Arvida Middle School

Incoming 8th Grade and Algebra Summer Math Packet

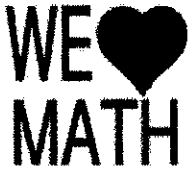
Welcome incoming Vikings!

It is highly recommended **that you download, print, and complete the Incoming 8th Grade/Arvida Summer Math packet. This packet will help you retain the skills you learned last year in math class.** ***Show all your work and steps in pencil and circle your answers for each problem.***

PLEASE bring this completed packet with you on the first day of school.

We look forward to meeting you!

The Arvida Vikings' Math Team



Name _____ Date _____ Period _____

Are You Ready . . . .

Prerequisite Skills

Directions: **Solve each problem in each section. Show all work where necessary.**

Part I. Fractions

1. $\frac{3}{5} + \frac{4}{5}$ **2.** $\frac{5}{9} - \frac{3}{9}$ **3.** $\frac{1}{3} + \frac{2}{21}$ **4.** $\frac{9}{25} - \frac{3}{10}$

5. $\frac{6}{7} \cdot \frac{6}{9}$ **6.** $\frac{3}{8} \div \frac{2}{3}$ **7.** $\frac{3}{5} \cdot \frac{4}{7}$ **8.** $\frac{15}{18} \div \frac{5}{9}$

Part II. Percents

9. Express 20% as a decimal and as a fraction.

10. 40% of 30 is what number?

11. 25 is what percent of 125?

12. Find 0.5% of 250.

13. Express $\frac{5}{8}$ as a percent.

Mixed Practice with Integers

Perform the indicated operations.

1. $-34 + -122$
2. $80 - (-22)$
3. $-3 \bullet 5$
4. $19 \bullet -23$
5. $83 + -85$
6. $28 - (-65)$
7. $28 - (-26)$
8. $-31 - (-21)$
9. $-35 + 62 + -90$
10. $12 \bullet -13 \bullet 6$
11. $(212 + -234 - 222) \div -6$
12. $100 \bullet 3 \bullet 21$
13. $\frac{175}{-5} \bullet -4$
14. $\frac{-555}{-5} \bullet -6$
15. $\frac{-424}{4}$
16. $\frac{-72}{8} + \frac{-64}{8} + \frac{33}{-11}$
17. $(225 \div 5) \bullet .2$
18. $(-19 - (-21) - (-34)) \div -6$
19. $(-18 - -77 - 22) \bullet 2$
20. $(10 + -31 + -80) \div 3$
21. $(16 - 21 + 34) \div -8$
22. $(-320 + -75 + 24) \bullet 4$
23. $(-12 + 13 + 55) \bullet 3$
24. $(-12 - 54 - 10) \bullet 2$

Adding and Subtracting Real Numbers

Add or subtract indicated operations.

1. $3\frac{2}{3} + -2.25 - 7\frac{2}{4}$
2. $-6 - 7\frac{3}{4} + -2\frac{2}{3}$
3. $-8\frac{1}{2} + -2\frac{4}{12} - 8\frac{1}{3}$
4. $6\frac{1}{10} + -3.25 - 12.65$
5. $-2 - -3\frac{1}{8} + -4\frac{3}{4}$
6. $7\frac{2}{3} - -1\frac{2}{3} + \frac{2}{3}$
7. $12 - 17.3 + -3\frac{2}{3}$
8. $-11.08 - -12.67$
9. $19.22 - -5\frac{3}{4} + 13\frac{2}{3}$
10. $13\frac{2}{5} - 17.8 + 13\frac{4}{5}$
11. $3\frac{7}{10} + -4.23 - 7\frac{3}{8}$
12. $5\frac{2}{7} + -3.43 - 8\frac{3}{11}$
13. $-8 - 1\frac{3}{5} + -6\frac{1}{8}$
14. $-2\frac{3}{7} + -9\frac{6}{10} - 5\frac{2}{3}$
15. $3\frac{1}{15} + -4.38 - 13.47$
16. $-5 - -7\frac{3}{7} + -2\frac{5}{8}$
17. $3\frac{1}{2} - -6\frac{1}{3} - \frac{3}{5}$
18. $17 - 12.2 - -8\frac{4}{9}$
19. $-5.23 + 3.33$
20. $11.62 + -8\frac{6}{7} - 18\frac{1}{9}$
21. $17\frac{8}{9} - 12.2 + 16\frac{2}{7}$
22. $9\frac{2}{3} - -5.61 - 9\frac{1}{5}$

