

Lake Braddock Secondary School  
Mathematics Department  
Summer Packet



**Algebra 1**

All of the problems in your summer packet should include the work and be completed without the use of a calculator.

Solve each of the following fraction problems and leave your answer reduced to lowest terms.

1.  $\frac{1}{3} + \frac{5}{6} =$

2.  $\frac{3}{8} \div \frac{1}{4} =$

3.  $\frac{11}{30} \cdot \frac{10}{11} =$

4.  $1\frac{3}{5} + 4\frac{1}{2}$

5.  $\frac{1}{3} \div 2\frac{1}{3} =$

6.  $5\frac{5}{6} - 3\frac{1}{3} =$

Simplify each of the following mathematical expressions.

7.  $42 \div 2 \cdot (12 + 9)$

8.  $14^2$

9.  $|-15|$

10.  $\sqrt{49}$

11.  $5a + 4a - 2a$

12.  $\frac{7^2 + b \cdot 3c}{24 - b \cdot 2c}$

13.  $\frac{2.4n}{.8}$

14.  $(-4x)(0.5y)$

15.  $(x^6y)(xy^3)$

16.  $(2rs^5)(-6mr^6)$

17.  $(5k^7)^3$

18.  $\frac{14a^4b^2c}{7a^3b^2}$

Evaluate each expression when  $a = 9$ ,  $b = -3$ , and  $c = 7$

19.  $4a + 7$

20.  $c(c + 3)$

21.  $7b + 2a$

22.  $\frac{a}{b} + 9$

Find the Greatest Common Factor

23. 21 and 24

24.  $12a^3c$  and  $15ab^3$

Find the Least Common Multiple

25. 9 and 15

26.  $7x$  and  $8x^2$

**Solve each equation using the correct form.**

Examples:

$\begin{aligned} -2y + 9 &= 7 \\ -2y + 9 - 9 &= 7 - 9 \\ -2y &= -2 \\ \frac{-2y}{-2} &= \frac{-2}{-2} \\ y &= 1 \end{aligned}$	$\begin{aligned} 2x + 3 &= x + 10 \\ 2x + 3 - 3 &= x + 10 - 3 \\ 2x &= x + 7 \\ 2x - x &= x + 7 - x \\ x &= 7 \end{aligned}$	$\begin{aligned} 3b + 2 &= 6(3 - b) \\ 3b + 2 &= 18 - 6b \\ 3b + 2 + 6b &= 18 - 6b + 6b \\ 9b + 2 &= 18 \\ 9b + 2 - 2 &= 18 - 2 \\ 9b &= 16 \\ b &= \frac{16}{9} \end{aligned}$
--	--	---

27. $6x + 8 = 20$	28. $-21 - 5x = 64$	29. $3y + 2y = 81 - 6$
30. $25n - 4 = 96$	31. $18y - 21 = 15y + 3$	32. $0.71 - 0.22n = 1.03 - .62n$
33. $-\frac{1}{5}x - 3 = 17$	34. $\frac{2a}{7} = \frac{2}{3}$	35. $3(y - 4) = -2(y + 6)$

**Solve each problem using a proportion or an equation.**

36. What is 12.5% of 96?

37. 60 is 75% of what number?

38. 6 is what percent of 5?

39. The regular price of a television is \$500. If it's on sale for 15% off, what's the sale price?

Use the rules of exponents to evaluate each expression if  $x = 5$ ,  $y = 10$ ,  $z = -2$ .

40.  $\frac{xz^2}{y^2}$

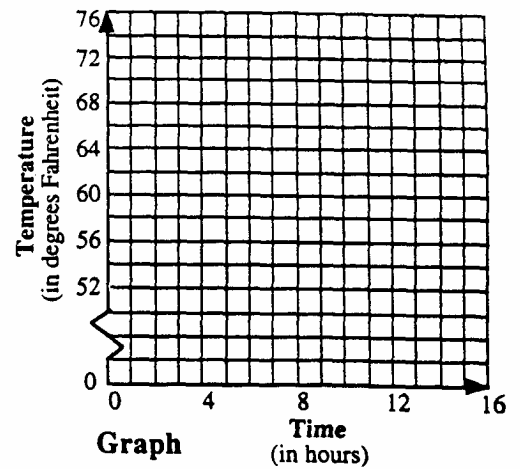
41.  $7xy^5$

42. The temperature was  $72^\circ\text{F}$  and then it dropped  $2^\circ$  per hour for the next eight hours.

Use the table below to graph the line and write the equation of the line.

**Table**

Time	Temperature
1	70
2	68
4	64
6	60
8	56



**Equation**

Temperature =

**Questions 43 through 49, write and solve an equation for each problem.**

43. A group of runners participated in a 10-kilometer race. One-eighth of the runners completed the race in 40 minutes or less. Seven-twelfths of the runners needed between 40 minutes and one hour to finish. The remaining 70 runners took one hour or longer to complete the race. How many runners participated in the race?

