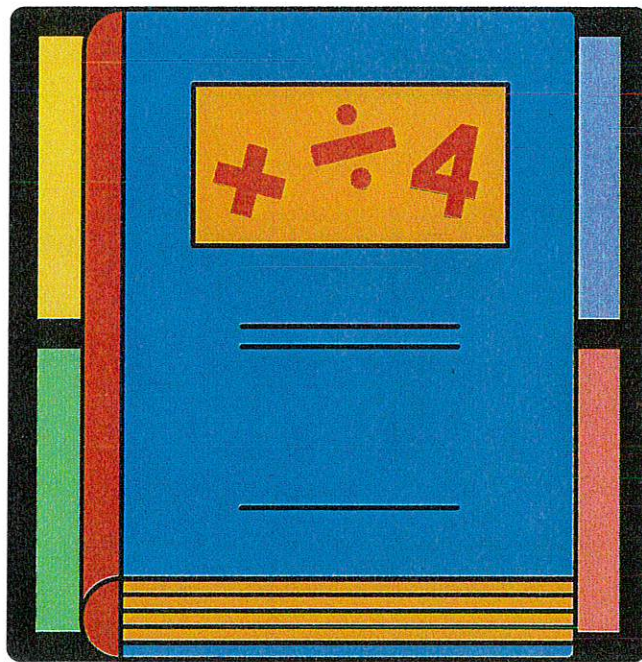


# SUMMER MATH PACKET



For students entering Grade 8

NAME: \_\_\_\_\_

Operation with Decimals: Simplify. Re-write each problem and show your work. Do NOT use a calculator!

1.)  $5.038 + 2.96$

2.)  $16 + 1.6 + 0.517$

3.)  $27 - 10.4$

4.)  $9.006 - 4.44$

5.)  $4.8 \cdot 6.9$

6.)  $0.05 \cdot 0.7$

7.)  $17.03 \div 9$

8.)  $4.82 \div 45$

9.)  $3.25 \div 0.5$

10.)  $23.24 \div 2.8$

Operations with Fractions: Simplify. Write your answer in lowest terms. Do NOT use a calculator!

1.)  $\frac{3}{8} + \frac{1}{4}$

2.)  $6\frac{1}{2} + 3\frac{1}{9}$

3.)  $5\frac{1}{3} - 2\frac{1}{4}$

4.)  $6 + 3\frac{3}{8}$

5.)  $2\frac{1}{6} + 2\frac{7}{8}$

6.)  $7\frac{1}{8} - 2\frac{3}{4}$

7.)  $20 - 8\frac{3}{4}$

8.)  $\frac{5}{9} \div \frac{1}{3}$

9.)  $\frac{11}{12} \cdot 3$

10.)  $\frac{5}{16} \cdot \frac{4}{5}$

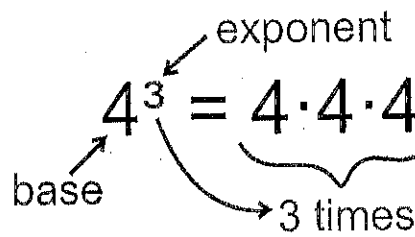
11.)  $5\frac{1}{2} \cdot 4\frac{3}{4}$

12.)  $3 \cdot 5\frac{2}{3}$

13.)  $5 \div \frac{2}{5}$

14.)  $9\frac{1}{4} \div 2\frac{1}{4}$

Exponents: Follow the directions for each section.



Write each exponent in *expanded form*.

Example:  $5^3 = 5 \cdot 5 \cdot 5$

1.)  $4^8 =$

2.)  $3^5 =$

3.)  $6^6 =$

\*challenge 4.)  $x^4 =$

Write each in *exponential form*.

Example:  $3 \cdot 3 \cdot 3 \cdot 3 = 3^4$

5.)  $7 \cdot 7 \cdot 7 =$

6.)  $3 \cdot 3 \cdot 8 \cdot 8 \cdot 8 =$

\*challenge 7.)  $x \cdot x \cdot y \cdot y \cdot y \cdot y =$

8.)  $9 \cdot 9 \cdot 9 =$

Evaluate. Show your work.

