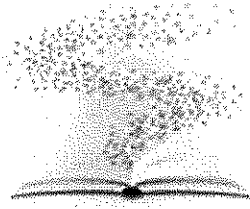


VIKINGS MAKE MAGIC HAPPEN



Arvida Middle School
Incoming 7th grade Summer Math Packet

This packet will help you retain the skills you learned last year in math class.

Please download and print this packet. **Show all your work neatly and steps in pencil.** Turn it in to your teacher the first week of school. Try your best.

We look forward to meeting you!

The Arvida Viking's Math Team.

WE ♥
MATH

Name _____

Order of Operations: Simplify. Show EACH STEP and circle answers. Do NOT use a calculator.

Parenthesis

Exponents

Multiplication or Division: Which ever comes first
from left to right.

Addition or Subtraction: Which ever comes first
from left to right.

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

One-Step Equations: Solve. SHOW YOUR STEPS! Circle answers. Do NOT use a calculator.

Remember to use INVERSE OPERATIONS to solve. Addition and Subtraction are inverse operations. Multiplication and Division are inverse operations. Always do the same thing to BOTH sides of the equation.

$r + 16 = -7$ Get the variable by itself. Right now 16 is being added to it.

$-16 \quad -16$ Undo the addition by subtracting 16 from both sides.

$r = -23$ Answer.

1)	$x - 4 = 1$	5)	$y + 3 = 9$
2)	$3g = 15$	6)	$\frac{r}{2} = 9$
3)	$z + 5 = 6$	7)	$4v = 20$
4)	$k - 2 = 4$	8)	$\frac{h}{5} = 1$

Integers: Simplify. Circle Answers. Do NOT use a calculator.

Addition: SAME SIGNS SUM (SSS): ADD and KEEP the same sign.

DIFFERENT SIGNS DIFFERENCE (DSD): SUBTRACT and answer takes the sign of larger absolute.

Subtraction: Add the opposite for the second number and use the Addition Rule above. (Ex: $-6 - 3 = -6 + -3 = -9$)

Multiplication & Division: Product or Quotient of TWO same signs is positive.

Product or Quotient of TWO different is negative.

1) $15 \div 3 =$

8) $8 \div (-4) =$

15) $(-4) - 4 =$

2) $9 \times (-8) =$

9) $25 \div (-5) =$

16) $1 + 7 =$

3) $4 \div 2 =$

10) $(-6) \times (-1) =$

17) $5 \times 6 =$

4) $16 \div 2 =$

11) $5 + 5 =$

18) $(-5) \times (-2) =$

5) $6 \times (-8) =$

12) $9 + (-7) =$

19) $(-27) \div (-3) =$

6) $9 - 1 =$

13) $4 \times (-7) =$

20) $(-2) - 7 =$

7) $3 + 4 =$

14) $(-6) - (-1) =$

21) $5 - (-4) =$

Identifying Ordered Pairs: Follow the directions below.

