

Warm Up

9/14

Solve for x:

$$\textcircled{-5}(2x - 4) + 3 = 10\textcircled{-1}(3x + 2)$$

$$-10x + 20 + 3 = 10 - 3x\textcircled{-2}$$

$$-10x + 23 = 8 - 3x$$

$$\begin{array}{r} + 3x \qquad \qquad \qquad + 3x \\ \hline \end{array}$$

$$\begin{array}{r} -7x + 23 = 8 \\ -23 \quad -23 \\ \hline \end{array}$$

$$\begin{array}{r} -7x = -15 \\ \overline{-7} \quad \overline{-7} \end{array}$$

$$x = \frac{15}{7}$$

Name

Key

Homework Questions?

Date

Solving for a Variable using Multiple Steps Practice

1.

$$\begin{array}{r}
 18 = 3(3x - 6) \\
 18 = 9x - 18 \\
 +18 \quad +18 \\
 \hline
 36 = 9x \\
 \frac{36}{9} = \frac{9x}{9}
 \end{array}$$

$$4 = x$$

2.

$$\begin{array}{r}
 30 = -5(6n + 6) \\
 30 = -30n - 30 \\
 +30 \quad +30 \\
 \hline
 60 = -30n \\
 \frac{60}{-30} = \frac{-30n}{-30}
 \end{array}$$

$$-2 = n$$

3.

$$\begin{array}{r}
 37 = -3 + 5(x + 6) \\
 37 = -3 + 5x + 30 \\
 37 = 5x + 27 \\
 -27 \quad -27 \\
 \hline
 10 = 5x \\
 \frac{10}{5} = \frac{5x}{5}
 \end{array}$$

$$2 = x$$

4.

$$\begin{array}{r}
 4(-x + 4) = 12 \\
 -4x + 16 = 12 \\
 -16 \quad -16 \\
 \hline
 -4x = -4 \\
 \frac{-4x}{-4} = \frac{-4}{-4}
 \end{array}$$

$$x = 1$$

5.

$$\begin{array}{r}
 -2 = -(n - 8) \\
 -2 = -1(n - 8) \\
 -2 = -n + 8 \\
 -8 \quad -8 \\
 \hline
 -10 = -n \\
 \frac{-10}{-1} = \frac{-n}{-1}
 \end{array}$$

$$10 = n$$

6.

$$\begin{array}{r}
 -13 = 5(1 + 4m) - 2m \\
 -13 = 5 + 20m - 2m \\
 -13 = 5 + 18m \\
 -5 \quad -5 \\
 \hline
 -18 = 18m \\
 \frac{-18}{18} = \frac{18m}{18}
 \end{array}$$

$$-1 = m$$

7. $10(1 + 3b) = -20$

$$\begin{array}{r} 10 + 30b = -20 \\ -10 \quad -10 \\ \hline 30b = -30 \\ \underline{30 \quad 30} \end{array}$$

$$b = -1$$

8. $8 = 8v - 4(v + 8)$

$$\begin{array}{r} 8 = 8v - 4v - 32 \\ 8 = 4v - 32 \\ +32 \quad +32 \\ \hline 40 = 4v \\ \underline{4 \quad 4} \end{array}$$

$$10 = v$$

9. $-5n - 8(1 + 7n) = -8$

$$\begin{array}{r} -5n - 8 - 56n = -8 \\ -61n - 8 = -8 \\ +8 \quad +8 \\ \hline -61n = 0 \\ \underline{-61 \quad -61} \end{array}$$

$$n = 0$$

10. $8(4k - 4) = -5k - 32$

$$\begin{array}{r} 32k - 32 = -5k - 32 \\ +32 \quad +32 \\ \hline 32k = -5k \\ +5k \quad +5k \\ \hline 37k = 0 \\ \underline{37 \quad 37} \end{array}$$

$$k = 0$$

11. $8(1 + 5x) + 5 = 13 + 5x$

$$\begin{array}{r} 8 + 40x + 5 = 13 + 5x \\ 13 + 40x = 13 + 5x \\ -13 \quad -13 \\ \hline 40x = 5x \\ -5x \quad -5x \\ \hline 35x = 0 \\ \underline{35 \quad 35} \end{array}$$

$$x = 0$$

12. $-11 - 5a = 6(5a + 4)$

$$\begin{array}{r} -11 - 5a = 30a + 24 \\ +5a \quad +5a \\ \hline -11 = 35a + 24 \\ -24 \quad -24 \\ \hline -35 = 35a \\ \underline{35 \quad 35} \end{array}$$

$$-1 = a$$

How do we solve for x?

We need to get "x" ...

Alone on one side of the equal sign.

How do we do this?

We use properties of equality.
We can do **whatever we want** as long as we use the **Properties of Equality**.

