

Algebra Placement Test Review 1

Simplify.

1. -5^2

2. -8^2

3. $(-5)^2$

4. $(-8)^2$

5. 5^2

6. 8^2

Rewrite using exponents.

7. $7 \cdot 7 \cdot 7 \cdot 7 \cdot 7 \cdot 7$

8. $3 \cdot 3 \cdot 3 \cdot 7 \cdot 7 \cdot 7 \cdot 7$

9. $3 \cdot 11 \cdot 3 \cdot 11 \cdot 11 \cdot 3$

Write in expanded form.

10. 5^3

11. π^5

Simplify.

12. $\frac{1}{2} \cdot 12 \cdot 4$

13. $\frac{1}{3} \cdot 6 \cdot 2$

14. $\frac{16-10x}{2}$

15. $\frac{18x+15}{3}$

16. $10 \div 5 + 5 \cdot 2$

17. $6 \div 2 + 4 \cdot 3$

18. $5 + 3(2^2 + 4) \div 2$

19. $4 - 2(3^2 - 1) \div 2$

20. $1 + 3(2^3 + 4) \div 4$

21. $2 + 2^2 \cdot 5$

22. $1 + 3^2 \div 9$

Simplify the Expression.

23. $3x - 4y + 2x - 2y$

24. $6x - 9y + 3x - 3y$

25. $10x - 15y - 10x - 5y$

26. $-8x + 12y + 8x + 4y$

27. $4f^2g + 6f^2g$

28. $5y^3z^2 - 2y^3z^2$

29. $x^3y + xy^3$

30. $a^7b^5 + a^5b^7$

31. $3x - (x + 4)$

32. $a - (5a + 1)$

33. $2x - (x - 4)$

34. $10x - (x - 10)$

Solve.

35. $\frac{3}{4}x = 7$

36. $\frac{4}{5}x = 9$

37. $\frac{x}{7} = -3$

38. $\frac{x}{4} = -5$

39. $x + 5 = -7$

40. $x + 3 = -4$

41. $-3x = 7$

42. $-5x = 9$

43. $5 - 4x = 10$

44. $-4 - y = 18$

45. $7 + 9x = 12$

46. $-3 + 10y = -4$

47. $6 = 4 - 2x$

48. $10 = 5y + 25$

49. $4x - 2 = 7x + 11$

50. $19y + 11 = 10y + 38$

51. $7x - 3 - 4x = 9$

52. $-2 + 2y + 5 - y = -1$

53. $9x - (4 + 3x) = 9$

54. $4y - (7 - 8y) = 17$

Solve for the indicated variable.

55. $A = \frac{1}{2}bh$ for h

56. $5F - 9C = 160$ for C

Translate the verbal expression into an algebraic expression or equation.

57. Four less than a number is 12.

58. Fifteen is three less than a number.

59. Six more than two-thirds of a number

60. Ten more than triple a number

61. Twenty is the product of 4 and a number

62. Fifty-six is the product of eight and a number

63. Eighty-one is the product of three and a number

64. The difference between twice a number and 5

65. The difference between half a number and sixteen

66. The difference between quadruple a number and three

67. You have \$75 to buy pizza for a party. Each slice of pizza costs \$1.25. Write an equation to determine how many slices of pizza you can buy.

68. You have \$50 to buy candy for a Halloween party. Each bag of candy costs \$2.50. Write an equation to determine how many bags of candy you can buy.

69. You have \$60 to buy pencils to give away as party favors. Each pencil costs \$0.75. Write an equation to determine how many pencils you can buy.

70. A basketball team finished its 60 games with no ties. The team won 4 times as many games as it lost. How many games did the team win?

71. The school sold 150 cookies in two days. Three times as many cookies were sold on the second day as the first. How many cookies were sold the first day?

72. A football team gained 28 yards on one play. After the play, the team was given a 5 yard penalty. However, the next play, they gained 3 yards. How many total yards did they gain on the two plays?

73. If four times a number is increased by 3, the result is 51. Find the number.

74. If six times a number is decreased by 7, the result is 41. Find the number.

75. An elevator left the 12th floor, went up 5 floors, then down 7, and back up 2. On what floor is the elevator on now?

76. A submarine was 3000 feet below sea level. It rose 640 feet, went back down 1000 feet, and rose 1300 feet. Where is the submarine now?

Translate the verbal expression into an algebraic expression or equation. Then solve.