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

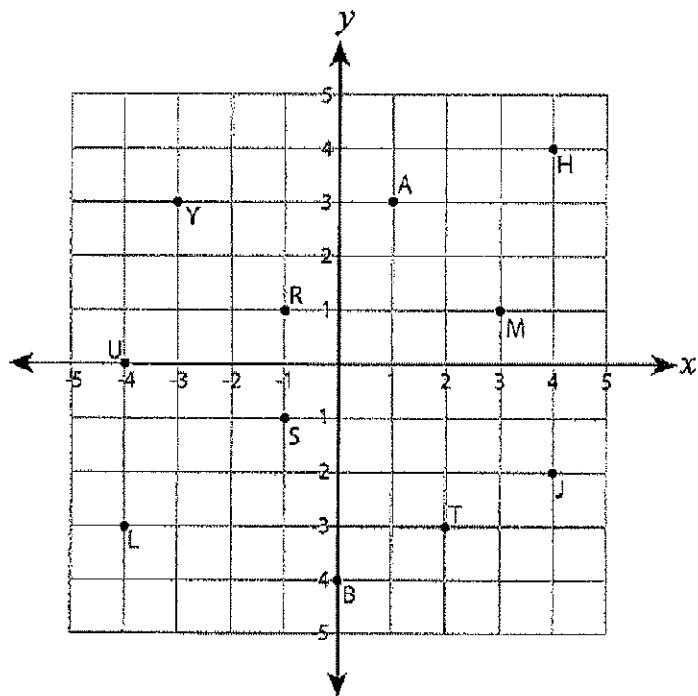
1) $(1, 3)$ _____ 2) $(-4, 0)$ _____

3) $(-1, 1)$ _____ 4) $(4, -2)$ _____

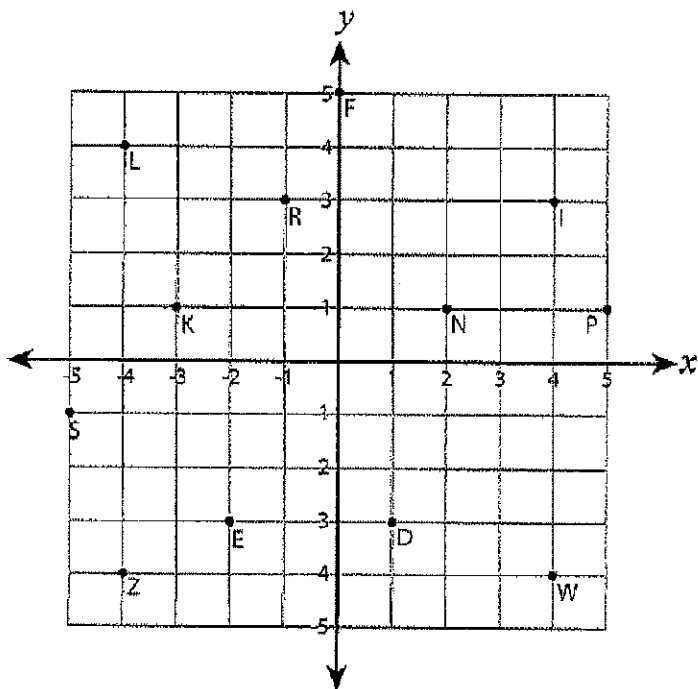
5) $(2, -3)$ _____ 6) $(3, 1)$ _____

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 (____, ____)

Ratios, Rates and Unit Rates: Express each phrase as a rate and unit rate. Round your answer to the nearest hundredth.

	Rate	Unit Rate
1) 7 batteries cost 15 dollars	$\frac{15 \text{ dollars}}{7 \text{ batteries}}$	$\underline{2.14 \text{ dollars per battery}}$
2) 5 dollars for 4 cans of tuna	_____	_____
3) 6 calculators cost \$180.00	_____	_____
4) 5 pencils for 15 dollars	_____	_____
5) 7 chocolate bars cost 18 dollars	_____	_____

Solving Proportions: Solve by using one of the following two methods. Show steps.

$$\begin{aligned}\frac{3}{4} &= \frac{15}{x} \\ \frac{3}{4} \cdot \frac{5}{5} &= \frac{15}{20} \\ x &= 20\end{aligned}$$

$$\begin{aligned}\frac{4}{15} &= \frac{36}{c} \\ 4c &= 15(36) \\ 4c &= 540 \\ \frac{4c}{4} &= \frac{540}{4} \\ c &= 135\end{aligned}$$

1. Cross Products
2. Multiply
3. Divide by the number next to the variable

1. $\frac{7}{r} = \frac{1}{4}$

2. $\frac{k}{75} = \frac{9}{15}$

3. $\frac{24}{21} = \frac{s}{35}$

4. $\frac{17}{34} = \frac{7}{f}$

5. $\frac{15}{h} = \frac{5}{6}$

6. $\frac{5}{14} = \frac{n}{42}$

7. $\frac{z}{25} = \frac{12}{5}$

8. $\frac{36}{k} = \frac{9}{4}$

9. $\frac{e}{22} = \frac{6}{15}$

Writing Percent Proportions: Answer each question. Set up proportions as the example below. Solve the proportion using one of the above methods. Circle Answers.

