★REVIEW: change words ⟹ numbers & symbols

Translating Phrases - Linear Expression

ES1

Translate each verbal phrase into an algebraic expression:

1) The sum of x and 2 — $x+2$

2) t divided by 8 — $t \div 8$

3) The product of 9 and m — $9 \times m$

4) Subtract 5 from c — $c-5$

5) Combine y and 7 — $7y$

6) Three-sevenths of h — $\frac{3}{7}h$

7) 3 multiplied by d — $3d$

8) One-quarter added to n — $n+\frac{1}{4}$

9) b decreased by 10 — $b-10$

10) One-half of k — $\frac{k}{2}$

NAME: answers

U4:L1 Algebra Review

Use highlighters, pencil crayons or markers to color coordinate and doodle on the notes to help remember

Operation	Inverse
+	−
−	+
×	÷
÷	×
x^2	$\sqrt{x}$

When solving problems algebraically, you always...

1) Do the inverse operation.

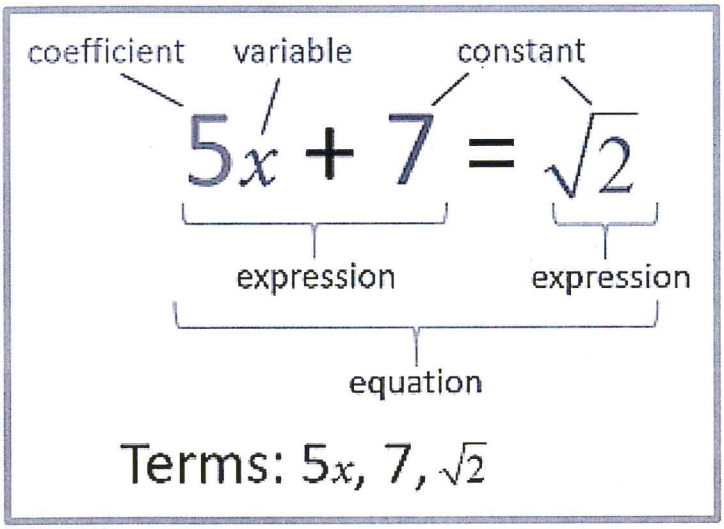
2) Do the same to both sides of the equal sign.

Examples:

$x - 4 = 10$ $+4 \quad +4$ $x = 14$	$y + 2 = 12$ $-2 \quad -2$ $y = 10$	$\frac{4x}{4} = \frac{200}{4}$ $x = 50$	$2 \times \frac{a}{2} = 7 \times 2$ $a = 14$

Your turn:

$m - 5 = 10$ $+5 \quad +5$ $m = 15$	$b + 20 = 90$ $-20 \quad -20$ $b = 70$	$\frac{5x}{5} = \frac{150}{5}$ $x = 30$	$9 \times \frac{a}{9} = 7 \times 9$ $a = 63$



Remember…

Equation has an equal sign (=)

Expression does not

1. Match the following terms to their definitions:

CONSTANT		A math phrase with an equals sign
EXPRESSION		A math phrase without an equals sign.
EQUATION		The unknown term (often expressed as a LETTER)
VARIABLE		A quantity that does not change (usually a NUMBER!)

2. Fill out the following table:

	VARIABLES	CONSTANTS	(CIRCLE ONE)
$x + 4$	x	4	EQUATION / EXPRESSION
$a + b + 7$	a, b	7	EQUATION / EXPRESSION
$44 = 11 + f$	f	44, 11	EQUATION / EXPRESSION
$10 + 13 = 23$		10, 13, 23	EQUATION / EXPRESSION
$4 + 7$		4, 7	EQUATION / EXPRESSION

Solving TWO Step Equations

Solving two step equations follows the same steps as one step equations.

1) Do the inverse operation.

2) Do the same to both sides of the equal sign.

What inverse operation do I do first???

