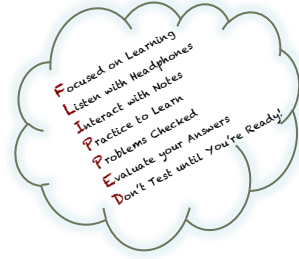


Write your questions here!

**Inverse Operations:**

Operation	Inverse Operation
Addition +	Subtraction -
Subtraction -	Addition +
Multiplication *	Division ÷
Division ÷	Multiplication *



To solve equations with multiple steps, we combine like terms, use reciprocals, apply the distributive property and use inverse operations.

Always try to simplify before solving, if possible!

**Examples:**

Combine like-terms,  
first, if possible!

Solve the following equation by combining like terms first:

Solve the following equations by using the distributive property:

Solve the following equations by using a reciprocal:

There are several ways to solve this equation. You decide for yourself the best method:

Now, summarize  
your notes here!



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## Practice 3.3

**Solve each equation.**

1)  $-3 + 2x + 2x = -3$

2)  $2 - m - 1 = 0$

3)  $-2a - 3a = 5$

4)  $3 = 1 + x - 1$

5)  $-60 = 4(1 + 4x)$

6)  $-3(2 + 4p) = 42$

7)  $-4(-3 - 3k) - 4 = 56$

8)  $-\frac{3}{17}(4x - 1) = 3$

$$9) -1368 = 36(v - 28)$$

$$10) 4 + 9(7 + 5n) = 517$$

$$11) 43.98 = 3.9 + 4(3.3 + 2.4a)$$

$$12) -3.4(2.7a - 1.7) - 1.2a = 47.3$$

$$13) -7(2n + 5) - 5 = -89$$

$$14) 9 = \frac{1}{2}(-2 + 5n)$$

$$15) 7(8b + 6) = -182$$

$$16) 121 = -5 + 6(-4v + 5)$$

$$17) -91 = -6(-1 + 4n) - 1$$

$$18) 6(-24x + 4) = 96$$

## Application And Extension

Solve the following equations for the unknown variable:

1.  $\frac{1}{3}(d + 3) = 5$

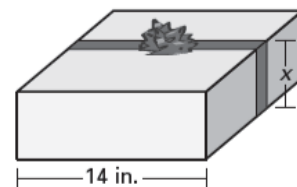
2.  $23 = -4m + 2 + m$

**Target Heart Rate** The target heart rate is the heartbeat rate during aerobic exercise that provides a benefit to your heart. The target heart rate for a person exercising at 70% intensity is given by the equation  $y = 0.7(200 - x)$  where  $y$  is the target heart rate in beats per minute and  $x$  is the person's age in years.

3. How old is a person with a target heart rate of 133 beats per minute?

4. How old is a person with a target heart rate of 126 beats per minute?

5. **Wrapping a Package** It takes 70 inches of ribbon to make a bow and wrap the ribbon around a box. The bow takes 32 inches of ribbon. The width of the box is 14 inches. What is the height of the box?



Quick Review	<p>1. Multiply:</p> $\frac{3}{2} \cdot \frac{14}{15}$	<p>2. Evaluate if <math>x = -5</math> and <math>y = -1</math></p> $-x - y$	<p>3. Simplify:</p> $\frac{-2 - 35}{-4 + 5} + 36$
Coming Up	<p>1. Distribute:</p> $-(-x - 1)$	<p>2. Simplify:</p> $-x - (y - 3x)$	<p>3. Plot (3, 0)</p>

Algebra 1

Practice 3.3

Solve each equation.

1)  $-3 + 2x + 2x = -3$

$$\begin{array}{r} -3 + 4x = -3 \\ + 3 \\ \hline 4x = 0 \\ \hline x = 0 \end{array}$$

3)  $-2a - 3a = 5$

$$\begin{array}{r} -5a = 5 \\ \div -5 \\ \hline a = -1 \end{array}$$

5)  $-60 = 4(1 + 4x)$

$$\begin{array}{r} -60 = 4 + 16x \\ -4 \\ \hline -64 = 16x \\ \div 16 \\ \hline -4 = x \end{array}$$

