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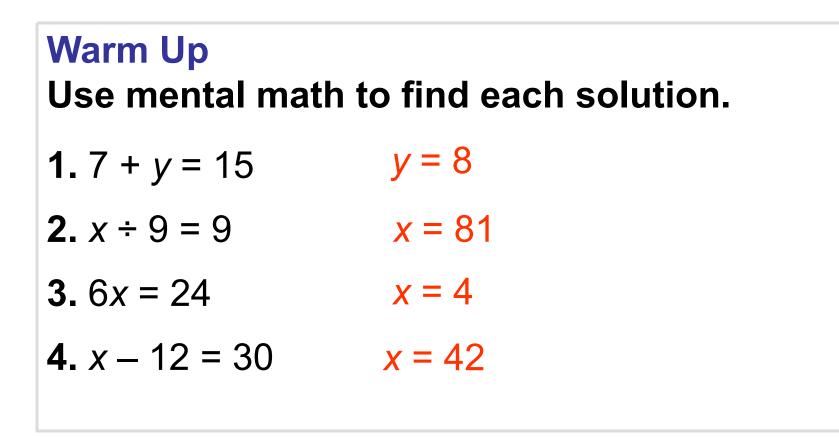
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Problem of the Day

Zelda sold her wet suit to a friend for \$156. She sold her tank, mask, and snorkel for \$85 less than she sold her wet suit. She bought a used wet suit for \$80 and a used tank, mask, and snorkel for \$36. If she started with \$0, how much money does she have left?

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\$111

Learn to solve one-step equations with integers.



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Inverse Property of Addition						
Words	Numbers	Algebra				
The sum of a number and its opposite, or additive inverse, is 0.	3 + (-3) = 0	a + (–a) = 0				

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Additional Example 1A: Solving Addition and Subtraction Equations

Solve each question. Check each answer.

$$-6 + x = -7$$

 $-6 + x = -7$
 $+ 6 + 6$
 $x = -1$

Add 6 to both sides to isolate the variable.

Check

$$-6 + x = -7$$

-6 + (-1) = -7
-7 = -7

Substitute –1 for x.

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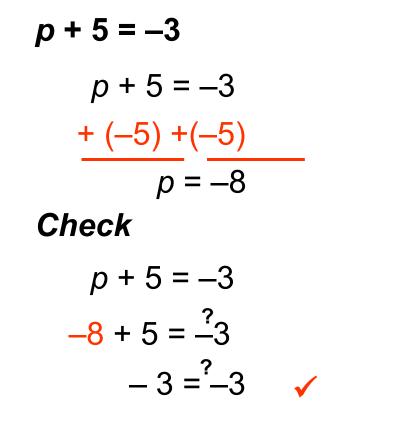
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True.

Additional Example 1B: Solving Addition and Subtraction Equations

Solve each equation. Check each answer.