$\frac{\text{IS (part)}}{\text{OF (whole)}} = \frac{\text{PERCENT}}{100}$	<p>PERCENT -- the number with the percent sign (%).</p> <p>PART -- the number with the word <i>is</i>.</p> <p>WHOLE -- the number with the word <i>of</i>.</p>
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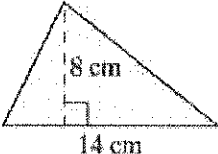
- 1) What is 45% of 78?

- 2) Jan made 17 baskets out of 25 shots she took. What was the percent of baskets she made?

- 3) 54 books make up 25% of the books in the library. How many books are there in the library?

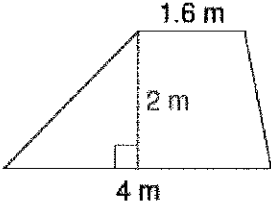
- 4) On a test, Hailey answered 64 out of 75 questions correctly. What percent of her answers were correct?

Geometry: Follow directions below for each figure. Show Steps. Circle Answers.
Find the area of each figure.



1)

$A = \frac{1}{2}bh$



2)

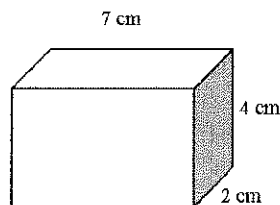
$A = \frac{1}{2}h(b_1 + b_2)$

- 3) Sam plans to replace the carpeting in the room shown below. What is the **area** of the room?



- 4) Find the **volume** of the rectangular prism given.

$A = lwh$ OR $A = Bh$



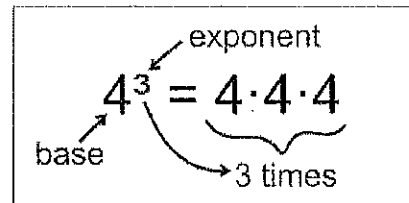
Rounding: Round to the given place value. Circle answers.

- 1) Round 8.54 to the nearest **tenth**
- 2) Round 310.286 to the nearest **tenth**
- 3) Round 118.387 to the nearest **hundredth**
- 4) Round 99.59 to the nearest **whole number**
- 5) Round 9.765 to the nearest **tenth**
- 6) Round 65.85 to the nearest **whole number**

Exponents: Evaluate each expression.

Circle answers.

- 1) 2^4
- 2) 6^2
- 3) 1^6



Greatest Common Factor (GCF) and Least Common Multiple (LCM):

Finding Common Factors:

4: 1, 2, 4

20: 1, 2, 4, 5, 10, 20

Greatest Common Factor = 4

Finding Least Common Multiple:

4: 4, 8, 12, 16, 20, 24

6: 6, 12, 18, 24, 30, 36

Least Common Multiple = 12

Find the **GCF** of the following numbers: Circle answers.

- 1) GCF of 18 and 30
- 2) GCF of 45 and 60
- 3) GCF of 36 and 60
- 4) GCF of 56 and 72

Find the **LCM** of the following numbers: Circle answers.

- 5) LCM of 8 and 12
- 6) LCM of 7 and 11
- 7) LCM of 25 and 10
- 8) LCM of 24 and 36

Writing Algebraic Expressions:

Example: 12 less than 3 times a number y . $3y-12$

- 1) One-eighth of m . _____
- 2) The product of x and 7. _____
- 3) Subtract 2 from x . _____
- 4) 13 less than 5 divided by p . _____
- 5) 4 times the sum of 10 and x . _____

Simplify Algebraic Expressions: Simplify each expression by *combining like terms*. Box the algebraic terms and circle the numeric terms in each expression. Circle final answers.