Part IV. Perimeter and Area

Perimeter is the distance around a geometric figure. The perimeter of a rectangle is: $P = 2l + 2w$. Since a square has 4 equal sides, its perimeter is 4 times the length of a side: $P = 4s$.
Area is the number of square units needed to cover a surface. To find the area of a rectangle, multiply its length times its width: $A = lw$. To find the area of a square, find the square of the length of one side: $A = s^2$

For each problem, draw the figure and calculate the perimeter and area of each figure. Remember to include the UNITS for each answer.

20. A rectangle has a length of 5 inches and a width of 3 inches.

21. A rectangle has a length of 12 feet and a width of 5 feet.

22. A square has a side length of 8 centimeters.

23. A square has a side length of 4.5 meters.

Part V. Circumference and Area

Circumference is the distance around a circle. Its formula is: $C = 2\pi r$ *or* $C = \pi d$ where r is the radius of the circle and d is the diameter of the circle (twice the radius).
The ***Area*** of a circle is found by using the formula: $A = \pi r^2$.

For each problem, draw a circle with the given situation. Then find the circumference and area of each circle. Show all work. **Give your answers in terms of π and then use $\pi \approx 3.14$ to round your answers to the nearest hundredth.** Remember to include the UNITS in your answer.

24. The radius is 3 feet.

25. The diameter is 20 inches.

26. The radius is 4 meters.

27. The diameter is 12 centimeters.

Part VI. Volume

Volume is the measure of space occupied by a solid. Volume is measured in cubic units. The volume of a rectangular prism is the product of its length, width, and height: $V = lwh$

For each problem, find the volume. Remember to include the units.

28. An aquarium is 7 feet long, 4 feet wide, and 4.8 feet deep. What is the volume of the tank?

29. A cube measures 3 meters on each side. Find its volume.

Part VII. Mean, Median, and Mode (Measures of Central Tendency)

To calculate the ***Mean*** of data, add up all of the numbers and divide by the total amount of numbers.
The ***Median*** is the number in the middle. Start by arranging the data in increasing order, from least to greatest. If there are an odd amount of numbers, then the middle number is the median. If there are an even number of data, then take the average of the two middle numbers. This is the median.
The ***Mode*** is the number or numbers that appear more than once and most often in a set of data. If no number appears more than once, then the data is said to have NO MODE (don't write zero because 0 is a number. For example: in a question asking the total number of brothers and sisters you have, an only child would answer 0. So if there's no mode in the data, you can't say 0 because then you're saying the mode is no brothers or sisters). It is possible for the data to have two or more modes.

30. Michael's test scores are as follows: 74, 96, 88, 79, 94, 95, 88, 94. Find the mean, median and mode of the data.

31. Sara takes a survey of the number of pets her friends have. They answered: 3, 2, 1, 2, 0, 2, 1, 2, 3, 2, 4, 0. Find the mean, median and mode of the data.

32. Mrs. Peterson is on a diet. She recorded the number of servings of fruits and vegetables she ate in one week. They were: 5 on Sunday, 4 on Monday, 6 on Tuesday, 3 on Wednesday, 7 on Thursday, 8 on Friday, and 2 on Saturday. Find the mean, median and mode of the data.

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Are You Ready

Prerequisite Skills – Part 2 Page 1

Part XI. Properties: Notes and Review

Properties	**Addition**	**Multiplication**
Commutative	$a + b = b + a$	$ab = ba$
Associative	$(a + b) + c = a + (b + c)$	$(ab)c = a(bc)$
Identity	$a + 0 = 0 + a = a$ 0 is the Additive Identity	$a \cdot 1 = 1 \cdot a = a$ 1 is the identity
Inverse	$a + (-a) = 0$	$a \cdot \frac{1}{a} = 1$
Zero		$a \cdot 0 = 0 \cdot a = 0$
Distributive	$a(b + c) = ab + ac$ and $(b + c)(a) = ba + ca$	
Substitution	If $a = b$, then a may be substituted for b	

