

Summer Packet

Date _____ Period _____

Evaluate each expression.

1) $(5 - 3)^2$

2) $7 \times -6 - (-6 - -8 \times -9)$

3) $9 \times (9 - 6)(-5 - -2)$

4) $\frac{-18 - (-1 - -5 + 6)}{2^2}$

5) $\left(2 + 3\frac{1}{4}\right)^2$

6) $\left(3\frac{1}{3} - \frac{2}{3}\right)^2$

7) $9 \div ((4 - 4)^2 + 3)$

8) $15 \div (4 - (5 - 4))$

9) $3\frac{1}{3}\left(\frac{9}{5} + \frac{7}{6}\right)$

10) $\frac{5}{4} \div 2\frac{3}{4} \times \frac{5}{3}$

Evaluate each using the values given.

11) $y + \frac{6}{z}$; use $y = 1\frac{1}{6}$, and $z = 5$

12) $6 + pr$; use $p = 6$, and $r = 4$

Simplify each expression.

13) $4 - 5n + 5n + 3$

14) $-(8b - 7)$

15) $-5(-6n - 4)$

16) $-4(7n + 3) - 4(10n - 10)$

Write each as an algebraic expression.

17) the difference of a number and 5 is 27

18) 16 less than b is equal to 36

19) half of a number is equal to 30

20) the product of a number and 5

21) the sum of a number and 11 is equal to 49

Write each as a verbal expression.

22) $n - 16 = 37$

23) $n + 5 = 7$

Simplify each expression.

24) $-2(n - 4) - 2n$

25) $-7(8v + 9) - 5(4v - 6)$

Solve each TWO STEP equation.

26) $2 = \frac{3 + n}{2}$

27) $8 + \frac{x}{10} = 9$

Solve each MULTI STEP equation with the variable on ONE side.

28) $4x - x = 15$

29) $-4(-1 - x) + 5(6x + 8) = -24$

Solve each MULTI STEP equation with the variable on BOTH sides.

30) $11 + 2x = x + 7$

31) $-8(8 + n) = 5n - 38$

$$32) 7 + 2r - 7 + 6r = 5(r - 6) + 6(r + 7)$$

$$33) 8(-4a + 8) = 4(2 + 6a)$$

Solve each proportion.

$$34) -\frac{8}{6} = \frac{9}{v}$$

$$35) \frac{10}{7} = \frac{9}{b - 8}$$

$$36) \frac{2}{r - 2} = -\frac{9}{2}$$

$$37) \frac{x + 5}{x - 10} = \frac{8}{10}$$

Solve each problem.

38) What is 55% of 10?

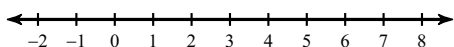
39) 15% of what is 14?

40) 72% of what is 157?

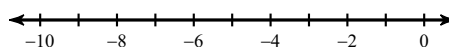
41) 57 is what percent of 115?

Solve each inequality and graph its solution.

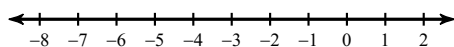
$$42) 312 \leq -6(-4 - 8m)$$



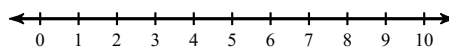
$$43) -7n - 6(-7n - 1) > -134$$



$$44) 3 - 7(2x - 7) > 122$$



$$45) 126 \leq 6(3k - 3)$$



Solve each equation for the indicated variable.

$$46) z = am, \text{ for } a$$

$$47) 3m + 2x = -3, \text{ for } x$$

Find the slope of each line.

48) $5y + 9x = 20$

49) $-2x = -5y + 10$

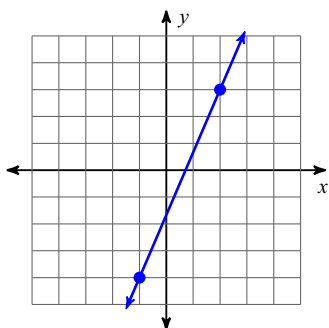
Find the slope of the line through each pair of points.

50) $(1, -8), (5, -18)$

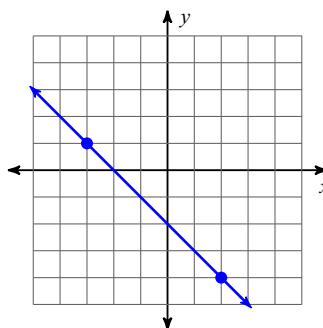
51) $(12, 12), (15, 5)$

Find the slope of each line.

52)



53)



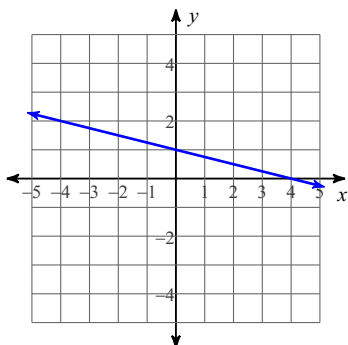
Write the slope-intercept form of the equation of each line given the slope and y-intercept.

