

**It's Logical!**

For any numbers  $a$ ,  $b$ , and  $c$ ,  
if  $a = b$ , then  $a + c = b + c$ .

You can add any number to both sides of an equation.

For any numbers  $a$ ,  $b$ , and  $c$ ,  
if  $a = b$ , then  $ac = bc$ .

You can multiply any number by both sides of an equation.

When you want to "get rid of" a multiplied number,  
try multiplying by its reciprocal.

$$3 + x = 17$$

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- 1 Solve the equation.**  
(It has only one solution.)

$$-7x = 49$$

$$-\frac{1}{7}(-7x) = \frac{1}{7}(49)$$

$$x = -7$$



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- 2 Solve the equation.**  
(It has only one solution.)

$$-3n = -27$$

$$-\frac{1}{3}(-3n) = -\frac{1}{3}(-27)$$

$$n = 9$$

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- 3 Solve the equation.**  
(It has only one solution.)

$$\frac{1}{9}y = -3$$

$$9\left(\frac{1}{9}y\right) = 9(-3)$$

$$y = -27$$

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- 4 Solve the equation.  
(It has only one solution.)

$$-\frac{6}{7}y = \frac{1}{4}$$

$$-\frac{7}{6} \left( -\frac{6}{7} y \right) = -\frac{7}{6} \left( \frac{1}{4} \right)$$

$$y = -\frac{7}{24}$$

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- 5 Solve the equation.  
(It has only one solution.)

$$-18x = 0$$

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- 6 Solve the equation.  
(It has only one solution.)

$$-x = -2$$

$$-1(-x) = -1(-2)$$

$$x = 2$$

To "get rid of" a negative sign,  
try multiplying both sides of the  
equation by  $-1$ .

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- 7 Solve the equation.  
(It has only one solution.)

$$\frac{n}{5} = 7$$

$$5 \left( \frac{n}{5} \right) = 5(7)$$

$$\cancel{5} \frac{n}{\cancel{5}} = 35$$

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- 8 Solve the equation.  
(It has only one solution.)

$$2r + 3 = 23$$

$$2r + 3 + -3 = 23 + -3$$

$$\frac{1}{2}(2r) = \frac{1}{2}(20)$$

$$r = 10$$

$$2x + 3$$

"Get rid of" numbers in the reverse order of operations.

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- 9 Solve the equation.  
(It has only one solution.)

$$10n - 6 = 44$$

$$10n - 6 + 6 = 44 + 6$$

$$10n = 50$$

$$\frac{1}{10}(10n) = \frac{1}{10}(50)$$

$$n = 5$$

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**10 Solve the equation.**  
 (It has only one solution.)  
 Enter your answer as an  
 improper fraction.

$$3x - 8 + 8x - 1 = 11$$

$$11x - 9 = 11$$

$$11x - 9 + 9 = 11 + 9$$

$$\frac{1}{11}(11x) = (20)\frac{1}{11}$$

$$x = \frac{20}{11}$$

Simplify each expression  
 before you start solving. } Strategy  
 Tip

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**11 Solve the equation.**  
 (It has only one solution.)

$$\frac{1}{5}(x + 6) = \frac{1}{6}(x + 8)$$

$$\frac{30}{1}\left(\frac{1}{5}x + \frac{6}{5}\right) = \frac{30}{1}\left(\frac{1}{6}x + \frac{8}{6}\right)$$

$$6x + 36 = 5x + 40$$

$$6x + 36 + -5x = 5x + 40 + -5x$$

$$x + 36 = 40$$

$$x + 36 + -36 = 40 + -36$$

$$x = 4$$

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**12 Solve the equation.**  
**(It has only one solution.)**

$$-\frac{1}{5}(x - 15) - \frac{1}{4}(x - 4) = x - 9$$

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**13 There are three consecutive integers. Let  $x$  denote the first (smallest) of them. Write, and simplify, an expression for the sum of 28 and the third integer.**

**B**

- A)  $x + 28$
- B)  $x + 29$
- C)  $2x + 30$
- D)  $x + 30$

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**14** There are three consecutive even integers. Let  $x$  denote the first (smallest) of them. Write, and simplify, an expression for the sum of the first and the third integer.

**B**

A)  $3x + 6$

B)  $2x + 2$

C)  $2x + 4$

D)  $3x + 4$

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**15** There are four consecutive odd integers. Let  $x$  denote the first (smallest) of them. Write, and simplify, an expression for the sum of all four integers.

**B**

A)  $4x + 6$

B)  $4x + 12$

C)  $x + 12$

D)  $4x + 4$

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