Charles County Public Schools

It's All About Teaching and Learning

CHARLES COUNTY PUBLIC SCHOOLS

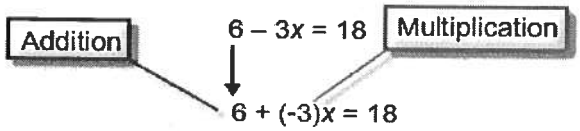
ESOL Math Grade 9 Learning Packet

E-Learning

Name: _____ ESOL Math Distance Learning Opportunity

Use inverse operations to solve a two-step equation.

Example



GOAL
Isolate *x*.

Operations on the left-hand side of the equation with *x*	Inverse operations needed to isolate *x*
1. Addition	Step 1. Subtraction
2. Multiplication	Step 2. Division

Step 1 — Subtract 6.

$$6 + (-3)x = 18$$
$$-6 \qquad -6$$
$$(-3)x = 12$$

Step 2 — Divide by -3.

$$\frac{(-3)x}{-3} = \frac{12}{-3}$$
$$x = -4$$

Isolating *x* and simplifying solves this equation.

Subtracting a number can be thought of as adding its opposite.

Example

$$6 - 3x = 18$$

Step 1
$$6 + (-3)x = 18$$

GOAL
Isolate *x*.

Subtract 6
$$-6 \qquad -6$$

Step 2
$$(-3)x = 12$$

Divide by -3
$$\frac{(-3)x}{-3} = \frac{12}{-3}$$
$$x = -4$$

Rewriting subtraction as addition can help you solve an equation.

Solving 2 Step Equations Practice:

1. You begin solving the equation $8 - 2x = 40$ by subtracting 8 from both sides. Which is the best choice for Step 2?

a) Subtract 32 from both sides.

b) Divide both sides by -2.

c) Divide both sides by 32.

d) Multiply both sides by -2.

2. Write the steps in order to solve the equation **$-3x - 6 = 18$** for x

x- 4	-3x = 12	-3x = 24	x= -8	3x = 24

Write the order below:

_____

_____

_____

_____

_____

3. Which choice describes whether "**x = 19**" is the solution of the equation **42 = 3x – 15**?

a) **X = 19** is **not** the solution because 3 .19-15 = 3.4 = 12, not 42.

b) **X = 19** is the solution because 3. 19- 15 = 3.4 = 12

c) **X= 19** is the solution because 3. 19 -15 = 57 -15 =42

d) **X=19** is **not** the solution because 3. 19 -15= 57-15=42

4. Write the steps into order to solve the equation **$4x - 9 = 11$** for x

4x = 2	x = -5	-4x = 20	x= 5	x = ½	4x = 20

Write the order below:

_____Type equation here.

_____

_____

_____

_____

Some examples can help you think about the problem.

power of a power

$(3^{-4})^2$

$(\frac{1}{81})^2 = \frac{1}{6{,}561}$

Evaluate inside the parentheses first.

power of a power

$(3^{-3})^{-2}$

$(\frac{1}{27})^{-2} = 729$

$(3^{-4})^2$

$3^{-4 \cdot 2} = 3^{-8} = \frac{1}{6{,}561}$

Or find the product of the exponents first.

$(3^{-3})^{-2}$

$3^{-3 \cdot -2} = 3^6 = 729$

These are two ways to evaluate the power of a power.

Think about the definition of a power.

Example

power

base 2^4 exponent

product of integers: $2 \cdot 2 \cdot 2 \cdot 2$

2 is a factor 4 times

base $(h^2)^4$ exponent

$h^2 \cdot h^2 \cdot h^2 \cdot h^2$ — product of powers

h^2 is a factor 4 times

product of powers: $2^5 \cdot 2^3 = 2^{5+3}$ (add; same base)

$2 \cdot 4$

$h^{2+2+2+2}$ — add exponents

$h^{2 \cdot 4}$ — product of the exponents

Now it's your turn to use these strategies:

Which of these is <u>equal</u> to 5^3?

$3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$

$5 \cdot 3$

$5 \cdot 5 \cdot 5$

3^5

Exponents Worksheet

Solve.

1 a. 2^1

1 b. 5^2

2 a. 3^3

2 b. 8^2

3 a. 0^{82}

3 b. 100^1

4 a. 10^7

4 b. 0^{20}

5 a. 8^1

5 b. 5^1

Write using exponents. For example, $8 \times 8 \times 8$ is written as 8^3. You don't have to solve.

6 a. $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$

7 a. $95 \times 95 \times 95$

8 a. 7×7

9 a. $1 \times 1 \times 1 \times 1 \times 1 \times 1$

10 a. $2 \times 2 \times 2 \times 2$

COMPARING AND ORDERING INTEGERS

Compare the pairs of integers below and mark either < or > to show which number is greater (the first two are done for you.)

-6 < 2	-3 -4	-6 -5	-1 -6
5 > -16	9 10	-14 -15	-2 -4
-6 -5	-17 18	0 -46	7 6
-73 -78	-9 9	-34 -47	-196 -199

Place these integers in order starting with the least or smallest (the first one is done for you.)

-6	-8	10	**-8 -6 10**
0	-5	-4	
12	-12	16	
-4	-3	-8	
-6	7	-8	5
0	18	-22	20
-56	17	-85	99
42	-17	-12	-43

Ordering Numbers

A) Write each set of numbers in the correct order from least to greatest.

1)	–16	–45	33	7	–9	☐	☐	☐	☐	☐
2)	23	–78	–2	18	–5	☐	☐	☐	☐	☐
3)	44	–56	28	32	–19	☐	☐	☐	☐	☐
4)	–25	–6	–74	–69	–8	☐	☐	☐	☐	☐
5)	78	66	–2	4	–12	☐	☐	☐	☐	☐

Name _____ Date_____ Period_____

Math Word Match

Write the letter next to the word.

1. three digit number _____	A. 56 : 8
2. division_____A___	B. A number that is below zero
3. parentheses_____	C. The counting numbers (1, 2, 3,...)
4. even number_____	D. Positive and negative whole numbers including zero.
5. addition_____	E. >
6. greater than_____	F. A number that can be divided by 2. 2, 4, 6, 8....
7. integers_____	G. A number above zero
8. less than_____	H. 356
9. natural numbers_____	I. <
10. negative numbers_____	J. forty-five plus three
11. odd number_____	K. A whole number NOT divisible by 2.
12. positive number_____	L. ( )