77. One fifth of a number is 76. Find the number.

78. One fourth of a number is 123. Find the number.

79. The perimeter of a rectangle is 168 inches. The width is 54 inches. Find the length.

80. The perimeter of a rectangle is 54 cm. The width is 3 cm. Find the length.

Evaluate:

81. For $x = -3$ and $y = 2$, find the value of x^2y^3 .

82. For $x = 3$ and $y = 2$, find the value of x^2y^3 .

83. For $x = -3$ and $y = 2$, find the value of $(x+y)^2$.

84. For $x = 3$ and $y = 2$, find the value of $(x+y)^2$.

Simplify.

85. $5^6 \cdot 5^8$

86. $9^2 \cdot 9^8$

87. $x^6 \cdot x^8$

88. $y^2 \cdot y^8$

89. $(x^6)^8$

90. $(y^2)^8$

91. $(xy^6)^8$

92. $(x^2y)^8$

93. $(-5x^6y)^4$

94. $(-4x^2y)^3$

95. $5x^6 \cdot 4x^8$

96. $9y^2 \cdot 2y$

97. $5x^6(4x)^3$

98. $9y^2(9y)^4$

99. $\left(\frac{3}{4}x^5\right)^3$

100. $\left(\frac{1}{5}y^2\right)^3$

101. $(5x^6y^8)^0$

102. $(-9x^2y^5)^0$

103. $\frac{x^6}{x^8}$

104. $\frac{y^2}{y^8}$

105. 5^{-2}

106. 9^{-6}

Simplify.

107. $(5-x) - (3x+5)$

108. $(2x+9) - (4+3x)$

109. $-7y(10y-7)$

110. $-10x(3x+3)$

111. $(x^2-4x+5)+(4x^2+6x-3)$

112. $(5x^2+4x-1)+(2x^2-6x-3)$

113. $(7x^3+5)+(4x^3+2x-1)$

114. $(5x^2+4x-1)-(2x^2-6x-3)$

Distribute:

115. $(n+2)(n-3)$

116. $(x-6)(x+7)$

117. $(b+4)(b-4)$

118. $(y+2)(y-2)$

119. $(q+6)^2$

120. $(z+9)^2$

121. $(w-8)^2$

122. $(p-5)^2$

123. $(3x+1)(x-4)$

124. $(3y+6)(2y+5)$

125. $(6z-4)(3z-7)$

126. $(x-4)(2x^2-x+5)$

127. $(x-1)(2x^2-6x-3)$

128. Given that the area of a triangle is one-half the base times the height, find the area of the triangle with a base of $(2x+4)$ and a height of $(x-3)$.

129. Given that the area of a rectangle is length times the width, find the area of the rectangle with a length of $(2x+4)$ and a width of $(x-3)$

Find the solution to the given equation.

130. $(5x+1)(x-3) = 0$

131. $(4x-2)(x+5) = 0$

132. $(x+5)^2 = 0$

133. $(x-7)^2 = 0$

134. $x(x+2)(x-4) = 0$

135. $7(x+5)(x-3) = 0$

136. $a(a+5) = 0$

137. $y(y-4) = 0$

138. $(7x-3)(x-4)(3x-7) = 0$

139. $(3x-5)(x-5)(4x-3) = 0$

Find the greatest common factor.

140. $3x^2 - 6x$

141. $7x^2 - 49x$

142. $10y^4 + 6y^3 + 14y$

143. $27x^4 + 9x^3 + 3x$

Factor completely.

144. $3x^3 - 27x$

145. $2x^2 - 50x$

146. $2y^4 - 2y^3 - 12y^2$

147. $4y^4 + 12y^3 - 40y^2$

148. $2y^2 - 16y + 32$

149. $3y^3 - 30y + 75$

Solve.

150. $y^2 - y - 12 = 0$

151. $y^2 + 10y + 21 = 0$

152. $y^2 - 7y = -10$

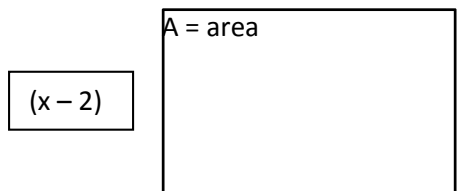
153. $y^2 - y - 12 = 0$

154. $y^2 - 6y = 0$

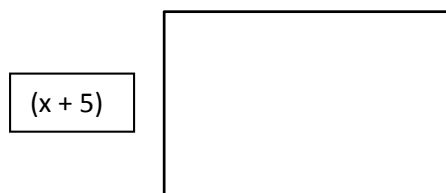
155. $y^2 - 8y = 0$

Use factoring to find an expression for the missing side of the rectable

156. $A = x^2 - 6x + 8$



157. $A = x^2 + 2x - 15$



For the following questions, find the factors by choose from these factors.

