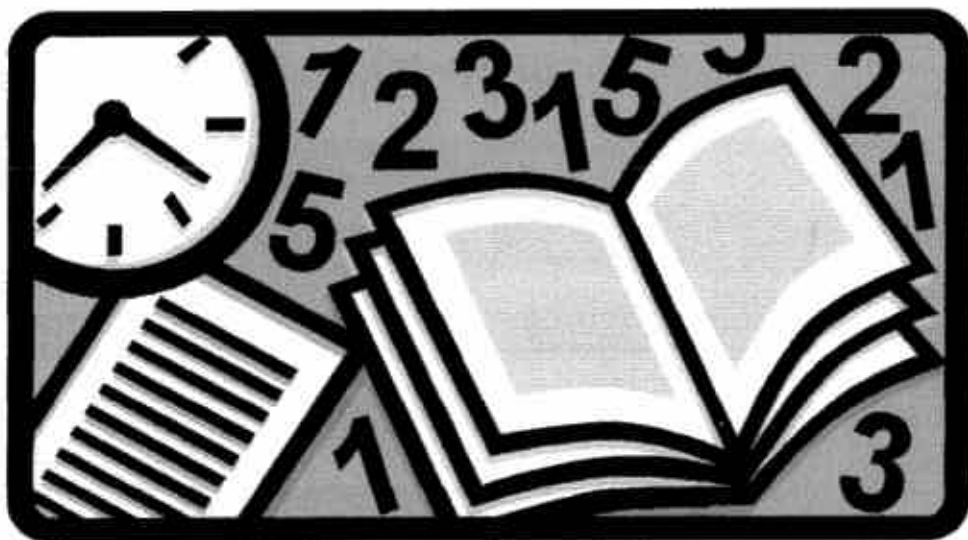


**MATH SKILL REVIEW**  
**FOR THE**  
**PARAPROFESSIONAL**



## MATH SKILL REVIEW FOR THE PARAPROFESSIONAL

This workshop will provide review and practice on math skills and concepts covered on the math portion of the Willamette Education Service District (WESD) Paraprofessional Local Assessment.

During the workshop participants will:

1. Review basic mathematic concepts and skills that are covered on the local assessment.
2. Practice problems as a group and discuss how to solve the problems as well as practice individually..
3. Review some general test-taking hints to increase chances for success.
4. Have one opportunity to take the math portion of the WESD Paraprofessional Local Assessment. A passing score will be credited towards passing the mathematics portion of the complete exam.

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## 1. ADDING (SUM) WHOLE NUMBERS

Hints: Line up the numbers so digits of the same place value are aligned. When a column adds up to greater than 9, carry to the next column.

**Practice: Find the sum of these numbers- 10,345 5,967 789 and 34.**

## 2. SUBTRACTING (DIFFERENCE) WHOLE NUMBERS

Hints: Line up numbers so digits are in line by place value, start from the right hand "ones" column, borrow if digit on bottom is greater than one on top.

**Practice: What is the difference between 1,345 and 956? 456 and 129?**

## 3. MULTIPLYING (PRODUCT) WHOLE NUMBERS

Hints: Line up the digits by place value, multiply the top number by the ones digit; multiply the top number by the tens digit, multiply the top number by the hundreds digit, and so on. Line up each product under the digit you multiplied by.

**Practice: What is the product of these numbers?  $45 \times 56$ ?  $345 \times 20$ ?  $234 \times 567$ ?**

## 4. DIVIDING WHOLE NUMBERS

Hints: Put the number you are "dividing by", called the *divisor*, on the outside of the division brackets, the number on the inside of the brackets is the *dividend*. The answer on the top of the brackets multiplied by the *divisor* should give you the *dividend* back.

**Practice: Divide 450 by 90;  $144 \div 12$ ,  $1,008 \div 56$ .**

## 5. FRACTION TERMS

*Common or proper fractions* are fractions less than one like  $\frac{3}{4}$ .

*Improper fractions* are fractions equal to or greater than one like  $\frac{5}{4}$  or  $\frac{7}{7}$ .

*Mixed numbers* are combination of whole numbers and fractions like  $4\frac{3}{4}$ .

*Numerator* is the top number of a fraction.

*Denominator* is the bottom number of a fraction.

Hint: When adding or subtracting fractions the denominators must be the same, once they are, add or subtract the top numbers only.

## 6. LEAST COMMON MULTIPLE (LCM)

The *Least Common Multiple* is the smallest number that all numbers listed will divide into without leaving a remainder.