Example:

$\textcircled{8} + \boxed{3j} - \textcircled{5} - \boxed{2j} + \boxed{8j}$	
$\boxed{8-5} + \boxed{3j-2j+8j}$	Regroup like terms
$3 + j + 8j$	Add numeric terms; combine algebraic terms
$3 + 9j$	

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

Distributive Property: Simplify by using the distributive property. Show your work. Circle final answers.

Example: $4(5a+7)$
 $= 4 \cdot 5a + 4 \cdot 7$ *Multiply each term inside the parentheses by 4.*
 $= 20a + 28$

1) $3(p+9)$

2) $7(4x+2)$

3) $10(3-2x)$

4) $9(2x-9)$

5) $6(3-4d)$

6) $2(12+5y)$

Factoring Algebraic Expressions: Factor each expression by taking out the GCF. Show work. Circle final answers.

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) $3x+15y$

Properties of Real Numbers: Name the property illustrated in each equation

Additive Identity: For any number a , $a+0=a$

Multiplicative Identity: For any number a , $a \cdot 1=a$

Commutative Properties: For any numbers a and b , $a+b=b+a$ and $a \cdot b=b \cdot a$

Associative Properties: For any numbers a , b , and c , $(a+b)+c=a+(b+c)$ and $(ab)c=a(bc)$

1) $3+x=x+3$

2) $4 \cdot (6 \cdot 3) = (4 \cdot 6) \cdot 3$

3) $35+0=35$

4) $1 \cdot 17=17$

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

Decimal Addition and Subtraction: Line up the *decimals* before adding or subtracting. Add zeros as placeholders, if needed. Bring the decimal straight down in your answer.

Decimal Multiplication: Line up the *numbers*. Multiply as you would with whole numbers. Count the decimal places in each factor. The product (answer) has the same number of decimal places.

Decimal Division: If the divisor (outside number) is a decimal, you must move the decimal point to the right until it becomes a whole number. Then, move the decimal in the dividend (inside number) the same number of spaces. Add zeros as placeholders, if needed. Divide to find your answer (quotient). Then, move the decimal straight up from the dividend to the quotient.

1) $12.6 + 3.1$

2) $4.67 + 9.5$

3) $15.3 - 12.8$

4) $25.67 - 2.9$

5) $7.9 - 1.02$

6) $6.21 (3.1)$

7) $0.25 (7.4)$

8) $0.05 (0.7)$

9) $31.8 \div 3$

10) $14.36 \div 0.03$

11) $5.1 \div 0.017$

12) $3.25 \div 0.5$

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

Adding and Subtracting Fractions and Mixed Numbers: Make sure you have common denominators BEFORE adding or subtracting. Simplify, if necessary.

Multiplying Fractions and Mixed Numbers: If there are any mixed numbers, change to improper fractions. Multiply the numerators. Multiply the denominators. Simplify, if necessary.

Dividing Fractions and Mixed Numbers: If there are any mixed numbers, change to improper fractions. Keep (first fraction), Change (division to multiplication), Flip (reciprocal of second fraction). Multiply numerators. Multiply denominators. Simplify, if necessary.

1) $\frac{5}{17} + \frac{6}{17}$

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

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

4) $2\frac{1}{6} + 2\frac{7}{8}$

5) $7\frac{1}{8} - 2\frac{3}{4}$

6) $\frac{13}{14} - \frac{1}{2}$

7) $\frac{2}{5} \times \frac{6}{7}$

8) $5\frac{1}{2} \times 4\frac{3}{4}$

9) $5 \div \frac{2}{5}$

10) $\frac{7}{11} \div \frac{1}{3}$

11) $9\frac{1}{4} \div 2\frac{1}{4}$

12) $2\frac{1}{3} \div 1\frac{2}{3}$