Example:  $2^3 = 2 \cdot 2 \cdot 2 = 8$

9.)  $5^3 =$

10.)  $3^4 =$

11.)  $6^3 =$

12.)  $9^2 =$

13.)  $13^2 =$

\*challenge 14.)  $4^2 \cdot 3^3 =$

Order of Operations: Simplify. Show your work and box your answer.

Example:  $13^2 - 2 \cdot 5 + (12 \div 2^2)$

$$169 - 2 \cdot 5 + (12 \div 4)$$

$$169 - 2 \cdot 5 + 3$$

$$169 - 10 + 3$$

$$159 + 3$$

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**Order of Operations**

<b>P</b>	P: Parenthesis ( ) E: Exponents $5^2$ M: Multiplication $\times$ D: Division $\div$ A: Addition $+$ S: Subtraction $-$
<b>E</b>	
<b>M D</b>	Purple Elephants May Destroy A School.
<b>A S</b>	

1.)  $[36 \div (3 \cdot 4)] + 2$

2.)  $60 - 7(5 + 6 \div 2) + 2^4$

3.)  $4 + 6(5 - 2)$

4.)  $2 + 8 \cdot 3^2$

5.)  $24 - 6 \cdot 2$

6.)  $4 \cdot 9 + 7 \cdot 8$

7.)  $102 - 2^4(3^4 - 51)$

8.)  $14 + 8 \div 2 - 1$

9.)  $\frac{63 - 8}{3 + 8} - 2$

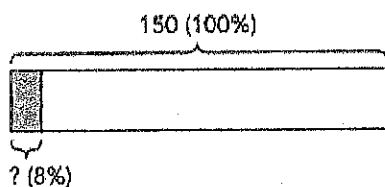
10.)  $5 \cdot \frac{19 - 7}{5 + 1}$

**Percent of a Quantity:** Solve each problem. Show your work!

*Example*

What is 8% of 150?

**Method 1**



The model shows that:

$$100\% \rightarrow 150$$

$$1\% \rightarrow \frac{150}{100} = 1.5$$

$$8\% \rightarrow 8 \times 1.5 = 12$$

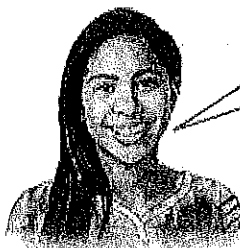
$$8\% \text{ of } 150 \text{ is } \underline{12}$$

**Method 2**

$$8\% \text{ of } 150 = \frac{8}{100} \times 150$$

$$= \underline{12}$$

$$8\% \text{ of } 150 \text{ is } \underline{12}$$



"of" means "x". In this case, 8% of 150 is the same as 8% x 150.

1.) 35% of 900

**Method 1**

2.) 115% of \$360

**Method 1**

3.) 82% of 450

**Method 2**

4.) 170% of 2,100 ft

**Method 2**

Choose the method you like best to complete the following problems.

5.) 35% of 125 miles

6.) 46% of 340 gallons

7.) 65% of 180 pounds

8.) 75% of 72 hours

9.) 120% of \$590

10.) 245% of 860 kilograms

Percent of a Quantity - Continued: Solve each problem. Show your work!

Example

15% of a number is 180. Find the number.

$$15\% \rightarrow 180$$

$$1\% \rightarrow \frac{180}{15}$$

$$100\% \rightarrow \frac{100 \times \frac{180}{15} = 1,200$$

The number is 1,200.

1.) 40% of a number is 180.

Find the number.

$$40\% \rightarrow 180$$

$$1\% \rightarrow \underline{\hspace{2cm}}$$

$$100\% \rightarrow \underline{\hspace{3cm}}$$

The number is           .

2.) 75% of a number is 230.

Find the number.

$$75\% \rightarrow 230$$

$$1\% \rightarrow \underline{\hspace{2cm}}$$

$$100\% \rightarrow \underline{\hspace{3cm}}$$

The number is           .

3.) 25% of            is 195.

4.) 56% of            is 70.

5.) 18% of                    is 99.

