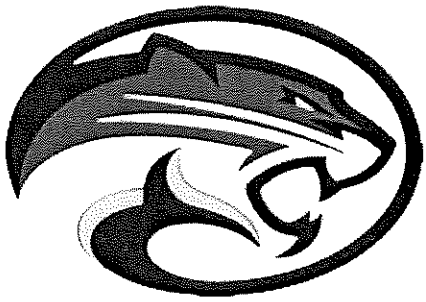
SUMMER

MATH PRACTICE

for students entering <u>Adv Alg I</u>



Benton Middle School

7411 Hoadly Road

Manassas, VA 20112

Algebra I Summer Project

Evaluate. Show work and do not use a calculator.

1. $12x \text{ when } x = 6$
2. $m^2 \text{ when } m = 8$
3. $\frac{1}{2}k \text{ when } k = \frac{3}{4}$
4. $2^n \text{ when } n = 5$
5. $8 + 4(3)$
6. $\frac{14+(3+2^2)}{3}$
7. $7 + 8^2 \div 4$
8. $y^3 - y \text{ when } -1$
9. $8(x-3) \text{ when } x = -2$
10. $\sqrt[2]{100}(-4)^2$
11. $(2+3)^3 - 10$
12. $(2^3 + 3^3) - 10$

Translate each of the verbal phrases into an expression:

13. the product of 9 and x
14. 2 less than three times w
15. the quotient of $r + r$ and b
16. 4 more than twice a number
17. 9.85 less than the product of t and 36
18. the product of m and 5, minus the quotient of 3b and 4.5

Evaluate. Show work and do not use a calculator.

19. $\frac{3}{4}+\frac{5}{8}$

20. $5+(-9)$

21. $-\frac{5}{9}+(-\frac{1}{3})$

22. $\frac{1}{9}+(-\frac{5}{6})$

23. $9.51+(-17)$

24. $-\frac{1}{6}+\frac{5}{9}$

25. $2\frac{1}{4}+13\frac{15}{16}$

26. $-8.05+7.4$

Answer the following questions. Show all work and do not use a calculator.

27. Write an equation for "the product of 5 and the sum of z and 3 is equal to 45."

28. Is 7 a solution of the equation $3p-8=12$? Why or why not?

29. Is 4 a solution of the inequality$r^2+8>21$? Why or why not?

30. Create a table for the function $y=x-7$ using the numbers 11, 13, 15, 17 and 20 for the input values.

31. Create a table for the function $y=4x-6$ using the numbers 2, 3, 5, 7 for the input values.

32. A contractor buys screws for \$1.55 per box and nails for \$1.05 per box. Write an equation for the total cost. Then find the cost of 3 boxes of screws and 5 boxes of nails.

Example for 33 and 34:

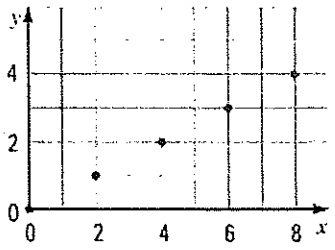
Graph the function $y = \frac{1}{2}x$ with domain 0, 2, 4, 6, and 8.

Solution

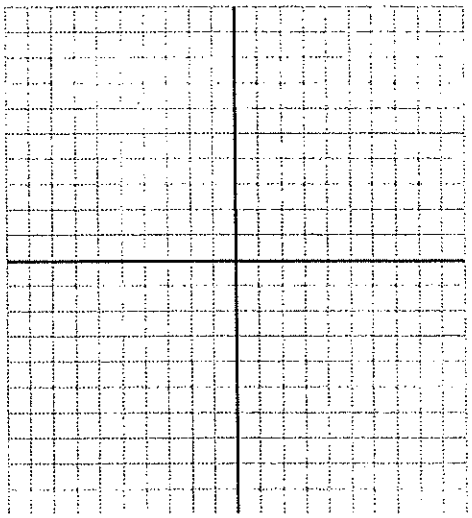
STEP 1 **Make** an input-output table.

x	0	2	4	6	8
y	0	1	2	3	4

STEP 2 **Plot** a point for each ordered pair (x, y).



33. Graph the function y = 5x – 4 using the domain: 1, 2, 3, 4, 5. Label the axes.



34. Given the function $y = 2x \mp 3$, make a table of values, draw the first quadrant of a coordinate grid, and graph at least five points.

Solve each equation. Show work and do not use a calculator.