BEDMAS backwards ... SAMDEB

Examples:

$3m - 5 = 10$ $+5 \quad +5$ $\frac{3m}{3} = \frac{15}{3}$ $m = 5$	$2b + 10 = 90$ $-10 \quad -10$ $\frac{2b}{2} = \frac{80}{2}$ $b = 40$	$5x - 5 = 150$ $+5 \quad +5$ $\frac{5x}{5} = \frac{155}{5}$ $x = 31$	$\frac{a}{9} = 7 + 3$ $9 \times \frac{a}{9} = 10 \times 9$ $a = 90$

Your turn:

$5 + 2q = 11$ $-5 \quad -5$ $\frac{2q}{2} = \frac{6}{2}$ $q = 3$	$\frac{b}{2} + 10 = 70$ $-10 \quad -10$ $2 \times \frac{b}{2} = 60 \times 2$ $b = 120$	$5 = 150 + 5c$ $-150 \quad -150$ $\frac{-145}{5} = \frac{5c}{5}$ $-29 = c$	$8 \times 7 = \frac{2a}{8} \times 8$ $\frac{56}{2} = \frac{2a}{2}$ $28 = a$

answers

Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples	
One-Step Equations	**1.** $m + 12 = 10$ $-12 \quad -12$ $m = -2$	**2.** $-2 = g - 9$ $+9 \quad +9$ $7 = g$
	3. $\frac{-7y}{-7} = \frac{-91}{-7}$ $y = 13$	**4.** $\frac{a}{9} = -4 \cdot 9$ $a = -36$
Fractions To "get rid" of a fraction, multiply by the reciprocal !	**5.** $\frac{3}{2} \cdot \frac{2}{3}x = 10 \cdot \frac{3}{2}$ $x = 15$	**6.** $\frac{9}{4} \cdot \frac{4}{9}w = -8 \cdot \frac{9}{4}$ $w = -18$
	7. $\frac{-5}{6} \cdot -\frac{6}{5}k = 12 \cdot \frac{-5}{6}$ $k = -10$	**8.** $-2 \cdot -\frac{1}{2}m = -9 \cdot -2$ $m = 18$
Two-Step Equations	**To Solve a Two-Step Equation:** 1. Undo the **Addition/Subtraction** (to remove constant term) 2. Undo the **Multiplication/Division** (to remove coefficient)	
	9. $6x + 8 = 50$ $-8 \quad -8$ $\frac{6x}{6} = \frac{42}{6}$ $x = 7$	**10.** $2n - 5 = 11$ $+5 \quad +5$ $\frac{2n}{2} = \frac{16}{2}$ $n = 8$
	11. $13 = -4k + 9$ $-9 \quad -9$ $\frac{4}{-4} = \frac{-4k}{-4}$ $k = -1$	**12.** $7 - 3y = 34$ $-7 \quad -7$ $\frac{-3y}{-3} = \frac{27}{-3}$ $y = -9$

13. $\frac{x}{2} - 7 = 9$

$+7 \quad +7$

$2 \cdot \frac{x}{2} = 16 \cdot 2$

$\boxed{x = 32}$

14. $11 = \frac{c}{-5} + 8$

$-8 \quad -8$

$-5 \cdot 3 = \frac{c}{-5} \cdot -5$

$\boxed{-15 = c}$

15. $\frac{3}{5}x + 22 = 28$

$-22 \quad -22$

$\frac{5}{3} \cdot \frac{3}{5}x = 6 \cdot \frac{5}{3}$

$\boxed{x = 10}$

16. $-\frac{1}{3}m + 1 = -7$

$-1 \quad -1$

$-3 \cdot -\frac{1}{3}m = -8 \cdot -3$

$\boxed{m = 24}$

17. $-10 \div \frac{7}{4}p = -38$

$+10 \quad +10$

$\frac{4}{7} \cdot \frac{7}{4}p = -28 \cdot \frac{4}{7}$

$\boxed{p = -16}$

18. $15 = 9 - \frac{1}{2}x$

$-9 \quad -9$

$-2 \cdot 6 = -\frac{1}{2}x \cdot -2$

$\boxed{-12 = x}$

Watch Out!

The examples below are different in that the multiplication/division is done FIRST, followed by the addition/subtraction.

19. $\frac{x+11}{8} = -3 \cdot 8$

$x + 11 = -24$

$-11 \quad -11$

$\boxed{x = -35}$

20. $\frac{n-5}{-2} = -7 \cdot -2$

$n - 5 = 14$

$+5 \quad +5$

$\boxed{n = 19}$

21. $1 = \frac{a-13}{-6} \cdot -6$

$-6 = a - 13$

$+13 \quad +13$

$\boxed{7 = a}$

22. $4 = \frac{w+8}{9} \cdot 9$

$36 = w + 8$

$-8 \quad -8$

$\boxed{28 = w}$