6.) 92% of                    is 345.

7.) 55% of                    is 143.

8.) 350% of                    is 679.

9.) 47% of                    is 141.

10.) 125% of                    is 85.

## Writing Algebraic Expressions:

Use the key words to write an algebraic expression. Simplify if possible.

1.) One-eighth of  $m$ .

---

2.) The product of  $x$  and 7.

---

3.) Subtract 2 from  $x$ .

---

4.) The sum of  $m$  and  $n$ .

---

5.) Subtract the product of 5 and  $x$  from 7.

---

6.) Divide  $y$  by the sum of 9 and  $x$ .

---

7.) Subtract the cube of  $y$  from 15.

---

9.) 13 less than 5 divided by  $p$ .

---

11.) 12 less than 3 times a number  $y$ .

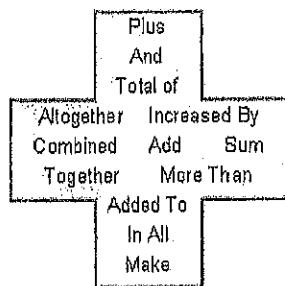
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13.) one-third of the product of  $5p$  and 3.

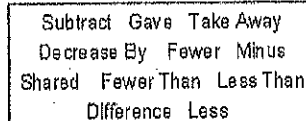
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## Words and Phrases to Math Symbols

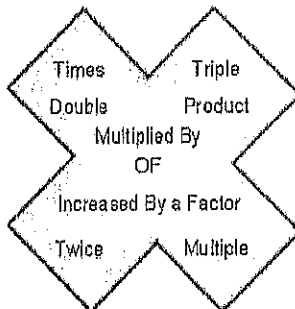
### Addition



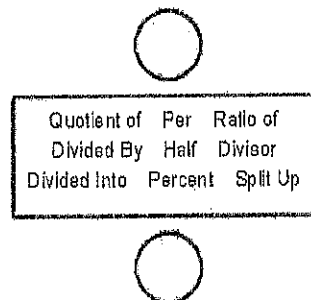
### Subtraction



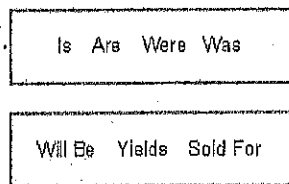
### Multiplication



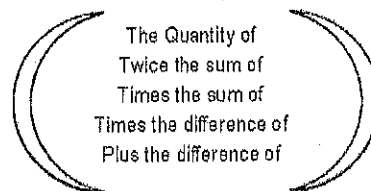
### Division



### Equals



### Parenthesis Words



8.) 4 times the sum of 10 and  $x$ .

---

10.) 5 more than the product of 3 and  $c$ .

---

12.) 6 less than the sum of 5 and  $y$ .

---

14.) the product of  $5x$  and 7 divided by 13.

---





Simplifying Algebraic Expressions: Simplify each expression by combining like terms. Box the algebraic terms and circle the numeric terms in each expression.

Example:

$$\boxed{8} + 3j - \boxed{5} - 2j + \boxed{8j}$$

$$\boxed{8-5} + 3j - 2j + 8j$$

$$3 + j + 8j$$

$$3 + 9j$$

Regroup like terms.

Add numeric terms; combine algebraic terms

1.)  $12c - 3c - 3c$

2.)  $5j + 2j + 9j$

3.)  $9k + 3k - 2k$

4.)  $8y - 5y + 2y$

5.)  $5t + 4 + 2t$

6.)  $6m - 10 - 2m - m$

7.)  $7r + 5r - 12$

8.)  $20 + 5u + 10u - 20 - 14u$

9.)  $20 + 12k - 7k - 8$

10.)  $6x + 15 + 9x - 10x - 8$

Expanding Algebraic Expressions: Expand each expression. Show your work!