54) Slope = $\frac{7}{4}$, y-intercept = -3

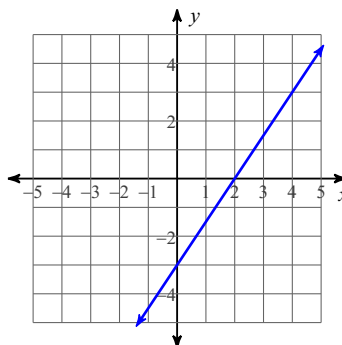
55) Slope = $-\frac{3}{4}$, y-intercept = 0

Write the slope-intercept form of the equation of each line.

56)

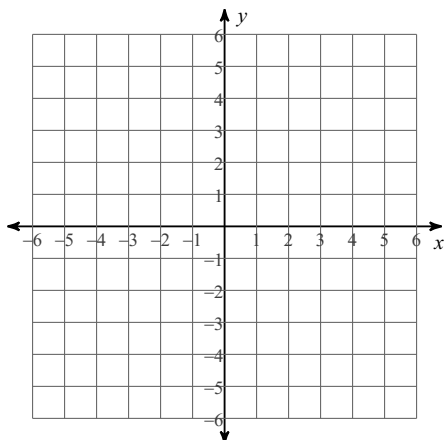


57)

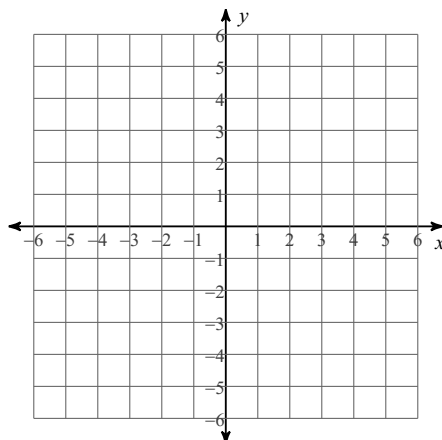


Sketch the graph of each line.

58) $y = 2x + 1$



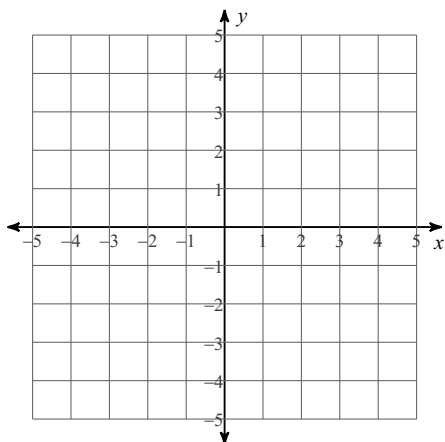
59) $2x + 3y = -6$



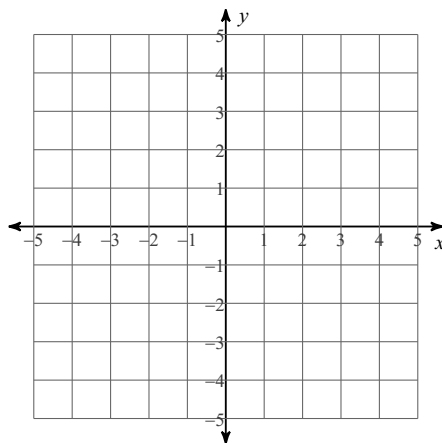
Solve each system by graphing. Show your Graph

60) $y = -\frac{3}{4}x - 4$

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



61) $4x - 3y = -6$
 $x - 3y = 3$



Solve each system by elimination.

62) $8x + 5y = -22$
 $-3x - 5y = 2$

63) $8x - 5y = 20$
 $5x - 5y = 20$

Solve each system by substitution.

64) $-4x - 8y = -12$
 $y = -2x + 3$

65) $x - 2y = -3$
 $7x - 2y = 3$

66) The water park is a popular field trip destination. This year the senior class at High School A and the senior class at High School B both planned trips there. The senior class at High School A rented and filled 10 vans and 7 buses with 348 students. High School B rented and filled 10 vans and 10 buses with 420 students. Each van and each bus carried the same number of students. Find the number of students in each van and in each bus.

67) The state fair is a popular field trip destination. This year the senior class at High School A and the senior class at High School B both planned trips there. The senior class at High School A rented and filled 9 vans and 13 buses with 711 students. High School B rented and filled 9 vans and 3 buses with 261 students. Every van had the same number of students in it as did the buses. Find the number of students in each van and in each bus.

68) Stephanie and James are selling wrapping paper for a school fundraiser. Customers can buy rolls of plain wrapping paper and rolls of holiday wrapping paper. Stephanie sold 9 rolls of plain wrapping paper and 4 rolls of holiday wrapping paper for a total of \$130. James sold 5 rolls of plain wrapping paper and 8 rolls of holiday wrapping paper for a total of \$182. What is the cost each of one roll of plain wrapping paper and one roll of holiday wrapping paper?