44. A number  $n$  plus  $\frac{3}{8}$  equals  $1\frac{5}{8}$ .  
What is the number?

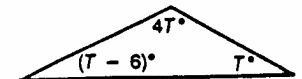
45. A boat traveled at an average speed of 14.4 km/h for 3.5 hours. How far did the boat travel? Use  $d = rt$ .

46. The sum of a number  $x$  and  $-34$  is 17.  
What is the number?

47. A number  $n$  is divided by 8 and the quotient is  $-12$ . What is the number?

48. The perimeter of a triangle is 117 cm.  
Two sides are 31 cm and 48 cm.  
Find the third side.

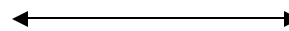
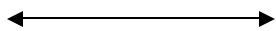
49. Write and solve an equation to find the value of  $T$ .



**Solve each inequality and graph the solution on the number line.**

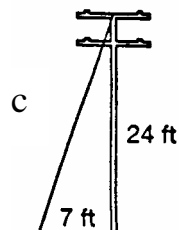
50.  $x - 6 < -8$

51.  $12 \geq 6x$

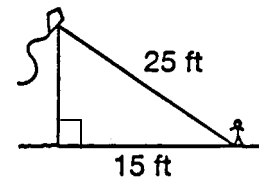


**The Pythagorean Theorem. Find the length of the missing side of the right triangle.**

52. How long is the guide wire (c)?

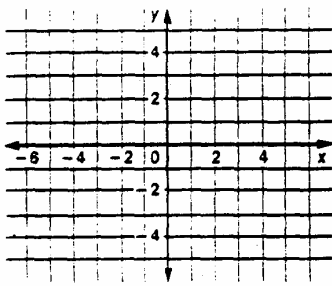
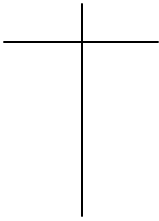


53. What is the height of the kite in the diagram?

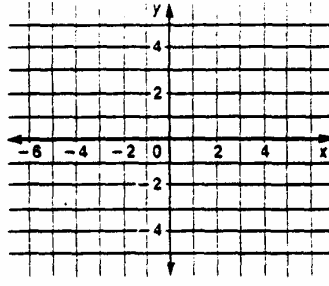
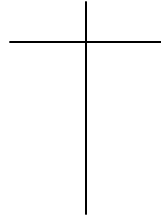


Graph each equation using a table of values.

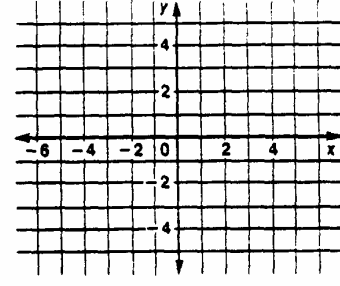
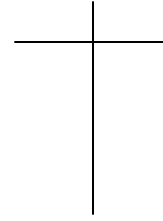
54.  $y = x - 3$



55.  $y = -3x + 4$



56.  $y = \frac{1}{2}x + 2$



Match each equation on the left with the property it illustrates on the right.

57.  $4 + (9 + 6) = (4 + 9) + 6$

A. Identity property of multiplication

58.  $x + 12 = 12 + x$

B. Associative property

59.  $(3 + y) + 0 = 3 + y$

C. Distributive property

60.  $x \cdot 1 = x$

D. Identity property of addition

61.  $5(x + y) = 5x + 5y$

E. Commutative property

Express each number in decimal notation.

62.  $8.2 \cdot 10^3$

63.  $1.5 \cdot 10^{-2}$

Express each number in scientific notation.

64. 59,300

65. 0.00056

66. Simplify and evaluate the variable expression for  $x = 2$  and  $y = 1$

$$\frac{16y^8x^5}{4y^2x} + (2y^3x^2)^2$$

**Questions 67 through 70, write and solve an equation for each problem.**

67. *Three times the sum of a number and eight is four more than twice the sum of the number and six.*

68. *Three mathematics students were in the finals of the state competition. Kim scored the least number of points. Claire scored five more points than Kim. Sam scored twice as many points as Kim. Together the three students scored 85 points. How many points did each student score?*

69. *The length of one side of a triangular lot is 6 m less than three times the length of the second side. The third side is 8 m longer than the first side. The perimeter of the lot is 80 m. Find the length of all three sides.*

70. *The students on the Plaid Team sold cookies to raise money. Peanut butter cookies sold best. The students sold half as many chocolate chip cookies as peanut butter cookies. Twenty dozen cookies were sold all together. How many cookies of each type were sold?*