

Summer Math Packet

Please work on this during the summer. **ALL** work must be written down. Remember to include formulas and units when necessary.

Please bring this to school with you on the first day. This needs to be returned to your 7th grade math teacher.

Enjoy and have a wonderful summer!

7th Grade - Summer Math Packet

Unit: KNOWLEDGE of ALGEBRA, PATTERNS, and FUNCTIONS

Objective: Write an algebraic expression to represent unknown quantities.



- A **variable** is a symbol, usually a letter, used to represent a number.
- **Algebraic expressions** are combinations of variables, numbers, and at least one operation.

Examples:

The sum of 5 and some number is written as: $5 + n$ because the operation that is associated with the word **sum** is addition.

The difference of a number and three tenths is written as: $n - .3$ because the operation that is associated with the word **difference** is subtraction.

1.)

a number plus $\frac{1}{2}$

2.)

a number minus .7

3.)

the difference of twenty-one hundredths and a number

4.)

the sum of a number and forty-six

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Unit: KNOWLEDGE of ALGEBRA, PATTERNS, and FUNCTIONS

Objective: Evaluate numeric expressions using order of operations.

- A **numerical expression** is a combination of numbers and operations.
- The **Order of Operations** tells you which operation to perform first so that everyone gets the same final answer.
- The **Order of Operations** is: **Parentheses, Exponents, Multiplication or Division (left to right), and Addition or Subtraction (left to right.)**

Examples:

$48 \div (3 + 3) - 2^2$	original expression
$48 \div 6 - 2^2$	simplify the expression inside the parentheses
$48 \div 6 - 4$	calculate 2^2
$8 - 4$	divide 48 by 6
4	subtract 4 from 8

1.)

$$(8 + 1) \times 12 - 13$$

2.)

$$13 \times 4 - 72 \div 8$$

3.)

$$88 - 16 \times 5 + 2 - 3$$

4.)

$$100 \div 5^2 \times 4^3$$

5.)

$$45 \div 9 - 3 + 2 \times 3$$

6.)

$$(5^2 + 3^3) \times (81 \div 9) \div 10$$

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Unit: KNOWLEDGE of ALGEBRA, PATTERNS, and FUNCTIONS

Objective: Determine the unknown in a linear equation (multiplication & division).

- In a **multiplication equation**, the number by which a variable is multiplied is called the **coefficient**. In the multiplication equation $2x = 8$, the coefficient is 2.
- **Multiplication equations:** Divide both sides by the coefficient so that the two sides remain equal.
- In a **division equation**, the number by which the variable is divided is called the **divisor**. In the division equation $\frac{x}{4}$, 4 is the divisor.
- **Division equations:** Multiply both sides of the equation by the divisor so that the two sides remain equal.

Examples:

$$4b = 16 \quad \text{original equation}$$

$$\frac{4b}{4} = \frac{16}{4} \quad \text{divide both sides by 4}$$

$$1b = 4 \quad \text{solution}$$

$$b = 4 \quad \text{simplify}$$

$$\frac{m}{6} = 11 \quad \text{original equation}$$

$$6 \times \frac{m}{6} = 11 \times 6 \quad \text{multiply each side by 6}$$

$$1m = 66 \quad \text{solution}$$

$$m = 66 \quad \text{simplify}$$

1.)

$$7x = 63$$

2.)

$$\frac{k}{9} = 8$$

3.)

$$5b = 3.55$$

4.)

$$\frac{n}{7} = 5.55$$

5.)

$$12m = 84.72$$

6.)

$$\frac{p}{13} = 2.67$$

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Unit: NUMBER RELATIONSHIPS and COMPUTATION

Objective: Identify and determine equivalent forms of proper fractions as decimals, percents, and ratios - A.

Examples: Write $\frac{21}{25}$ as a decimal

Method 1:

Change $\frac{21}{25}$ to a fraction with a denominator of 10, 100, or 1000

EX: $\frac{21}{25} = \frac{?}{100}$

(Use 100, since 25 divides into 100 evenly)

$$\frac{21}{25} = \frac{x4}{x4} = \frac{84}{100} \quad \frac{84}{100} = 0.84 \text{ as a decimal}$$

Method 2: Divide 21 by 25

$$\begin{array}{r} 0.84 \\ 25 \overline{)21.00} \\ \underline{-200} \\ 100 \\ \underline{-100} \\ 0 \end{array}$$

Therefore: $\frac{21}{25} = 0.84$

1.) Write $\frac{19}{20}$ as a decimal. Use method 1

2.) Write $\frac{7}{8}$ as a decimal. Use method 2.

3.) Write $\frac{3}{16}$ as a decimal. Use method 2

4.) Write $\frac{27}{40}$ as a decimal. Use method 2

5.) Write $\frac{3}{4}$ as a decimal. Use method 1

6.) Write $\frac{3}{5}$ as a decimal. Use method 1

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Unit: NUMBER RELATIONSHIPS and COMPUTATION

Objective: Compare and order fractions and decimals.