a. $(x+2)$ b. $(x+4)$ c. $(x-2)$ d. $(x-4)$

e. $(x+3)$ f. $(x+6)$ g. $(x-3)$ h. $(x-6)$

158. $x^2 - x - 12$

159. $x^2 - 16$

160. $x^2 - 4x - 12$

161. $x^2 + x - 12$

162. $x^2 + 4x - 12$

For the following questions, find the factors by choose from these factors.

a. $(x+5)$ b. $(3x+5)$ c. $(x-5)$ d. $(3x-5)$ e. $(3x+1)$

f. $(9x+1)$ g. $(3x-1)$ h. $(9x-1)$ i. $(3x+1)^2$

163. $9x^2 + 12x - 5$

164. $9x^2 + 6x + 1$

165. $9x^2 + 44x - 5$

166. $9x^2 - 44x - 5$

167. $9x^2 - 12x - 5$

Algebra Placement Test Review 1 Answers

1. -25
2. -64
3. 25
4. 64
5. 25
6. 64
7. 7^6
8. $3^3 7^4$
9. $3^3 11^3$
10. $5 \cdot 5 \cdot 5$
11. $\pi \cdot \pi \cdot \pi \cdot \pi \cdot \pi$
12. 24
13. 4
14. $8-5x$
15. $6x+5$
16. 12
17. 15
18. 17
19. -4
20. 10
21. 22
22. 2
23. $5x-6y$
24. $9x-12y$
25. $-20y$
26. $16y$
27. $10f^2g$
28. $3y^3z^2$
29. Cannot simplify, not like terms
30. Cannot simplify, not like terms
31. $2x-4$
32. $-4a-1$
33. $X+4$
34. $9x+10$
35. $28/3$
36. $45/4$
37. -21
38. -20
39. -12
40. -7
41. $-7/3$
42. $-9/5$
43. $-5/4$
44. -22
45. $5/9$
46. $-1/10$
47. -1
48. -3
49. $-13/3$
50. 3
51. 4
52. -4
53. $13/6$
54. 2
55. $2A/b$
56. $(5F-160)/9$
57. $X-4=12$
58. $15=x-3$
59. $2/3x+6$
60. $3x+10$
61. $20=4x$
62. $56=8x$
63. $81=3x$
64. $2x-5$
65. $\frac{1}{2}x-16$
66. $4x-3$
67. $1.25x=75$
68. $2.5x=50$
69. $.75x=60$
70. 48
71. 37.5
72. 26
73. 12
74. 8
75. 12
76. -2060
77. 380
78. 492
79. 30
80. 24
81. 72
82. 72
83. 1
84. 25