Example:  $4(5a+7)$

$$= 4 \cdot 5a + 4 \cdot 7$$

$$= 20a + 28$$

*Multiply each term inside the parentheses by 4.*

1.)  $3(p+9)$

2.)  $7(4x+2)$

3.)  $10(3-2x)$

4.)  $9(2x-9)$

5.)  $6(3-4d)$

6.)  $2(12+5y)$

7.)  $4(3g+5)$

8.)  $8(11-6a)$

9.)  $7(4x+5y)$

10.)  $3(8m-3n)$

11.)  $3(2a+6b+3c)$

12.)  $5(7x+8y-3z)$

Factoring Algebraic Expressions: Factor each expression by taking out the GCF. Show your work!

Example:  $56x - 7$   
 $= 7 \cdot 8x - 7 \cdot 1$  The GCF of 56 and 7 is 7.  
 $= 7(8x - 1)$

1.)  $3 - 24t$

2.)  $6a + 24$

3.)  $5y + 20$

4.)  $6 + 42h$

5.)  $3b - 21$

6.)  $3x + 15y$

7.)  $15w - 5$

8.)  $4n - 28$

9.)  $8 + 8a$

10.)  $16g - 24h$

11.)  $5a + 20b + 35c$

12.)  $15x - 12y + 36z$

One-Step Equations: Solve. Show your work! Box your answer.

1.)  $x - 8 = 15$

2.)  $x + 15 = 6$

3.)  $5x = 6$

4.)  $\frac{x}{8} = 6$

5.)  $x - 8 = 12$

6.)  $6 + x = 15$

7.)  $1.3x = 2.6$

8.)  $\frac{x}{9} = 12$

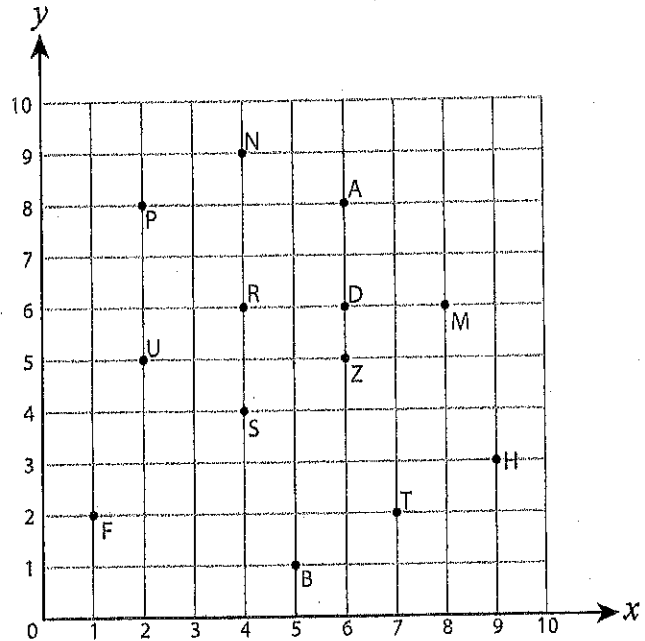
9.)  $\frac{2}{3}x = 18$

10.)  $\frac{5}{6}x = 10$

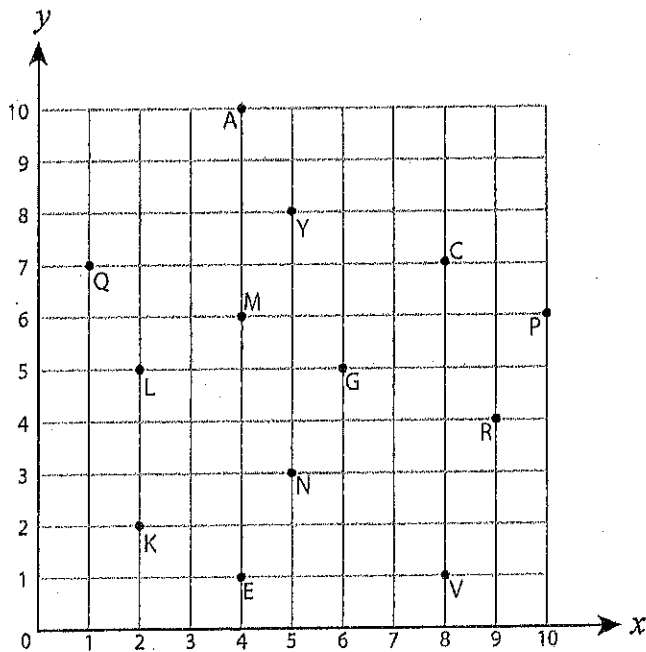
**Identifying Ordered Pairs**

A) Write the point that is located at each ordered pair.