35. $18 = m + 6$

36. $x - 3 = 8$

37. $y + 7.6 = 4$

38. $y - \frac{4}{7} = \frac{3}{7}$

39. $c - 7.88 = 9.24$

40. $5x = -75$

41. $2 = -2m$

42. $-\frac{a}{7} = 2.5$

43. $-10 = \frac{x}{6}$

44. $3x - 2 = 4$

45. $8 - 3y = 14$

46. $3 - 5z = 18$

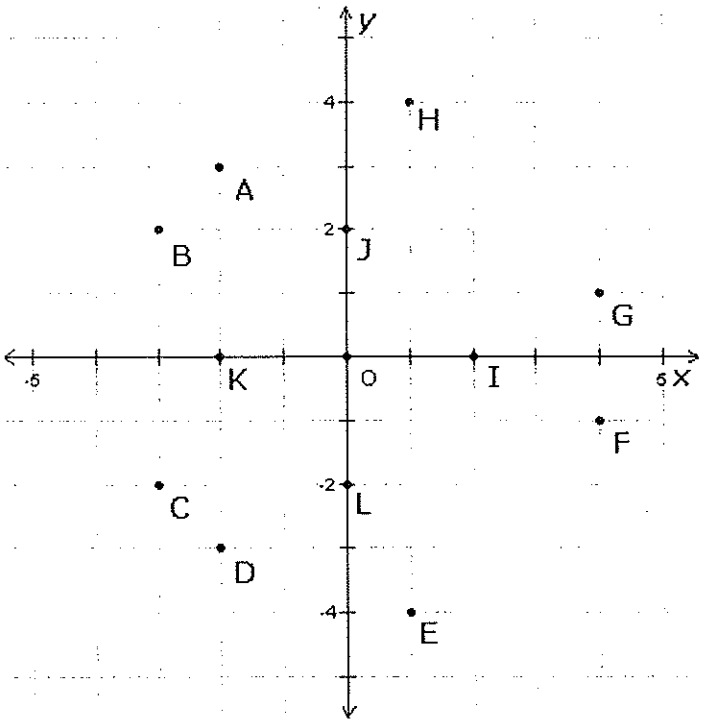
47. Suppose you work at Tim Horton's. You earn \$138.55 for working 17 hours. What is your hourly wage?

48. Your bill for a car repair is \$166.50.

a. One – third of your bill is for labor. Write and solve an equation to find the cost for labor.

b. The mechanic worked on your car for 1.5 hours. What is the hourly charge for labor?

49. Use the coordinate plane below to answer questions a – f.



a. Which point has coordinates (–2, 3)?

b. Which point has the coordinates (–2, 0)?

c. Which point has the coordinates (4, –1)?

d. Draw and label the point $(0, -3)$ as point M.

e. Draw and the label the point $(-\frac{1}{2}, 4\frac{2}{3})$ as point N.

f. What is the name of the point (0, 0)?

50. Write an equation to model the situation then solve for the variable: The perimeter of an equilateral triangle is 3 times the length of a side *s*. The perimeter of a rectangle is 124 cm.

51. Write an equation to model the situation then solve for the variable: The total cost of *n* cartons of milk is \$3.60. Each carton costs \$0.45.

52. A group of mountain climbers begin an expedition with 265 lb of food. They plan to eat 15 pounds every day.

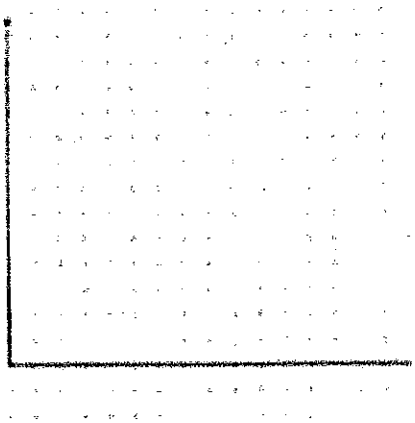
a. What is the starting value?

b. What is the rate of change?

c. Make a table of values for this situation.

d. Write an equation in slope-intercept form relating the remaining food supply r to the number of days d.

e. Graph the function.



f. How many pounds of food is left after 4 days?

g. The group plans to eat the last of their food the day their expedition ends. How many days they expect the expedition to last.

h. The expedition is stranded in a blizzard. People can survive for 12 days without food. If the expedition began on January 2nd, what date must they be rescued by in order to survive?

Evaluate. Show work and do not use a calculator.

53. $15(13-7) \div (8-5)$

54. $(5+3) \div 2 + (5^2 - 3)$

55. $8 \div (9-7) + (13 \div 2)$

56. $b^4 \; for \; b = \frac{1}{2}$

57. $b^4 \; for \; b = -\frac{1}{2}$

58. $-b^6 \; for \; b = \frac{1}{2}$

59. $\frac{3}{4}w - 7 \; for \; w = 1\frac{1}{3}$

60. $\frac{n}{m} \; for \; n = -\frac{4}{5} \; and \; m = 8$

61. $(-3)^3$

62. $\frac{x}{y} \; for \; x = -\frac{3}{4} \; and \; y = -\frac{5}{2}$

63. $-2abc \; for \; a = -\frac{3}{4}, b = \frac{1}{3} \; and \; c = -\frac{2}{5}$

64. A toll bridge in Maine in the early 1900s charged 2 cents per person and 6 and a quarter cents per dozen sheep. How much would the toll have been for 3 people and 4 dozen sheep?

65. As riders plunge down the hill of a roller coaster, you can approximate the height, *h*, in feet, above the ground of their roller-coaster car. Use the formula $h = 155 - 16t^2$ where *t* is the number of seconds since the start of the descent.

    a. How far is a rider from the bottom of the hill after 1 second? 2 seconds?

    b. Does it take more than or less than 4 seconds to reach the bottom? Explain?

Find the Least Common Multiples of each set of numbers:

66. 3 and 4

67. 4 and 5

68. 3, 4 and 5

69. 12 and 40

70. 6 and 16

71. 9 and 15

72. 12, 15 and 18

73. 6 and 12

74. 45, 120 and 150

Find the Greatest Common Factor of each set of numbers:

75. 40 and 60

76. 10 and 45

77. 54 and 144

78. 6, 8 and 12

79. 12, 18 and 21

80. 143 and 169

Order the numbers in order from least to greatest:

81. $\frac{1}{2}, \frac{3}{4}, \frac{2}{5}$

82. $-\frac{3}{4}, -\frac{7}{10}$

83. $\frac{6}{8}, \frac{7}{9}$

84. $\frac{7}{9}, \frac{3}{9}, \frac{5}{9}$

85. $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$

86. $\frac{2}{5}, \frac{3}{8}, \frac{1}{3}, \frac{2}{4}$

87. What were the *easiest* problems for you to complete?

88. What were the *most difficult* problems for you to complete?