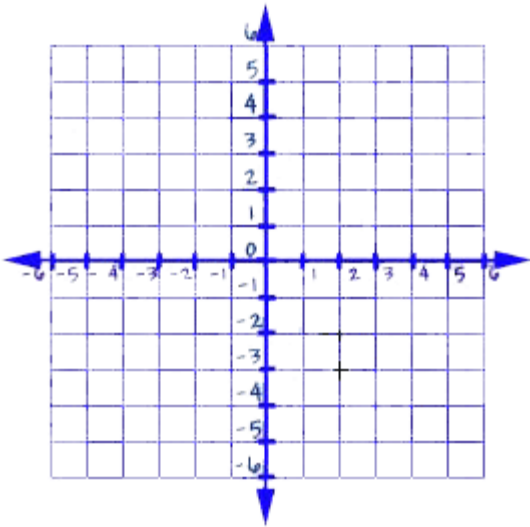
85. 5^{14}
 86. 9^{10}
 87. x^{14}
 88. y^{10}
 89. x^{48}
 90. y^{16}
 91. $x^8 y^{6 \cdot 8}$
 $x^8 y^{48}$
 92. $x^{2 \cdot 8} y^8$
 $x^{16} y^8$
 93. $(-5)^4 x^{6 \cdot 4} y^4$
 $(-5)^4 x^{24} y^4$
 94. $(-4)^3 x^{2 \cdot 3} y^3$
 $-64x^6 y^3$
 95. $5 \cdot 4x^{6+8}$
 $20x^{14}$
 $9 \cdot 2y^{2+1}$
 96. $18y^3$
 $5x^6 \cdot 4^3 x^3$
 97. $5 \cdot 64x^{6+3}$
 $320x^9$
 $9y^2 \cdot 9^4 y^4$
 98. $9 \cdot 9^4 y^{2+4}$
 $9^5 y^6$
 $\frac{3^3}{4^3} x^{5 \cdot 3}$
 99. $\frac{27}{64} x^{15}$
 100. $\frac{1^3}{5^3} y^{2 \cdot 3}$
 $\frac{1}{125} y^6$
 101. 1
 102. 1
103. x^{6-8}
 x^{-2}
 $\frac{1}{x^2}$
 y^{2-8}
 104. y^{-6}
 $\frac{1}{y^6}$
 105. $1/25$
 106. $1/9^6$
 107. $-4x$
 108. $-x+5$
 109. $-70y^2 + 49y$
 110. $-30x^2 - 30x$
 111. $5x^2 + 2x + 2$
 112. $7x^2 - 2x - 4$
 113. $11x^3 + 2x + 4$
 114. $3x^2 + 10x + 2$
 115. $n^2 - 3n + 2n - 6$
 $n^2 - n - 6$
 $x^2 + 7x - 6x - 42$
 116. $x^2 + x - 42$
 $b^2 - 4b + 4b - 16$
 117. $b^2 - 16$
 $y^2 - 2y + 2y - 4$
 118. $y^2 - 4$
 $(q+6)(q+6)$
 119. $q^2 + 12q + 36$
 $(z+9)(z+9)$
 120. $z^2 + 18z + 81$
 $(w-8)(w-8)$
 121. $w^2 - 16w + 64$
 $(p-5)(p-5)$
 122. $p^2 - 10p + 25$
 $3x^2 - 12x + x - 4$
 123. $3x^2 - 11x - 4$

124. $6y^2 + 15y + 12y + 30$
 $6y^2 + 27y + 30$
125. $18z^2 - 42z - 12z + 28$
 $18z^2 - 54z + 28$
126. $2x^3 - 5x^2 + 9x - 20$
127. $2x^3 - 8x^2 + 3x + 3$
 $\frac{1}{2}(2x+4)(x-3)$
128. $\frac{1}{2}(2x^2 - 2x - 12)$
 $x^2 - x - 6$
129. $2x^2 - 2x - 12$
130. $-1/5, 3$
131. $1/2, -5$
132. -5
133. 7
134. $0, -2, 4$
135. $-5, 3$
136. $0, -5$
137. $0, 4$
138. $3/7, 4, 7/3$
139. $5/3, 5, 3/4$
140. $3x$
141. $7x$
142. $2y$
143. $3x$
144. $3x(x+3)(x-3)$
145. $2x(x-25)$
 $2y^2(y^2 - y - 6)$
146. $2y^2(y-3)(y+2)$
 $4y^2(y^2 + 3y - 10)$
147. $4y^2(y+5)(y-2)$
 $2(y^2 - 8y + 16)$
148. $2(y-4)(y-4)$
or $2(y-4)^2$
149. $3(y^3 - 10y + 25)$
150. $(y-4)(y+3) = 0$
 $y = 4, y = -3$
151. $(y+7)(y+3) = 0$
 $y = -7, y = -3$
152. $2, 5$
153. $(y-4)(y+3) = 0$
 $y = 4, y = -3$
154. $0, 6$
155. $0, 8$
156. $(x-4)$
157. $(x-3)$
158. DE
159. BD
160. AH
161. BG
162. CF
163. BG
164. I
165. AH
166. CF
167. DE
- 168.

