Topic 8: Word Problems

Steps to solving Math Word Problems

1. Read the full problem.
2. Highlight facts and clue words, then read the full problem again.
3. Draw a picture or diagram of the problem.
4. Determine the operation needed to solve the problem.(Addition, Subtraction, Multiplication, or Division)
5. Write the math equation or formula needed to solve the problem.
6. Solve the equation and check your work.
7. Read the full problem a final time to make sure the solution answers the question in the word problem.

Solve and check your answer.   Show all your work!

1. Janet had $125 in her checking account. Then, she deposited $45 and withdrew $36. What is the final balance?

2. At noon, the temperature was -4 degrees Fahrenheit. At 2PM the temperature was 5 degrees Fahrenheit. What was the difference in the temperature?

3. Randy lost a total of 200 points after playing 4 games. He lost the same number of points during each game. How many points did he lose during each game? Express the loss of points as an integer.

4. Charlie dove 16 feet below sea level. Marla dove 24 feet below sea level. Greg dove 18 feet below sea level. Who dove the furthest into the ocean?

5. After playing 5 games, Kelley scored a total of 31 points. In her fifth game, she scored 7 points. During each of the other four basketball games, she scored an equal amount of points. How many points did she earn in each of those four games?

Topic 7: Solving Two-Step Equations

To solve a two-step equation, you'll need to use **inverse operations** to isolate the variable.

First: Undo the addition or subtraction by adding or subtracting the number from each side of the equation.

Second: Undo the multiplication or division by multiplying or dividing the number from each side of the equation.

Third: Watch all signs!! Always remember to combine like terms!!

Fourth: Check to make sure that your solution is correct!

Solve and Check

1) $5x - 6 = 19$	2) $68 = 6p - 10$	3) $2m - 12 = -4$
4) $-4c - 2 = 10$	5) $-17v - 26 = -60$	6) $3g + 7 = -5$
7) $4n + 16 = 4$	8) $\dfrac{a}{10} + 14 = 5$	9) $\dfrac{n}{4} + 2 = 10$
10) $5k + 10 = 15$	11) $-9t + 49 = 4$	12) $22 = -8a + 6$
13) $\dfrac{c}{6} + 6 = 15$	14) $18 = -9y - 9$	15) $-16 = 10k + 14$

Topic 6: Solving One-Step Equations

To solve a one-step equation, you'll need to use <u>inverse operations</u>. Inverse operations are operations that "undo" each other. Addition and subtraction are inverse operations. Multiplication and division are also inverse operations. When you're solving an equation, the goal is to isolate the variable(get the variable by itself). A "one-step equation" means there is only one step that needs to be done to solve for the variable. To isolate the variable, you need to use the inverse operation, and remember that whatever you do to one side of the equation, you have to do the same to the other side. <u>Equations always have to be balanced.</u> It's always a good idea to check the solution by substituting the value for the variable into the original equation.

Solve and Check

1) $h + 9 = 21$	2) $k + 36 = 28$	3) $d - 4 = 25$
4) $6 = w -(-2)$	5) $-8 - m = -3$	6) $22 = 10 + w + 4$
7) $9e = 846$	8) $5a = -250$	9) $28 - 44 = 4k$
10) $-264 = -8g$	11) $-6d = -5-7$	12) $\dfrac{c}{-4} = -12$
13) $\dfrac{y}{7} = 21$	14) $144 = -r -2r$	15) $2k + 3k = 45$

Topic 5: Order of Operations

PEMDAS-Parentheses, Exponents, Multiplication, Division, Addition, Subtraction

The order of Operations is the rule in math that states we evaluate the parentheses/brackets first, the exponents/the orders second, division or multiplication third (from left to right, whichever comes first), and the addition or subtraction at the last (from left to right, whichever comes first).

Solve and Check

$(-1)^3 \times 7 + 4 =$	$10 \div 2 \times 4 \div 5 =$
$(-6 + 8) \div (-2) =$	$7 \times 3 + 2^3 =$
$8 + 2 \times 6 - 5 =$	$11 + 8(6 - 3) =$
$9 - 4 + 2 - 1 + 8 =$	$[4 + (-3 + 7)] \times (2^2 \times 3) =$
$12 + 4(8 \div 2) =$	$(26 - 17)^2 + 35 =$

Topic 4: Multiplication and Division of Integers

Multiplication and Division:

Product or Quotient of **TWO** same signs is **positive**.

Product or Quotient of **TWO** different signs is **negative**.