Hint: To find the LCM

Step 1: Check and see if the biggest number in the list can be divided by all of the other numbers in the list. If yes, then the biggest number in the list is the LCM.

Step 2: If the biggest number in the list is not the LCM then double the biggest number and divide it by the other numbers. If they all work then the value of double the biggest number is the LCM. If not, triple it and try and so on.

Example: Find the LCM for these numbers- 6, 12, 24, 36-

Does 6 divide evenly into 36? Yes. Does 12 into 36? Yes. Does 24 into 36? No.

Then double 36 and try again- Does 6 divide evenly into 72? Yes. 12? Yes. 24? Yes. 36? Yes. Therefore 72 is the LCM.

**Practice: Find the Least Common Multiple for these numbers- 5, 15, 25.**

## 7. CHANGING MIXED NUMBERS TO IMPROPER FRACTIONS

Hint: Multiply the whole number by the denominator (the bottom number of the fraction part) and add it to the numerator (the top number of the fraction part.)

Example:  $7\frac{3}{4}$

Step 1: Whole number times denominator-  $7 \times 4 = 28$

Step 2: Add to the numerator-  $28 + 3 = 31$

Answer:  $31/4$  which can also be written as  $7\frac{3}{4}$

**Practice: Write  $11\frac{3}{8}$  as an improper fraction.**

## 8. ADDING OR SUBTRACTING FRACTIONS

Hint: Step 1: Change all numbers to improper fractions, if necessary.

Step 2: Check to see if the denominators are the same. If yes, then add or subtract the top numbers. Example:  $11/12 - 4/12 = 7/12$ .  $3/5 \div 1/5 = 4/5$ .

Step 3. If the bottom numbers (denominators) are different use the "laser beam" method:

- multiply the denominators
- cross multiply the numerator of each fraction by the denominator of the other fraction
- add or subtract the top numbers
- put them over the top of the new bottom numbers (denominators)

Examples:  $\frac{1}{4} + \frac{2}{3}$

$$\frac{5 \times 1}{4 \times 3} + \frac{2 \times 4}{3 \times 4} = \frac{5 + 8}{12} = 1 \frac{11}{12}$$

Practice: Solve  $7/4 + 5/8 =$

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

## 9. MULTIPLYING AND DIVIDING FRACTIONS

Hint: Change all numbers to improper fractions. To multiply, multiply top numbers together, then multiply bottom numbers together. To divide, invert the second fraction (tip the "divided by" fraction upside down), multiply as fractions.

Example:  $3/4 \times 2/3 = 6/12$  or  $1/2$ . (Most test answers reduce fractions to their simplest form)

$$3/4 \div 2/3 = 9/8 \text{ or } 1 \frac{1}{8}$$

Practice: Find the product of  $1 \frac{3}{4}$  and  $3 \frac{3}{4}$ . Divide  $1 \frac{1}{2}$  by  $3/8$ .

## 10. DECIMAL EQUIVALENT OF FRACTIONS

Hint: To change a fraction to a decimal divide the bottom (denominator) into the top (numerator) of the fraction.

Example:  $2/5$  as a decimal is  $2 \div 5$ , which is 0.4.

Practice: Change these numbers into decimals.  $3/4$ ,  $1/2$ ,  $4 \frac{3}{5}$ .

## 11. PERCENT

Hint: A decimal number expressed as a percent is 100 times the number.

Examples: The number 0.33 as a percent is  $100 \times 0.33$  or 33%. The number 3.25 as a percent is  $100 \times 3.25$  or 325%.

**Practice: Change the following numbers to percent- 0.25, 0.1, 1.01.**

## 12. WRITING NUMBERS IN WORDS

Hint: Write a number in words exactly as you read it aloud. Only use the word “and” when saying the decimal.

Example: 24,202.04 is “twenty-four thousand two hundred two and four hundredths.”

**Practice: Write the following numbers in words- 12,056,212    124.201    7,876.23**

## 13. UNIT COST

Hint: The “unit cost” is the price of each unit (measure) of a product. Divide the number of units into the cost of the product.

Example: Roses are \$18.00 per dozen. What is the unit cost of each rose?  $18 \div 12 =$  \$1.50 per rose.