Directions: Identify the property illustrated

1. $(6 + 7) + 4 = 6 + (7 + 4)$	
2. $10 \cdot 0 = 0$	
3. If $12 + 2 = 14$, then $14 = 12 + 2$	
4. $1 \cdot 58 = 58$	
5. $-4(x + y) = -4x - 4y$	
6. $\frac{3}{4} \cdot \frac{4}{3} = 1$	
7. $(25 - 5)4 = 20(4)$	
8. $26 + 0 = 26$	
9. $(10 + x) + y = y + (10 + x)$	
10. $6 + (x + y) = (6 + x) + y$	
11. $(5 + a)4 = 5(4) + 4a$	
12. $(2x) + (-2x) = 0$	

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Are You Ready
Prerequisite Skills – Part 2 Page 2

Part XII. Order of Operations: Notes and Review

Parentheses **E**xponents **M**ultiplication or **D**ivision (whichever comes first) **A**ddition or **S**ubtraction (whichever comes first)

Directions: Simplify each expression.

13. $4-16\div4\times6\times3$	**14.** $5-10\,(10)\div5^2+2$	**15.** $\lvert6^2-4^3\rvert+10(2)$	**16.** $\frac{(-2)^3-1}{1+1}$

Part XIII. Solving Equations (multi-step and with the variable on both sides)
Directions: Solve each equation.

17. $6x-15=33$	**18.** $\frac{x}{4}-15=10$	**19.** $\frac{x-12}{2}=-5$	**20.** $0.2x+4=9.6$
21. $4+10x=5x-1$	**22.** $4(x+1)-2=3x$	**23.** $6x=3x-18$	**24.** $8x+10=7x-4$

Name _____ Date _____ Period _____

Are You Ready for Algebra 1?
Pre-Algebra Skills – Page 2

Part II. Order of Operations: Notes and Review

Parentheses **E**xponents **M**ultiplication or **D**ivision (whichever comes first) **A**ddition or **S**ubtraction (whichever comes first)

Directions: Simplify each expression.

13. $4 - 16 \div 4 \times 6 \times 3$	**14.** $5 - 10\,(10) \div 5^2 + 2$	**15.** $\lvert 6^2 - 4^3 \rvert + 10(2)$	**16.** $\frac{(-2)^3 - 1}{1+1}$

Part III. Solving Equations (multi-step and with the variable on both sides)
Directions: Solve each equation.

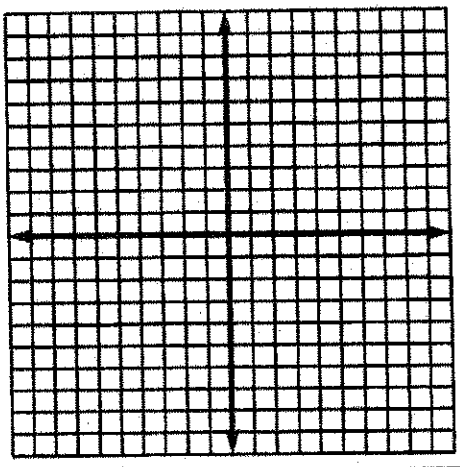
17. $6x - 15 = 33$	**18.** $\frac{x}{4} - 15 = 10$	**19.** $\frac{x-12}{2} = -5$	**20.** $0.2x + 4 = 9.6$
21. $4 + 10x = 5x - 1$	**22.** $4(x + 1) - 2 = 3x$	**23.** $6x = 3x - 18$	**24.** $8x + 10 = 7x - 4$

Graphing Linear Equations

Solve for y in each equation. Choose 3 values for x and find the values for y. Graph the 3 ordered pairs and draw a line connecting them.

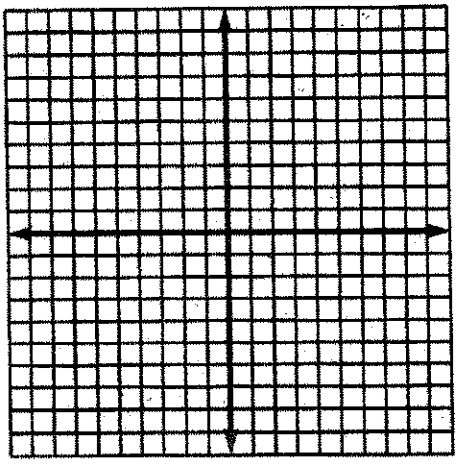
1. $3x - y = 3$

x	y



2. $5x - y = 7$

x	y



3. $y = -3x - 5$

x	y