

Name _____

Date _____

2023 Summer Math Packet - Incoming 7th graders

Pre-Algebra: This course includes 7th and 8th grade math skills.

The Prerequisite Packet: Students need a strong foundation to be ready for pre-algebra and future math courses. The attached worksheets will be used to practice these skills. If a student has forgotten how to do one of the skills, or it's new to them, it is suggested that they use Khan Academy to find a tutorial video.

Calculators: these problems should be completed without using a calculator, unless specified. Students with accommodations may use a multiplication chart.

When students return to school they will take a **PreAlgebra readiness test**. Students that do not show mastery of Prerequisite Skills should consider finding an outside tutor.

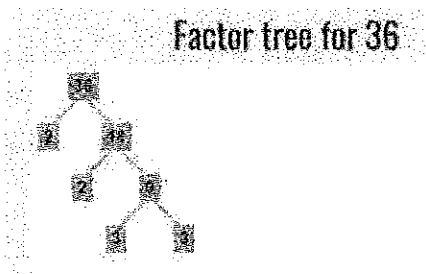
Skills needed before entering Pre-Algebra - Students should be able to add, subtract, multiply, and divide without the use of a calculator. Students will need to practice on their own, if they lack these basic skills. Students should also be able to round decimals and be able to apply the order of operations correctly. We will not be spending time in class on skills that should already have been mastered.

The Summer packet includes:

1. Adding, subtracting, multiplying, and dividing fractions
2. Solving one step equations
3. Solving two step equations - Students will need to be able to solve multistep linear equations by the end of 7th grade. Students may need to watch some additional videos on the topic, if they are confused.
4. Translating Expressions and equations - from words to numbers, variables, and operations.
5. Prime factorization, LCM, and GCF or GCD - students may use a prime number list to help them and a divisibility rule list.
6. Addition and Multiplication Properties
7. Basic Statistics - Mean, Median, mode, and range. (Students may use a calculator to verify the answer of the mean).

Summer Assignment - Incoming 7th graders

Find the Prime Factorization for the numbers below. Write the prime factorizations using powers. Write the primes in increasing order. Example: $2^2 \cdot 3^2$. Use a **factor tree** to show our work.



1. What is the prime factorization of 392?

2. What is the prime factorization of 80?

3. What is the prime factorization of 648?

4. What is the prime factorization of 243?

Mixed Problems with Fractions

$$1) \quad \frac{2}{3} + \frac{2}{4} =$$

$$2) \quad \frac{1}{5} + \frac{4}{9} =$$

$$3) \quad \frac{14}{16} + \frac{2}{18} =$$

$$4) \quad \frac{8}{14} - \frac{3}{10} =$$

$$5) \quad \frac{6}{7} - \frac{1}{5} =$$

$$6) \quad \frac{6}{9} - \frac{2}{7} =$$

$$7) \quad \frac{6}{10} \times \frac{6}{9} =$$

$$8) \quad \frac{1}{3} \times \frac{16}{18} =$$

$$9) \quad \frac{6}{14} \times \frac{8}{10} =$$

$$10) \quad \frac{7}{20} \div \frac{2}{6} =$$

$$11) \quad \frac{3}{7} \div \frac{1}{8} =$$

$$12) \quad \frac{5}{18} \div \frac{1}{2} =$$

One Step Equations

$$15) \frac{y}{8} = 2$$

$$16) 16 = \frac{k}{11}$$

$$17) -15x = 0$$

$$18) -17x = -204$$

$$19) 21 = -7n$$

$$20) \frac{m}{4} = -13$$

$$21) -126 = 14k$$

$$22) -143 = -11x$$

$$23) -16 + x = -15$$

$$24) -5 = \frac{a}{18}$$

$$25) -17 = x - 15$$

$$26) n - 8 = -10$$

$$27) \frac{p}{7} = 8$$

$$28) a + 11 = 20$$

$$29) -7 + m = 8$$

$$30) 18 + m = 8$$

Two-Step Equations: Integers

Solve each equation.

1) $5n + 5 = 45$

2) $\frac{y}{6} - 3 = -11$

3) $4(g - 1) = 24$

4) $\frac{v+9}{15} = 0$

5) $-40 = 12x + 8$

6) $-2p - 3 = -19$

7) $13 = \frac{w-14}{2}$

8) $36 = 1 + 7a$

9) $-9 = -11 + \frac{b}{8}$

10) $2q + 10 = 7q$

Translating Expressions and Equations

An **equation** is a number sentence that contains an equal sign.

An **expression** is a number phrase without an equal sign.

Equations and expressions may contain only numerals, or they also may contain variables. A **variable** is a symbol, usually a letter, that stands for an unknown number.

	Equation	Expression
Numerical	$3 \times 5 = 15$	$9 + 2$
Variable	$2n + 2 = 18$	$a - 5$

All equations and expressions express an idea.

3×4 means "three 4s." $6 \div 3 = 2$ means "6 divided by 3 is 2."

$n - 7$ means "n decreased by 7" or "a number decreased by 7."

$4n + 2 = 6$ means "four times a number, plus 2, is 6" or "4ns, plus 2, is 6."

Translate each phrase into an expression or an equation.

- | a. | b. |
|-------------------------------------|---------------------------------|
| 1. x increased by 5 _____ | 12 divided by a number _____ |
| 2. seven ns _____ | c less than 7 _____ |
| 3. a number added to 15 is 23 _____ | one-fourth of x _____ |
| 4. p added to 6 _____ | the product of 15 and m _____ |

Translate each sentence into an equation. Use n for an unknown number.

- 11 decreased by a number is 7. _____
- 8 times a number, plus 4, is 84. _____
- A number divided by 5 is 6. _____

Write each expression in words.

8. $n - 5$ _____
9. $3n + 6$ _____

Properties:

Match the property name with the proper equation. The terms may be used more than once. Use the following terms:

Commutative, Associative, Distributive, or Identity.

- 1) _____ $8 + 12 = 12 + 8$
- 2) _____ $3 \cdot (5 + 2) = (3 \cdot 5) + (3 \cdot 2)$
- 3) _____ $9 + 0 = 9$
- 4) _____ $23 \cdot 1 = 23$
- 5) _____ $7 + 4 + 6 = 6 + 4 + 7$
- 6) _____ $(4 \cdot 5) \cdot 6 = 4 \cdot (5 \cdot 6)$
- 7) _____ $3 \cdot 24 = (3 \cdot 20) + (3 \cdot 4)$
- 8) _____ $12 + (11 + 50) = (12 + 11) + 50$

Statistics - MMR:

9. Find the mean, median, mode, and range for the following data set.

13, 6, 24, 18, 33, 5, 13, 48, 9, 11, 36, 28, 15, 6, 13

Mean: _____ Median: _____ Mode: _____ Range: _____

10. Find the mean, median, mode, and range for the following data set.

20, 70, 92, 65, 27, 45, 89, 94, 25, 33, 25, 78, 13, 66

Mean: _____ Median: _____ Mode: _____ Range: _____