**Practice: Fabric is \$7.20 per yard. What is the unit cost of the fabric, per foot?**

## 14. KILOMETERS, METERS, DECIMETERS, CENTIMETERS, MILLIMETERS

Hints: \* A kilometer is about  $\frac{3}{5}$  of a mile. (1000 meters)  
\* A meter is about 3” longer than a yard. About 39 inches.  
\* A decimeter is about 4”. The width of the back of an adult’s hand. (1/10 meter)  
\* A centimeter is a little less than  $\frac{1}{2}$ ”. About the thickness of the little finger (1/100 of a meter)  
\* A millimeter is about the width of the wire on a paper clip. (1/1000 meter)

**Practice: About how wide is this paper in centimeters? Decimeters? Millimeters?**

## 15. AVERAGE, MEAN, MEDIAN, MODE

Hint: *Average* and *mean* are the same thing mathematically. Add the values in the list and divide by the sum of the items in the list.

*Median* is the middle value of a list of numbers. If there is an even number of values in the list, find the average of the two middle numbers.

*Mode* is the most often occurring number in the list. A list may not have a mode or may have several.

Example: The mean, median, and mode of this list of numbers- 3, 6, 16, 17, 21, 21, 29 is-  
Mean =  $113 \div 7 = 16.14$ . Median is 17. Mode is 21.

**Practice: Find the mean, median, and mode of this group- 3, 6, 19, 20, 20, 21.**

## 16. EVALUATING EQUATIONS

Hint: When given an equation with a variable (a number represented by a letter like "x" or "n"), substitute the value given for the variable into the equation and follow the "*order of operations*".

The *order of operations* is:

- Do everything inside the parentheses first. Hint: The number outside the parentheses means multiply it times what is inside the parentheses
- Do multiplication and division in order from left to right.
- Do addition and subtraction in order from left to right.

Example: If  $n = 9$ , what does  $3 + 5 + 2(n + 6)$  equal?

$$3 + 5 + 2(9 + 6) = ?$$

$$3 + 5 + 2(15) = ?$$

$$3 + 5 + 30 = 38$$

**Practice: Solve these equations-**

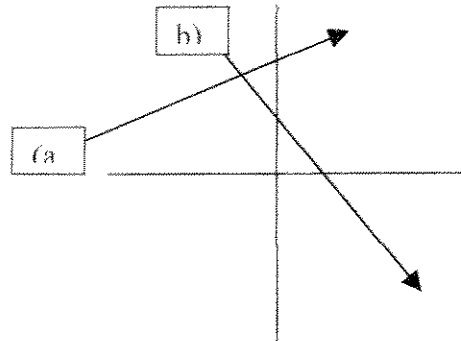
If  $y = 4$ , then  $3(y) + 8 = ?$

If  $x = 3.5$ , then  $\frac{1}{2}x + 2(x) = ?$

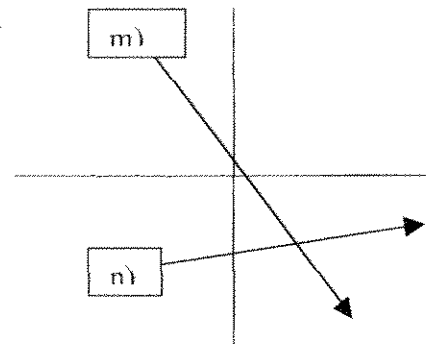
## 17. SLOPE

Hint: *Slope* is the steepness of a line on a coordinate graph. The steeper the line, the greater the slope. If a line rises as it moves from left to right it has a “*positive slope*.” If a line falls as it moves from left to right it has a “*negative slope*”.

Example: Line (a) has a positive slope. Line (b) has a negative slope. Line (b) is steeper than line (a).



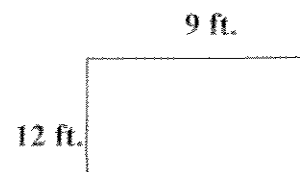
**Practice:** Describe the slope of line (m) compared to line (n).



## 18. GEOMETRY TERMS

Hints: radius – distance from center point to circle.  
 circumference- distance around circle  
 diameter- distance across circle through center point  
 perimeter- sum of the length of edges of a shape.  
 Area- for a square or rectangle = length x width.  
       for a triangle =  $\frac{1}{2}$  base x height  
       for a circle = pi times the radius times the radius ( $\pi r^2$ )  
 Sum of the interior angles of a triangle is 180 degrees.

**Practice:** What is the perimeter of this object-



**Practice:**

Betty builds a pen for her dog. It is a rectangle  $6\frac{1}{2}$  feet on one side and 3 feet on the other. What is the perimeter of her dog pen? What is the area of her dog pen?