

A.5A Solving Equations

Objective: I will be able to ... Solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides.

Review:

1. Given $(x, 3)$, solve for x :
 $2x + 4y = 20$

+	-	-	-	-	-	-	-
-	0	0	0	0	0	0	0
	1	1	1	1	1	1	1
	2	2	2	2	2	2	2
	3	3	3	3	3	3	3
	4	4	4	4	4	4	4
	5	5	5	5	5	5	5
	6	6	6	6	6	6	6
	7	7	7	7	7	7	7
	8	8	8	8	8	8	8
	9	9	9	9	9	9	9

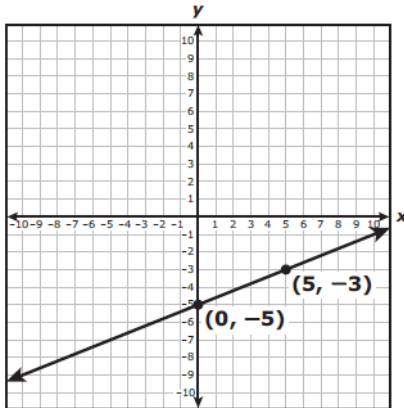
2. Solve $-4 + 5(x + 3) > 9$ for x .

3. Solve $11x + 14 = 16x - 12$ for x .

+	-	-	-	-	-	-	-
-	0	0	0	0	0	0	0
	1	1	1	1	1	1	1
	2	2	2	2	2	2	2
	3	3	3	3	3	3	3
	4	4	4	4	4	4	4
	5	5	5	5	5	5	5
	6	6	6	6	6	6	6
	7	7	7	7	7	7	7
	8	8	8	8	8	8	8
	9	9	9	9	9	9	9

Examples

1. The graph of an equation in the form $y = mx + b$ is shown below.



Based on the graph, what is the value of x when $y = -7$?

2. The approximately distance in miles between a commercial jet flying from Boston to Los Angeles can be found using the function:

$m = -475t + 2,650$, where t is the number of hours the jet has been flying. How many hours and minutes has the jet been flying if the jet is 1,500 miles from Los Angeles?

3. The perimeter of a rectangle is 42 centimeters. The length of the rectangle can be represented by $(x + 4)$, and its width can be represented by $(2x - 7)$. What are the dimensions of this rectangle in centimeters?

4. A painter charges \$35 per hour plus \$40 for a ladder rental when he paints the house. The total charge to paint a customer's house was \$950. How many hours did it take to paint the house?

<p>1. If $y = -\frac{4}{5}x - 2$, what is the value of x when y = -9?</p>	<p>2. Given (-3, y), solve for y: $-2x - y = 12$</p>	<p>3. An online music service lets customers download an unlimited number of songs for \$0.25 each after paying a monthly membership fee of \$5.00. The total amount of money a customer spends on music in dollars in a single month can be found using the function $y = 0.25x + 5$. If the online service has charged a customer \$46.25 this month, how many songs has the customer downloaded?</p>
<p>4. A teacher determined the total number of books she needs to order using the function $b(n) = 4n$, where n is the number of students she has in the class. What is the independent quantity?</p> <p>b. If she has 132 books, how many students does she have in the class?</p>	<p>5. Solve $10(y + 7) = 12y$ for y.</p> <p>6. Solve $8x - 9 = 15$ for x.</p>	<p>7. A student bought concert tickets online. The total cost, c, in dollars, of t tickets can be found using the function $c = 24.50t + 9.50$. If the student spent a total of \$83 on tickets, how many tickets did he buy?</p>
<p>8. A car repair job requires parts that costs \$325. The mechanic is paid \$70 per hour. Write an equation that shows the total cost of the repair as it depends on the time it takes to finish the job.</p>	<p>9. The amount of money Beth has saved is given by $t(w) = 12w + 40$, where w is the number of weeks she saves. Annotate the equation.</p>	<p>10. Simplify:</p> $3c\left(\frac{1}{3}d - 9\right) - 7(c + 1) + d(c + 4)$



Practice A.5(A)

Solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides.

Multi-Step Example

Solve $5x + 7 = 9(x - 2)$.

$5x + 7 = 9(x - 2)$	Original equation
$5x + 7 = 9x - 18$	Distributive property
$7 = 4x - 18$	Subtract $5x$ from each side.
$25 = 4x$	Add 18 to each side.
$\frac{25}{4} = x$	Divide each side by 4.

1 Solve $8x - 9 = 15$ for x .

- A $\frac{3}{4}$
- B 16
- C $\frac{87}{8}$
- D 3

2 Solve $10(y + 7) = 12y$ for y .

- F 7
- G $\frac{7}{2}$
- H $\frac{70}{11}$
- J 35

3 Solve $3x + 8 = 2x - 7$.

- A $x = 3$
- B $x = -15$
- C $x = 15$
- D $x = -3$

4 Solve $-4x + 6(x + 2) = 20$.

- F 9
- G 4
- H 3
- J -4

5 Solve $11x + 14 = 16x - 12$ for x .

Record your answer and fill in the bubbles on your answer document.

6 Solve for t : $7(t + 2) + 4t = 2t - 4$

- A $-\frac{2}{3}$
- B $-\frac{14}{3}$
- C $-\frac{18}{11}$
- D -2

7 For which value of x is $9x + 22 = 3x$?

- F -33
- G $-\frac{22}{3}$
- H 66
- J $-\frac{11}{3}$



Practice A.5(A) (continued)

SCORE _____

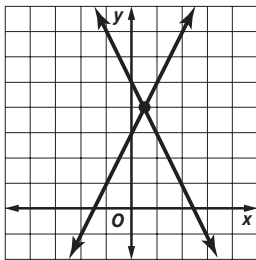
8 Solve $\frac{2}{3}(x + 6) = 7$ for x .

- A $\frac{9}{2}$
- B -3
- C $\frac{3}{2}$
- D $\frac{1}{3}$

9 Solve $12x + 5 = 7x - 8$ for x .

- F $\frac{13}{19}$
- G $-\frac{13}{5}$
- H $-\frac{1}{4}$
- J $-\frac{3}{19}$

10 The graphs of the linear equations $y = 5 - 2x$ and $y = 2x + 3$ are shown below.



If $5 - 2x = 2x + 3$, what is the value of x ?

- A -4
- B $-\frac{1}{2}$
- C $\frac{1}{2}$
- D 4

11 Using the table of values below, determine the value of x for which $y = 0$.

x	y
0	7
4	13
8	19

- F -4
- G $-\frac{14}{3}$
- H 0
- J $\frac{11}{2}$

12 Solve $6(x - 7) = 10(x + 4)$ for x .

Record your answer and fill in the bubbles on your answer document.

13 Solve $A + 2A + 3A = 4(A + 5)$ for A .

- A 4
- B $\frac{5}{2}$
- C 5
- D 1

14 Use the addition property of equality to show the first step in solving $12 = 3x - 3$.

- F $3x = 9$
- G $4 = x - 1$
- H $x = 5$
- J $3x = 15$

15 Solve $-4 + 5(x + 3) = 9$.

- A -0.4
- B 6
- C -3
- D 2