- |                 |                  |
|-----------------|------------------|
| 1) (2, 5) _____ | 2) (4, 6) _____  |
| 3) (9, 3) _____ | 4) (7, 2) _____  |
| 5) (6, 6) _____ | 6) (8, 6) _____  |
| 7) (4, 9) _____ | 8) (4, 4) _____  |
| 9) (5, 1) _____ | 10) (1, 2) _____ |



B) Write the ordered pair for each point.



- |                    |                    |
|--------------------|--------------------|
| 11) G (____, ____) | 12) V (____, ____) |
| 13) R (____, ____) | 14) C (____, ____) |
| 15) E (____, ____) | 16) L (____, ____) |
| 17) Q (____, ____) | 18) A (____, ____) |
| 19) Y (____, ____) | 20) K (____, ____) |

**Identifying Ordered Pairs**

A) Write the point that is located at each ordered pair.

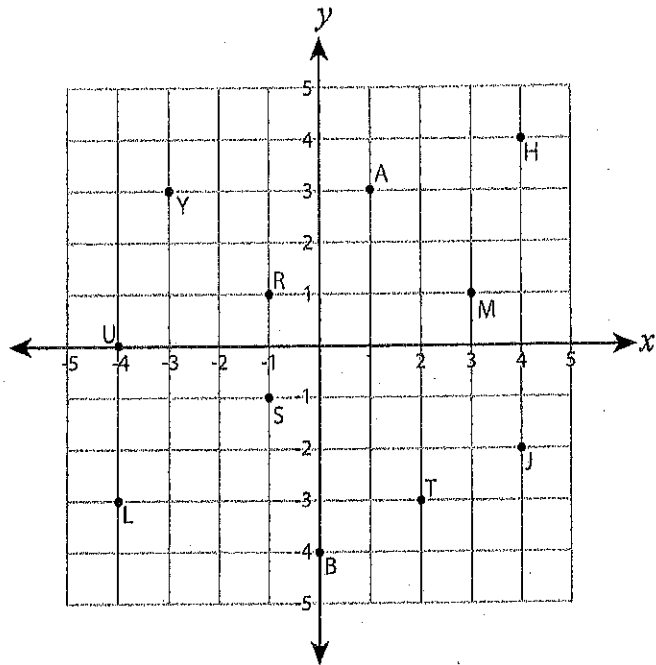
1) (1, 3) \_\_\_\_\_      2) (-4, 0) \_\_\_\_\_

3) (-1, 1) \_\_\_\_\_      4) (4, -2) \_\_\_\_\_

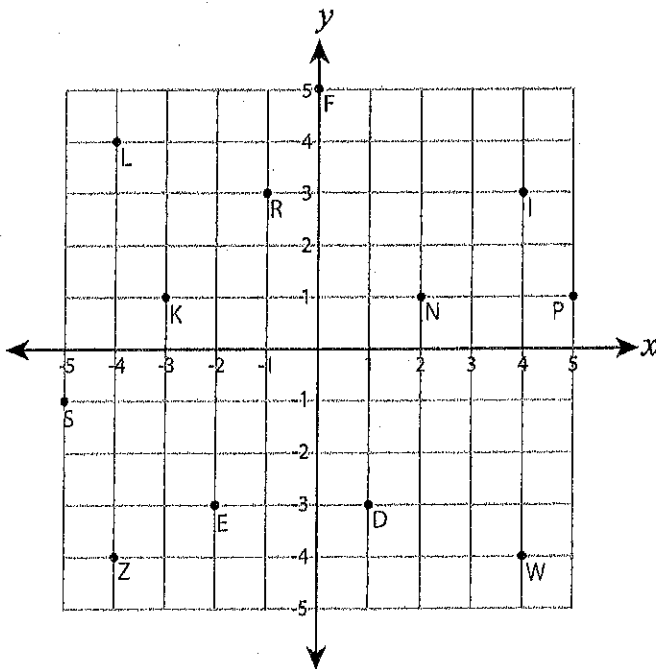
5) (2, -3) \_\_\_\_\_      6) (3, 1) \_\_\_\_\_

7) (4, 4) \_\_\_\_\_      8) (0, -4) \_\_\_\_\_

9) (-3, 3) \_\_\_\_\_      10) (-4, -3) \_\_\_\_\_



B) Write the ordered pair for each point.