Steps to follow:

- Distribute
- Combine Like Terms
- Properties of Equality

Choice of either the Blue Sheet
or the White Sheet.

What Do You Call Someone Who Can't Turn Pancakes?

Cross out the letter pair next to each correct solution.

For each letter pair you DON'T cross out, write the upper case letter in the box containing the lower case letter.

a	b	c	d	e	f	g	h	i	j	k	l	m
---	---	---	---	---	---	---	---	---	---	---	---	---

1 $9y + 4 = 2y + 25$

2 $5n - 2 = n + 18$

3 $11 + 8q = 3q - 19$

4 $-3 - 10x = 25 + 4x$

5 $15a = 6a - 90$

6 $24 - 5d = d$

7 Xavier is thinking of a number. Nine more than four times the number is the same as fifteen less than twice the number. What is Xavier's number?

e • N 4

a • P -6

f • I -1

d • R -12

l • F 3

b • A 7

i • E -10

g • S 5

j • L -9

k • U -2

8 $2 + 11b = 8b + 15$

9 $7m + 32 = 12 - m$

10 $16 - 5y = 1 - 4y$

11 $2x - 8x + 1 = 9 - 10x$

12 $-3t - 8 + 7t = 34 + 9t - 2$

13 $2a + 3a + 4a = 5a - 18$

14 Yvonne is thinking of a number. Fifty, decreased by three times the number, is the same as seven times the number, increased by 80. What is Yvonne's number?

c • N 15

k • O -6

e • H $-2\frac{1}{2}$

m • T -3

g • P $-3\frac{3}{4}$

a • R -8

l • S $4\frac{1}{3}$

h • D 2

d • F 11

i • L $-4\frac{1}{2}$

15 $5(x + 4) = 7x - 26$

16 $20 - 9w = 4(15 - w)$

17 $2(11 + 3n) = 12n$

18 $10 - 4(p + 7) = 2(1 - p)$

19 $11x = 8x - 3(5 - 2x)$

20 $9 - 6(4u - 1) = u + 15$

21 Zabato is thinking of a number. Three times the sum of the number and ten is the same as eight times the number. What is Zabato's number?

e • T -8

l • V 6

h • S -10

l • P 18

m • E $3\frac{2}{3}$

e • L -9


c • N 0

i • G 23

a • P 5

i • F $6\frac{1}{3}$

Why Do Cowboys Have So Much Trouble With Math?

Solve each equation or problem and find your solution in the answer column.
Write the letter of the answer in each box that contains the exercise number.
If the answer has a , shade in the box instead of writing a letter in it.

① $8x + 15 = 3x - 20$

② $9n - 2 = 7n + 50$

③ $18 - 5y = y + 4$

④ $-7a - 10 = 20 - 3a$

⑤ $11d = 81 - 16d$

⑥ $-22 - x = 5 + 6x + 9$

⑦ $10b - 25 - 3b = 4b - 1$

⑧ $33 + 15w = 3w - w + 4w$

- ⑨ The Sun Spa charges annual dues of \$125 plus \$10 per hour to use the facilities. The Moon Spa charges annual dues of \$230 plus \$7 per hour to use the facilities. For what number of hours would the two spas charge the same total amount?

⑩ $9(m - 2) = m + 40$

⑪ $3(2p + 7) = 15(p - 4)$

⑫ $5x + 2(11 - 4x) = 82 + x$

⑬ $16 - 5(3t - 4) = 8(-2t + 11)$

⑭ $7(7c + 1) - 4c = 13(3c - 2)$

⑮ $12(5 + 2y) = 4y - (6 - 9y)$

⑯ $3q - 16q = 7 + 2(-8q - 3)$

⑰ $14 - 3(5t - 12) = 1 - (20t + 1)$

- ⑱ Simon says: "Five times my age 4 years ago is the same as 3 times my age in 2 years." How old is Simon now?

Answers 1-9

Ⓐ 8
Ⓘ $-7\frac{1}{2}$
Ⓚ 38
● $-5\frac{1}{7}$
Ⓞ -7
Ⓟ $-3\frac{2}{3}$
Ⓣ 3
ⓔ $2\frac{1}{3}$
ⓓ 35
Ⓒ $-4\frac{1}{4}$
Ⓢ 26
Ⓟ 5

Answers 10-18

Ⓜ 18
Ⓛ $-5\frac{1}{2}$
Ⓝ 13
ⓖ 9
Ⓡ -10
Ⓑ $-7\frac{3}{4}$
● 52
Ⓦ $7\frac{1}{4}$
ⓕ 12
ⓗ $\frac{1}{3}$
Ⓨ -15
Ⓤ -6

5 16 3 12 6 7 14 10 7 12 2 13 17 1 15 18 9 6 5 16 4 18 11 2 13 15 8

Homework

Finish classwork