

Warm Up

9/12

Solve for x:

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

$$-10x + 20 + 3 = 10 - 3x - 2$$

$$\begin{array}{r} -10x + 23 = 8 - 3x \\ -8 \quad -8 \end{array}$$

$$-10x + 15 = -3x$$

$$\begin{array}{r} +10x \quad +10x \end{array}$$

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

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

Name

Key

Homework Questions?

Date

Solving for a Variable using Multiple Steps Practice

$$1. \quad 18 = 3(3x - 6)$$

$$18 = 9x - 18$$

$$\begin{array}{r} +18 \quad +18 \\ \hline 36 = 9x \end{array}$$

$$\frac{36}{9} = \frac{9x}{9}$$

$$4 = x$$

$$2. \quad 30 = -5(6n + 6)$$

$$30 = -30n - 30$$

$$\begin{array}{r} +30 \quad +30 \\ \hline 60 = -30n \end{array}$$

$$\frac{60}{-30} = \frac{-30n}{-30}$$

$$-2 = n$$

$$3. \quad 37 = -3 + 5(x + 6)$$

$$37 = -3 + 5x + 30$$

$$37 = 5x + 27$$

$$\begin{array}{r} -27 \quad -27 \\ \hline 10 = 5x \end{array}$$

$$\frac{10}{5} = \frac{5x}{5}$$

$$2 = x$$

$$4. \quad 4(-x + 4) = 12$$

$$-4x + 16 = 12$$

$$\begin{array}{r} -16 \quad -16 \\ \hline -4x = -4 \end{array}$$

$$\frac{-4x}{-4} = \frac{-4}{-4}$$

$$x = 1$$

$$5. \quad -2 = -(n - 8)$$

$$-2 = -1(n - 8)$$

$$-2 = -n + 8$$

$$\begin{array}{r} -8 \quad -8 \\ \hline -10 = -n \end{array}$$

$$\frac{-10}{-1} = \frac{-n}{-1}$$

$$10 = n$$

$$6. \quad -13 = 5(1 + 4m) - 2m$$

$$-13 = 5 + 20m - 2m$$

$$-13 = 5 + 18m$$

$$\begin{array}{r} -5 \quad -5 \\ \hline -18 = 18m \end{array}$$

$$\frac{-18}{18} = \frac{18m}{18}$$

$$-1 = m$$

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

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

$$b = -1$$

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

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

$$10 = v$$

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

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

$$n = 0$$

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

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

$$k = 0$$

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

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

$$x = 0$$

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

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

$$-1 = a$$

How do we solve for x?

We need to get "x" ... alone on one side
of the equal sign and number on the
other side.

How do we do this?

Distribute (if needed)

We can do **whatever we want** (as
long as we use the **Properties of
Equality**)
Combine Like Terms (CLT)
Use properties of equality
(same thing to both sides)

Steps to follow:

- Distribute (if needed)
- Combine Like Terms
- Properties of Equality
(doing the same thing to both sides)

Choice of either side of the
Puzzle 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
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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
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Homework

Finish classwork