

Expressions and Equations Study Guide

Name: _____

1) Substitute and evaluate the following expressions if: $x = 1, y = 2, z = 3$

$x + 2y \cdot (5y - 5) - 4y$	$17 - (yz)^2 \div (2yz)$	$7 - 2x(10z - z^2 - zy^2)$
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2) Explain whether the equation is true or false and why. If it is false, find two true expressions by making simple changes.

$3(2) + 5 < 11$	
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3) Write an algebraic expression for the following:

the product of c and d	8 less than the quotient of y and 3.	m is less than or equal to four
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4) Write the words for the following expression.

$\frac{a + d}{10}$	
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5) Select the equation(s) where $x = 5$ is a solution. Circle all that apply.

A. $2x + 4 = 14$

D. $8 + 3x = 23$

B. $5x = 55$

E. $6x = 30$

C. $6x + 3 = 14$

F. $5x = 1$

6) Find the value of the variable.

$42 = a + 16$	$4x = 18$	$\frac{x}{5} = 30$
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7) Find the value of the variable.

$x - 12 = 21$	$3x = 39$	$\frac{x}{5} = 4$	$v + 4 = 13$
$3x + 4 = 37$	$\frac{x}{2} - 5 = 3$	$\frac{(x - 2)}{4} = 3$	$\frac{3x}{2} - 5 = 1$

8) Find the values for the variable that would make the inequality true. Graph them on a number line.

$m - 7 < 12$	$4x + 1 \geq 25$
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9) Solve this problem. Show your work.

Amy read 5 more books than Chris in the second marking period. Write an expression for the number of books Chris read.

a) Define a variable:

b) Expression:

c) If Amy read 7 books, how many books did Chris read? Evaluate using your expression from b. Write your answer in a complete sentence.

10) Solve this problem. Show your work.

During a basketball game, Jeremy scored triple the number of points as Donovan. Kolby scored double the number of points as Donovan. If the three boys scored 36 points, how many points did each boy score?

a. What are the unknown values? What algebraic terms could represent each unknown value?

b. Create an equation:

c. Solve the equation:

d. Answer in a complete sentence:

11) Solve this problem. Show your work.

Fishing Adventures rents small fishing boats to tourists for day-long fishing trips. Each boat can hold at most eight people.

a. Let p represent the total number of people. Write an inequality to describe the number of people that a boat can hold. Draw a number line diagram that shows all possible solutions.



12) Solve this problem. Show and explain your work.

Marco reads for 30 minutes each night. He wants to determine the total number of minutes he will read over the course of a month. Let t represents the total number of minutes read and d represents the number of days that he read during the month. Determine which variable is independent and which is dependent, and write an equation. Then, complete the table to show how many minutes he has read in the first seven days.

# of nights (n)	Total amount of minutes (T)
0	
1	
2	
3	
10	
20	
n	

Independent variable:

Dependent variable:

Equation:

If Marco reads for 15 days, how many minutes has he read for?

If Marco has read for 570 minutes, how many days would have passed?

13) Solve this problem. Show your work.

Clara buys 125 apples at a price of 2450 Peso. What is the price for each apple?

a) Define the variable

b) Write an equation to represent the problem & solve:

c) Write a sentence to answer the problem:

14) Solve the problem below. Show your work and be sure to include a diagram.

A rectangle has a perimeter of 255cm and a width of 75 cm. Give the dimensions of the rectangle.

a) Define the variable

b) Create a diagram

c) Create an equation and solve.

d) Write a sentence to answer the problem:

15) Solve the problem below.

The cost of a Globe post pay plan is 499 Peso per month with a charge of 5 Peso per SMS with an unlimited amount of call time. If Carrie has a budget of 700 Peso per month, how many calls can she make without going over budget?

- a) Define the variable
- b) Create an inequality to represent the scenario
- c) Solve the inequality to find the number of km she can travel.
- d) Write a sentence to answer the problem:

16) Solve the problem below.

The seventh grade class is putting on a variety show to raise money. It costs \$700 to rent the banquet hall that they are going to use. If they charge \$15 for each ticket, how many tickets do they need to sell in order to raise at least \$1000?

- a) Define the variable
- b) Write an inequality that represents the situation.
- c) How many tickets do they need to sell? Justify your answer.
- d) Graph the solution on a number line.