Simplify using the product property.

69) $3a \cdot 4a^3$

70) $4x \cdot 2x^3$

Simplify using the power property.

71) $(3x)^4$

72) $(x^3)^2$

Simplify using the quotient property.

$$73) \frac{3a^3}{4a^5}$$

$$74) \frac{8x^5}{7x^9}$$

Simplify. Your answer should contain only positive exponents.

$$75) \frac{v}{(2u^3)^2 \cdot 2u^2}$$

$$76) \frac{x^{-3}}{x^3 \cdot (2x^{-1})^{-4}}$$

$$77) \left(\frac{yx^{-4} \cdot x^2 y^2}{2yx^2} \right)^0$$

$$78) \frac{xy^{-4} \cdot 2y^4}{(2x^{-4})^{-2}}$$

Simplify each expression.

$$79) (4 - 8a^4 + 7a) + (a^2 - 1 - 3a^4)$$

$$80) (3 + 7n^3) - (3n^3 + 7) - (n^3 - 2)$$

$$81) (3x^2 - 8x^4 + 5x) + (2x^3 + x^4 - 6x)$$

$$82) (3p - 3p^2) + (6p^2 - 3p) - (2p + 6)$$

Find each product.

$$83) 6n(8n - 6)$$

$$84) -8x(-3x^2 - 8x - 1)$$

Factor the common factor out of each expression.

$$85) 28k^7 + 24k^2$$

$$86) 8u^2v + 12uv - 32u$$

$$87) 18x^{10} + 3x^5 - 6x^2 - 30x$$

$$88) 24v^4 + 60v^2 + 18v + 30$$

Find each product.

89) $(2n - 8)(7n + 7)$

90) $(6n - 7)(8n + 2)$

91) $(8n - 5)(5n^2 - 6n + 4)$

92) $(5x - 4)(7x^2 + 6x + 3)$

93) $(5n + 4)(5n - 4)$

94) $(5n - 4)^2$

95) $(2v + 1)^2$

96) $(6b - 4)(6b + 4)$

Factor each completely.

97) $3v^2 + 5v + 2$

98) $2a^2 - 11a + 15$

99) $x^2 + x - 12$

100) $a^2 + 2a - 8$

101) $35p^3 + 30p^2 + 21p + 18$

102) $49m^3 + 21m^2 - 7m - 3$

103) $21r^3 + 15r^2 + 49r + 35$

104) $18v^3 + 21v^2 - 12v - 14$

Solve each equation by factoring.

105) $b^2 - 21 = 4b$

106) $n^2 + 5n - 2 = 4$

107) $k^2 - 15k + 64 = 8$

108) $5b^2 - 6 = -6 + 4b^2 + 7b$

109) $x^2 = -4x$

110) $x^2 - 4x - 6 = 4 - x$

111) $6n^2 - 10n + 6 = -5n + 5n^2$

112) $n^2 - 6 = -n$

113) $n^2 + 22n + 49 = 8n$

114) $x^2 = 1$

115) The sum of a number and its square is 42. Find the number.

116) A negative number is 12 less than its square. Find the number.

117) The square of a number is 15 more than 2 times the number. Find the number.

118) Find two consecutive negative integers whose product is 132.

119) The squares of two consecutive positive integers total 145. Find the integers.

120) The length of a rectangle is 7 cm more than the width. The area is 120. Find the dimensions of the rectangle.

121) A rectangle has a perimeter of 48m and area 135. Find the dimensions of the rectangle.

122) I am thinking of two consecutive integers. The difference between the square of the larger integer and the square of the smaller integer is 25. Find the integers.

123) The sum of two numbers is 18 and the sum of their squares is 164. Find the numbers.

124) Find two numbers that total 12 and whose squares total 90.

- 125) Originally, a rectangle was three times as long as it was wide. When 2 cm were subtracted from the length and 5 cm were added to the width, the resulting rectangle had an area of 90. Find the dimensions of the new rectangle.
- 126) The length of a rectangle is 4 cm longer than twice the width. The area of the rectangle is 96. Find the dimensions of the rectangle.
- 127) Micaela and Matt left the hospital at the same time. They traveled in opposite directions. Matt traveled 5 km/h faster than Micaela. After five hours they were 625 km apart. Find Micaela's speed.
- 128) A submarine traveled to Guam and back. The trip there took six hours and the trip back took eight hours. It averaged 6 km/h faster on the trip there than on the return trip. Find the submarine's average speed on the outbound trip.
- 129) Mary left school and drove toward the lake at an average speed of 60 mph. Alberto left sometime later driving in the same direction at an average speed of 72 mph. After driving for five hours Alberto caught up with Mary. Find the number of hours Mary drove before Alberto caught up.
- 130) John left the science museum and traveled toward the ocean. Eduardo left two hours later traveling 15 mph faster in an effort to catch up to him. After four hours Eduardo finally caught up. What was John's average speed?