Ordering fractions only:

- 1) determine the least common denominator (LCD) of the fractions
- 2) rewrite each fraction as an equivalent fraction using the LCD
- 3) Compare the numerators

EX: order the fractions $\frac{1}{2}, \frac{3}{8}, \frac{7}{12}$ from least to greatest

- 1) LCD of 2, 8, and 12 is 24

$$2) \quad \frac{1}{2} = \frac{12}{24}$$

$$\frac{3}{8} = \frac{9}{24}$$

$$\frac{7}{12} = \frac{14}{24}$$

- 3) Comparing the numerators:

$$\frac{3}{8} < \frac{9}{24} < \frac{14}{24}$$

Ordering fractions and decimals:

- 1) Change the fractions to decimals
- 2) Compare the decimals

EX: order the numbers $0.3; \frac{3}{8};$ and 0.38 from least to greatest

$$1) \quad \frac{3}{8} = 0.375$$

$$\frac{3}{8} = \frac{9}{24}$$

$$\frac{7}{12} = \frac{14}{24}$$

- 2) Compare the decimals:

$$0.3 < 0.375 < 0.38$$

Therefore: $0.3 < \frac{3}{8} < 0.38$

$$\begin{array}{r} 0.375 \\ 8 \overline{) 3.000} \\ \underline{-24} \\ 60 \\ \underline{-56} \\ 40 \\ \underline{-40} \\ 0 \end{array}$$

<p>1.) Order the fractions $\frac{2}{3}, \frac{5}{6}, \frac{3}{4}$ from least to greatest</p>	<p>2.) Order the numbers $0.78; \frac{3}{4};$ and 0.8 from least to greatest</p>
<p>3.) Order the fractions $\frac{3}{5}, \frac{7}{10}, \frac{5}{6}$ from least to greatest</p>	<p>4.) Order the numbers $\frac{3}{10}, \frac{1}{5};$ and 0.25 from least to greatest</p>
<p>5.) Order the fractions $\frac{1}{2}, \frac{5}{9}, \frac{5}{6}$ from least to greatest</p>	<p>6.) Which number has the greatest value? $0.94; \frac{19}{20};$ or $\frac{24}{25}$</p>

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Unit: NUMBER RELATIONSHIPS and COMPUTATION

Objective: Multiply fractions and mixed numbers and express answers in simplest form.

Multiplying Fractions and Mixed Numbers:

- 1) Change Mixed numbers to improper fractions
- 2) Multiply numerators
- 3) Multiply denominators
- 4) Simplify if necessary

EX: multiply $\frac{1}{2} \times \frac{3}{8}$

- 1) No mixed numbers
- 2) $\frac{1}{2} \times \frac{3}{8} = \frac{3}{16}$
- 3) $\frac{1}{2} \times \frac{3}{8} = \frac{3}{16}$
- 4) (can't be simplified)

EX: Multiply $\frac{1}{3} \times 6\frac{3}{7}$

- 1) $6\frac{3}{7} = \frac{45}{7}$ as an improper fraction
- 2) $\frac{1}{3} \times \frac{45}{7} = \frac{45}{21}$
- 3) $\frac{1}{3} \times \frac{45}{7} = \frac{45}{21}$
- 4) Simplified: $\frac{45}{21} = 2\frac{1}{7}$

1.) $\frac{5}{6} \times \frac{1}{2} =$

2.) $\frac{9}{10} \times \frac{2}{3} =$

3.) $2\frac{1}{2} \times 1\frac{2}{5} =$

4.) $2\frac{1}{4} \times 3\frac{1}{3} =$

5.) Belinda lives $1\frac{1}{2}$ times further from school than Jamie does. If Jamie lives $4\frac{1}{5}$ miles from school, how far does Belinda live?

6.) Mario practices his guitar every day for $\frac{3}{4}$ of an hour. How long does he practice for week?

Summer Math Packet

On a scale of 1 – 5 (1: Weak, 5: Strong) rate yourself on this section of math: 1 2 3 4 5

Unit: Knowledge of Number Relationships & Computation

Objective: Add, subtract, multiply and divide integers. - B

Examples:

MULTIPLYING & DIVIDING INTEGER RULES:

- Two integers with **DIFFERENT** signs the answer is **NEGATIVE**.
- Two integers with **SAME** signs the answer is **POSITIVE**.

Examples:

$5 (-2) = 5$ times -2 , the signs are different so the answer will be negative = -10

$(-6) \cdot (-9) =$ the signs are the same so the answer will be positive = 54

$30 \div (-5) =$ the signs are different so the answer will be negative = -6

$-100 \div (-5) =$ the signs are the same so the answer will be positive = 20

1.) Multiply: $-14 (-7)$

2.) Divide: $350 \div (-25)$

3.) Evaluate if $a = -3$ and $c = 5$

$$-3ac$$

4.) Evaluate if $d = -24$, $e = -4$, and $f = 8$

$$\frac{de}{f}$$

5.) A computer stock decreased 2 points each hour for 6 hours. Determine the total change in the stock value over the 6 hours.

6.) A submarine descends at a rate of 60 feet each minute. How long will it take it to descend to a depth of 660 feet below the surface?