7)  $-4(-3 - 3k) - 4 = 56$

$$\begin{array}{r} 12 + 2k - 4 = 56 \\ 2k + 8 = 56 \\ 2k = 48 \\ \div 2 \\ \hline k = 24 \end{array}$$

Name \_\_\_\_\_

2)  $2 - m - 1 = 0$

$$\begin{array}{r} -m + 1 = 0 \\ -1 \\ \hline -m = -1 \\ \div -1 \\ \hline m = 1 \end{array}$$

4)  $3 = 1 + x - 1$

$$\begin{array}{r} 3 = x \\ \hline x = 3 \end{array}$$

6)  $-3(2 + 4p) = 42$

$$\begin{array}{r} -6 - 12p = 42 \\ +6 \\ \hline -12p = 48 \\ \div -12 \\ \hline p = -4 \end{array}$$

8)  $-\frac{3}{17}(4x - 1) = 3$

$$\begin{array}{r} -\frac{12}{17}x + \frac{3}{17} = 3 \\ -\frac{3}{17} \\ \hline -\frac{12}{17}x = \frac{48}{17} \\ \div \left(\frac{-12}{17}\right) \\ \hline x = -4 \end{array}$$

OR  $\frac{17}{17} \rightarrow \frac{3}{17}(4x - 1) = 3 \cdot \frac{17}{17}$

$$\begin{array}{r} 4x - 1 = 17 \\ +1 \\ \hline 4x = 16 \\ \div 4 \\ \hline x = 4 \end{array}$$

9)  $-1368 = 36(n - 28)$

$$\begin{array}{r} -1368 = 36n - 1008 \\ +1008 \\ \hline -360 = 36n \\ \div 36 \\ \hline -10 = n \end{array}$$

11)  $43.98 = 3.9 + 4(3.3 + 2.4a)$

$$\begin{array}{r} 43.98 = 13.2 + 9.6a \\ 43.98 = 17.1 + 9.6a \\ -17.1 \\ \hline 26.88 = 9.6a \\ \div 9.6 \\ \hline 2.8 = a \end{array}$$

13)  $-7(2n + 5) - 5 = -89$

$$\begin{array}{r} -14n - 35 - 5 = -89 \\ -14n - 40 = -89 \\ +40 \\ \hline -14n = -49 \\ \div -14 \\ \hline n = 3.5 \end{array}$$

15)  $7(8b + 6) = -182$

$$\begin{array}{r} 56b + 42 = -182 \\ 56b = -224 \\ \div 56 \\ \hline b = -4 \end{array}$$

17)  $-91 = -6(-1 + 4m) - 1$

$$\begin{array}{r} -91 = 6 - 24m - 1 \\ -91 = 5 - 24m \\ +91 \\ \hline -86 = -24m \\ \div -24 \\ \hline 3.58 = m \end{array}$$

10)  $4 + 9(7 + 5n) = 517$

$$\begin{array}{r} 4 + 63 + 45n = 517 \\ 67 + 45n = 517 \\ -67 \\ \hline 45n = 450 \\ \div 45 \\ \hline n = 10 \end{array}$$

12)  $-3.4(2.7a - 1.7) - 1.2a = 47.3$

$$\begin{array}{r} -9.18a + 5.78 - 1.2a = 47.3 \\ -10.38a + 5.78 = 47.3 \\ -5.78 \\ \hline -10.38a = 41.52 \\ \div -10.38 \\ \hline a = 4 \end{array}$$

14)  $9 = \frac{1}{2}(-2 + 5n)$

$$\begin{array}{r} 9 = -1 + \frac{5}{2}n \\ +1 \\ \hline 10 = \frac{5}{2}n \\ \div \frac{2}{5} \\ \hline 4 = n \end{array}$$

16)  $121 = -5 + 6(-4 + 5)$

$$\begin{array}{r} 121 = -5 - 24 + 30 \\ 121 = -24 + 30 \\ -25 \\ \hline 96 = -24 \\ \div -24 \\ \hline -4 = v \end{array}$$

18)  $6(-24x + 4) = 96$

$$\begin{array}{r} -144x + 24 = 96 \\ -24 \\ \hline -144x = 72 \\ \div -144 \\ \hline x = -\frac{1}{2} \end{array}$$

Check your work!  
Practice 3.3 Answers