Solve and Check

$(-6) \div (+3) =$	$(4) \times (-8) =$	$(-1) \times (6) =$
$(-27) \div (-3) =$	$(225) \div (5) =$	$(-8) \times (-7) =$
$(-13) \times (-13) =$	$(-144) \div (-12) =$	$(-8)(-10) =$
$(24) \div (-8) =$	$(-3)(5)(-1) =$	$-2(-4)(5)(-2) =$
$(-6)(-7) =$	$(360) \div (-9) =$	$(1250) \div (-5) =$
$(-9)(12) =$	$(-14)(2)(-3) =$	$(32 + 12) \div (-11) =$

Topic 3: Adding and Subtracting Integers

Addition and Subtraction: If the two integers have the same sign, then add the two integers and keep the same sign as the two integers for the answer. If the two integers have different signs, subtract or find the difference between the two numbers, and keep the sign of the larger number(greater Absolute Value).

Solve and Check

(+4) + (-7) =	(-8) + (-2) =	(-9) - (-9) =
(-3) - (6) =	(6) + (-9) =	(-7) + (2) =
(-8) + (-6) =	(-9) + (-5) =	(-92) + (-27) =
(-48) + (24) =	(125) + (36) =	(-234) + (45) =
(-27) + (27) =	(-36) + (-12) + 20 =	(25) + (-20) + (-35) =
(-347) + (-13) + (-27) =	(9) + (18) + (245) =	(-7) -(-2) + (-14) =

Topic 2: Operations with Decimals

-__To add and subtract decimals__:1) Line up the decimal points vertically. Fill in any 0's where necessary. 2) Add or subtract the numbers as if they were whole numbers. 3) Place the decimal point in the sum or difference so that it lines up vertically with the numbers being added or subtracted.

-__To multiply decimals__: __First__, multiply as if there is no decimal. __Next__, count the number of digits after the decimal in each factor. __Finally__, put the same number of digits after the decimal in the product.

-__To divide decimals__ 1)If the divisor is not a whole number, then move the decimal place to the right to make it a whole number. Then move the decimal place in the dividend the same number of places to the right (adding some extra zeros if necessary 2) Divide as usual. If the divisor doesn't go in evenly, add zeros to the right of the dividend and keep dividing until you get a 0, 0 remainder, or until a repeating pattern shows up. 3)Put the decimal point in the quotient directly above where the decimal point now is in the dividend.

Solve and Check

-4.25 + 0.75	0.81 + (-3.19)	-45 + 60.5	7.3 - 6.5
-1.1 + (-5.7) + (-4)	1.32 - (-11) -(-3.1)	-6 + 3.5 + 4	24 -(-42.87) -35.9
-5.15(2.4)	-13.7(-9.2)	-6.2(-1)	-50 (-1.4)
0.725 ÷ (-.25)	-0.72 ÷ 0.8	-10.8 ÷ 1.2	4.55 ÷ 0.05
(-18 x 3) ÷ 6	-36 ÷ -0.6	0.8 ÷ 40	-0.30 ÷ 120

Topic One: Operations with Fractions

-To **add and subtract fractions**, the denominator needs to be the same. If the denominators are different, find the LCD of the fractions and change the fraction to an equivalent fraction before adding and subtracting. Simplify your final answer.

-To **multiply fractions**, remember to cross cancel before multiplying the numerators and then the denominators. Simplify your final answer.

-To **divide fractions**, remember that you are actually multiplying by the reciprocal. Cross cancel before multiplying the numerators and then the denominators. Simplify your final answer.

Solve and Check

$\frac{6}{7} - \frac{1}{2}$	$\frac{15}{4} + \frac{9}{5}$	$\frac{2}{5} - \frac{1}{3}$
$5\frac{1}{10} - 2\frac{1}{3}$	$12\frac{3}{8} + 5\frac{7}{8}$	$26\frac{3}{5} - 10\frac{4}{15}$
$28\frac{1}{7} - 17\frac{3}{4}$	$\frac{1}{6} \times 24$	$10\frac{2}{3} \times 1\frac{1}{8}$
$3\frac{1}{6} \times 2\frac{2}{3}$	$9\frac{1}{7} \times 6\frac{1}{9}$	$8\frac{1}{4} \div 1\frac{1}{8}$
$6\frac{5}{8} \div 2\frac{1}{4}$	$10\frac{2}{7} \div 3\frac{5}{9}$	$4\frac{1}{2} \div 2$