Pg 7
3 & 4-28 even

- **Copy the problem from the book**
- **Show your work! Show all steps!**
- **Skip lines between Problems**
- **Be neat**