11) L (\_\_\_\_, \_\_\_\_)

12) S (\_\_\_\_, \_\_\_\_)

13) E (\_\_\_\_, \_\_\_\_)

14) K (\_\_\_\_, \_\_\_\_)

15) N (\_\_\_\_, \_\_\_\_)

16) F (\_\_\_\_, \_\_\_\_)

17) I (\_\_\_\_, \_\_\_\_)

18) P (\_\_\_\_, \_\_\_\_)

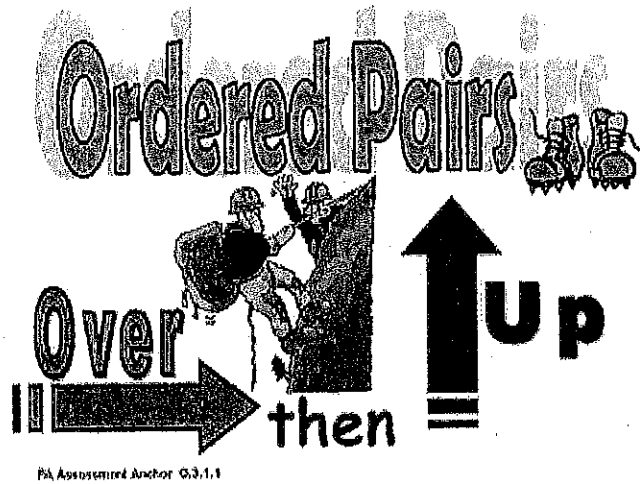
19) D (\_\_\_\_, \_\_\_\_)

20) Z (\_\_\_\_, \_\_\_\_)

Plotting Points

$(x, y)$

Ordered Pair



A) Plot each point on the coordinate grid.

1) T(3, 3)

2) S(1, 8)

3) H(2, 8)

4) E(6, 2)

5) R(5, 4)

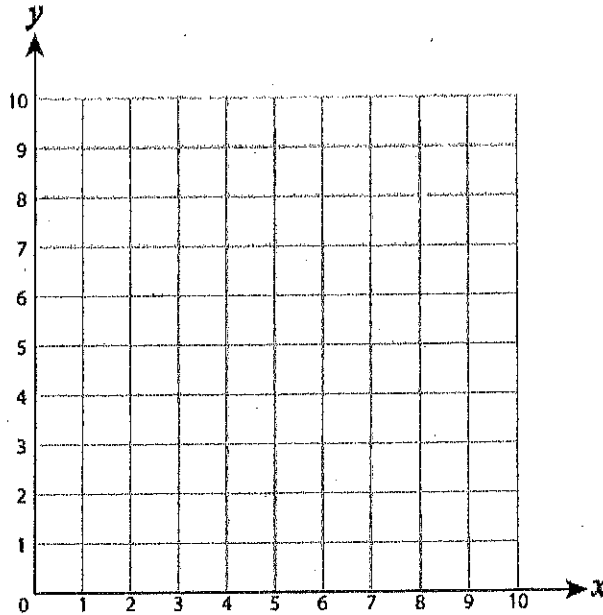
6) L(7, 6)

7) M(3, 1)

8) V(9, 5)

9) P(7, 1)

10) A(4, 7)



A) Plot each point on the coordinate grid.

1) D(-2, 3)

2) H(-1, -5)

3) K(2, 2)

4) U(2, 4)

5) E(-1, -1)

6) L(-3, 5)

7) P(0, 5)

8) A(-3, -4)

9) C(1, 4)

10) G(-1, 0)