Add -5 to both sides.

```
Substitute –8 for p.
True.
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Additional Example 1C: Solving Addition and Subtraction Equations

Solve each equation. Check each answer.

y - 9 = -40y - 9 = -40+9 +9 Add 9 to both sides. y = -31Check y - 9 = -40-31 - 9 = -40Substitute –31 for y. -40 = 40True.

Check It Out: Example 1A

Solve each equation. Check each answer.

-3 + x = -9-3 + x = -9 + 3 + 3 x = -6

Add 3 to both sides.

Check

$$-3 + x = -9$$

-3 + (-6) = -9
-9 = -9

Substitute –6 for x.

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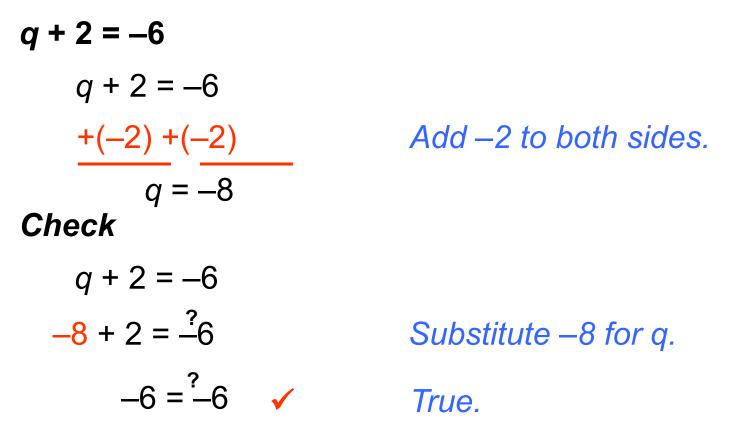
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Check It Out: Example 1B

Solve each equation. Check each answer.



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Check It Out: Example 1C

Solve each equation. Check each answer.

y - 7 = -34
y - 7 = -34

$$+7$$
 +7
y = -27
Check
y - 7 = -34
-27 - 7 = $^{?}$ 34
-34 = $^{?}$ -34 ✓ True.
Add 7 to both sides.
Add 7 to both sides.
Substitute -27 for y.
True.

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Additional Example 2A: Solving Multiplication and Division Equations

Solve each equation. Check each answer.

$$\frac{b}{-5} = 6$$
$$\frac{b}{-5} = 6$$
$$(-5) \quad (45) = (-5)6$$

Multiply both sides by –5.

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$$b = -30$$

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Additional Example 2A Continued

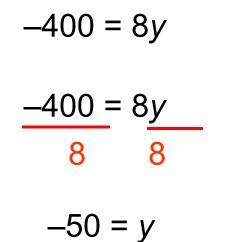
Check $\frac{b}{-5} = 6$ $\frac{-30}{-5} \stackrel{?}{=} 6$ $6 = 6 \checkmark$ True. $\frac{b}{-5} = 6.$

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Additional Example 2B: Solving Multiplication and Division Equations

Solve each equation. Check each answer.

-400 = 8y



Divide both sides by 8.

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Additional Example 2B: Solving Multiplication and Division Equations

Check

-400 = 8*y* Substitute -50 for *y*.

$$-400 = 8(-50)$$

 $-400 = -400$ \checkmark True.

Check It Out: Example 2A

Solve each equation. Check each answer.

$$\frac{c}{4} = -24$$

$$\frac{c}{4} = -24$$

$$4 \left(\underbrace{\sim}_{4} \right) = 4(-24)$$
Multiply both sides by 4.
$$c = -96$$

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Check It Out: Example 2A Continued

Check

$$\frac{c}{4} = -24$$

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-24 = -24 \checkmark *True*.

$$\frac{c}{4} = -24.$$

Check It Out: Example 2B

Solve each equation. Check each answer.

-200 = 4x



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$$-50 = x$$

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Check It Out: Example 2B Continued

Check.

-200 = 4x Substitute -50 for x.

-200 = 4(-50) $-200 = -200 \checkmark True.$

Additional Example 3: *Business Application*

In 2003, a manufacturer made a profit of \$300 million. This amount was \$100 million more than the profit in 2002. What was the profit in 2002?

Let *p* represent the profit in 2002 (in millions of dollars).

This year's profit 300	is =	100 million 100	More than +	Last year's profit <i>p</i>		
300 = 100 + p <u>-100</u> <u>-100</u> 200 = p						
The profit was \$200 million in 2002						

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The profit was \$200 million in 2002.

Check It Out: Example 3

This year the class bake sale made a profit of \$243. This was an increase of \$125 over last year. How much did they make last year?

Let *x* represent the money they made last year.

This year's profit
243is =125 million
125More than
+Last year's profit
x243 = 125 + x
-125 - 125
118 = x118 = x118 = x

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The class earned \$118 last year.

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Standard Lesson Quiz

Lesson Quiz for Student Response Systems

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Lesson Quiz

Solve each equation. Check your answer.

- **1.** -8*y* = -800 **100**
- **2.** *x* 22 = –18 **4**
- **3.** $-\frac{y}{7} = 7$ -49
- **4.** w + 72 = -21 <u>-93</u>
- 5. Last year a phone company had a loss of \$25 million. This year the loss is \$14 million more last year. What is this years loss?
 \$39 million

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Lesson Quiz for Student Response Systems

- 1. Solve the equation.
- y + 65 = -20
- **A.** *y* = 45
- **B.** *y* = 85
- **C.** y = -45
- **D.**y = -85

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Lesson Quiz for Student Response Systems

- 2. Solve the equation.
- x 25 = -15(A.)x = 10(B.) x = 20(C.) x = 35
- **D.** x = 45

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Lesson Quiz for Student Response Systems

- 3. Solve the equation.
- -10y = -1000
- **A.** y = -200
- **B.** y = -100
- $\bigcirc y = 100$
- **D.** y = 200

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Lesson Quiz for Student Response Systems

4. Solve the equation. $---= \frac{3}{9}$ A. a = 54B. a = 15C. a = -15D. a = -54

Lesson Quiz for Student Response Systems

5. In an online test, Dick scored –34 points. This was 20 points less than his previous score. What was his previous score?

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- A. 54 points
- **B.** 14 points
- C.–14 points
- **D.**–54 points