# Algebra 1

Our Goal: To review solving equations using several transformations

Warm Up: You will need your notebook and computer
Everything else, bags etc. on the shelves please

Today's Homework
1.1 Exercises, p.8-10: 6-57 (multiples of 3)

Previous Homework
Don't ask

$\frac{3}{7}x = 6$

$\frac{8}{9} \div \frac{2}{3} = \frac{4}{3}$

$1\frac{1}{3}$

**Simplify the expression.**

**1.** 5 + (−15)

**2.** 6 − 7

**3.** (−1) • (−3)

**4.** $\frac{-30}{2}$

**5.** −1 • 0

**6.** 4 − (−5)

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**Tell which property the statement illustrates.**

**1.** 2 + 4 = 4 + 2

**2.** (3 • 7)4 = 3(7 • 4)

**3.** 8 + 0 = 8

**4.** $7 \bullet \left(\frac{1}{7}\right) = 1$

**5.** 4 • 0 = 0

**6.** 12(8 + 3) = 12 • 8 + 12 • 3

$\frac{1}{2} \cdot 2 = 1$

$\frac{17}{24} \cdot \frac{24}{17}$

$0 \cdot \_\_ = 1$

$-\frac{2}{3} \cdot \frac{3}{2} = -1$

$7\left(\frac{1}{7}\right) = 1$

$7 + (-7) = 0$

$1 \cdot \_\_ = 1$

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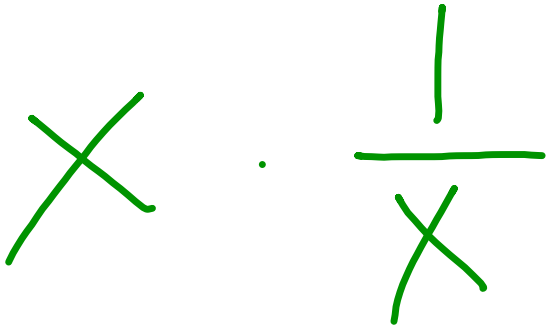

## Core Concept

### 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 $a - c = b - c$.

Solve each equation. Justify each step. Check your answer.

**a.** $x - 3 = -5$

**b.** $0.9 = y + 2.8$

**Solve the equation. Justify each step. Check your solution.**

**1.** $n + 3 = -7$ **2.** $g - \frac{1}{3} = -\frac{2}{3}$ **3.** $-6.5 = p + 3.9$

## Core Concept

### Multiplication Property of Equality

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

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

### Division Property of Equality

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

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

Solve each equation. Justify each step. Check your answer.

**a.** $-\frac{n}{5} = -3$

**b.** $\pi x = -2\pi$

$\frac{\pi}{\pi} \quad \frac{\pi}{\pi}$

$x = -2$

**c.** $1.3z = 5.2$

**Solve the equation. Justify each step. Check your solution.**

**4.** $\frac{y}{3} = -6$

**5.** $9\pi = \pi x$

**6.** $0.05w = 1.4$

## Core Concept

### Four-Step Approach to Problem Solving

1. **Understand the Problem** What is the unknown? What information is being given? What is being asked?
2. **Make a Plan** This plan might involve one or more of the problem-solving strategies shown on the next page.
3. **Solve the Problem** Carry out your plan. Check that each step is correct.
4. **Look Back** Examine your solution. Check that your solution makes sense in the original statement of the problem.

In the 2012 Olympics, Usain Bolt won the 200-meter dash with a time of 19.32 seconds. Write and solve an equation to find his average speed to the nearest hundredth of a meter per second.

distance = rate • time

$d = rt$

$200 = r \cdot 19.32$

$\frac{200}{19.32} = \frac{19.32r}{19.32}$

$r$

$10.35 = r$

**7.** Suppose Usain Bolt ran 400 meters at the same average speed that he ran the 200 meters. How long would it take him to run 400 meters? Round your answer to the nearest hundredth of a second.

## Core Concept

### Common Problem-Solving Strategies

- Use a verbal model.
- Draw a diagram.
- Write an equation.
- Look for a pattern.
- Work backward.
- Guess, check, and revise.
- Sketch a graph or number line.
- Make a table.
- Make a list.
- Break the problem into parts.

On January 22, 1943, the temperature in Spearfish, South Dakota, fell from 54°F at 9:00 a.m. to − 4°F at 9:27 a.m. How many degrees did the temperature fall?

$54 - t = -4$

$58$ OR $-58$

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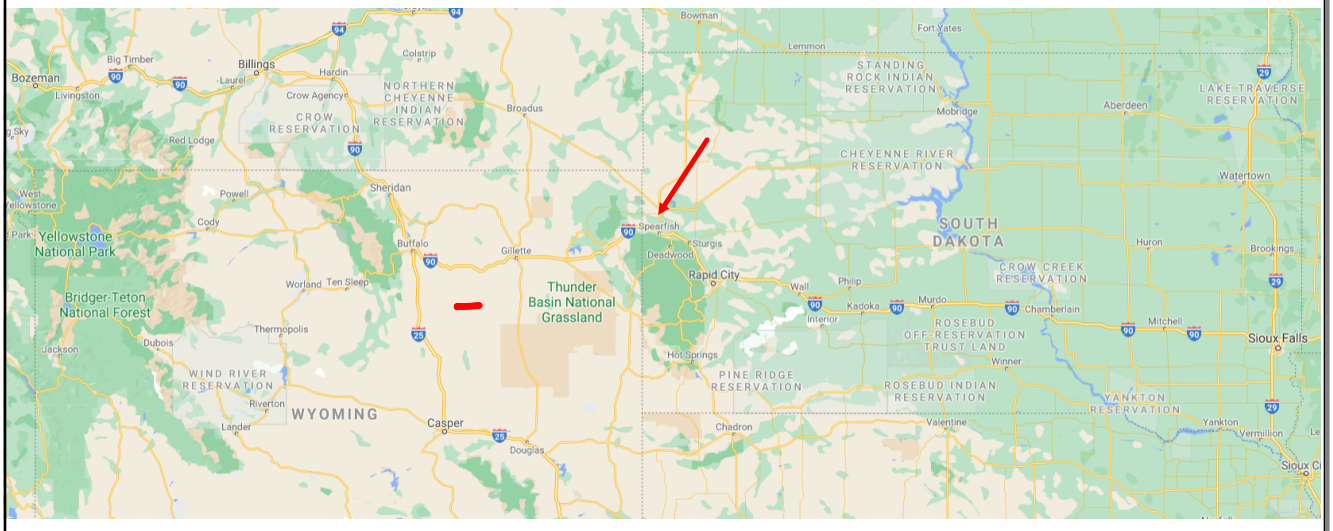

**8.** You thought the balance in your checking account was $68. When your bank statement arrives, you realize that you forgot to record a check. The bank statement lists your balance as $26. Write and solve an equation to find the amount of the check that you forgot to record.

List the operations shown in the expression

**2(x + 3) − 4**

In what order would you "do" these and why?

* 1.
* 2.
* 3.

One way to solve an equation is to isolate the variable by doing the inverse operations in reverse order

**$2(x + 3) - 4 = 8$**

1. do add 3
2. do multiply by 2
3. do subtract 4

1. undo subtract 4
2. undo multiply by 2
3. undo add 3

**$2(x + 3) - 4 = 8$**