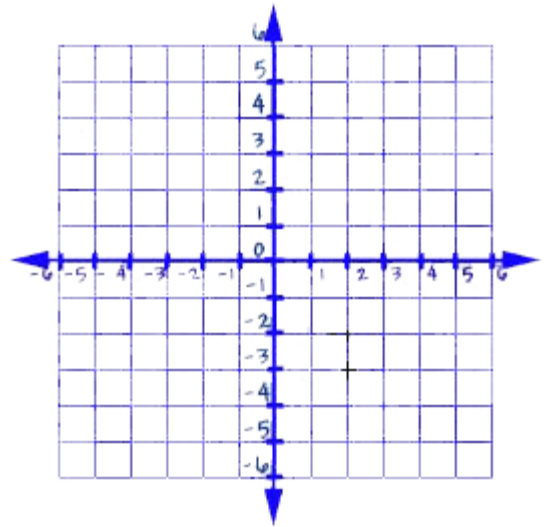
Algebra 1**Placement Exam Review Part 2**

- Given $y = mx + b$ what does m represent? What does b represent?
- What axis is generally used for x ?
- What axis is generally used for y ?
- Given the equation $y = \frac{5}{8}x - 4$ what is the slope? What is the y -intercept?
- Given the equation $y = -\frac{2}{3}x + 7$ what is the slope of the line parallel to this line? What is the slope of the line perpendicular to this line?

- Graph the function $x = -2$



- Graph the function $y = 4$



- Find the slope of the line that passes through the points $(6, 2)$ and $(-3, 7)$.

What is the x -intercept of the given function?

- $4x - y = 8$

- $3x - 2y = 24$

- $5x + 2y = 10$

- $-2x + 4y = 8$

What is the y-intercept of the given function?

13. $4x - y = 8$

14. $3x - 2y = 24$

15. $5x + 2y = 10$

16. $-2x + 4y = 8$

What is the slope of the given function?

17. $4x - y = 8$

18. $3x - 2y = 24$

Convert the given function into slope-intercept form.

19. $4x - y = 8$

20. $3x - 2y = 24$

21. Which point is on the line $y = \frac{2}{3}x + 1$?

- a) (-3, 1) b) (2, 1)
- c) (3, 3) d) (-2, 3)

22. Which point is on the line $y = \frac{1}{4}x - 2$?

- a) (0, 2) b) (4, -1)
- c) (4, -2) d) (2, 0)

23. Which point is on the line $3x - y = 9$?

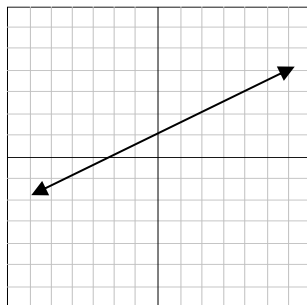
- a) (6, 2) b) (4, -2)
- c) (3, 0) d) (-3, 0)

24. Which point is on the line $5x + y = 10$?

- a) (2, 0) b) (2, -5)
- c) (5, -10) d) (0, -5)

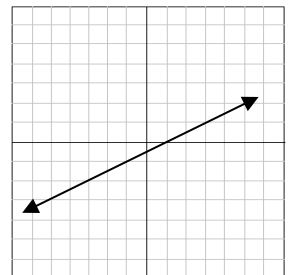
25. Which point is on the line shown on the graph?

- a) (1, 0)
- b) (3, 4)
- c) (4, 3)
- d) (0, -2)



26. Which point is on the line shown on the graph?

- a) (2, 0)
- b) (3, 1)
- c) (3, -3)
- d) (-3, 1)



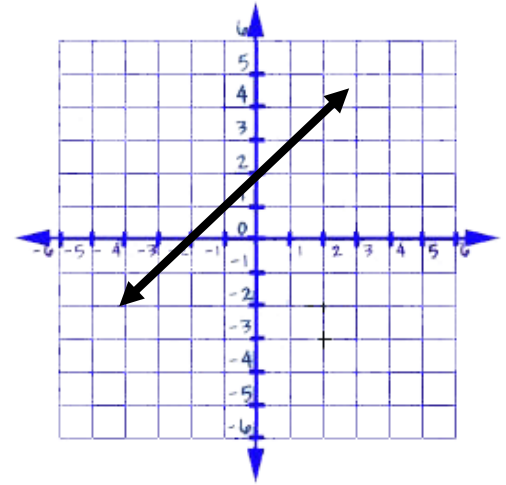
27. Is $(4, 3)$ a solution to the equation $y = -3x + 10$?

28. Is $(4, 3)$ a solution to the equation $y = 3x - 9$?

For problems 29 and 30 use the graph to the right.

29. Is the point $(3, 1)$ a solution to the equation of this line?

30. Is the point $(-2, 0)$ a solution to the equation of this line?



Convert the following equations to standard form with integer coefficients.

31. $y = \frac{1}{2}x - 4$

32. $y = -\frac{2}{3}x + 1$

Given the following slope, what is the slope of a parallel line?

33. Given slope = $-\frac{3}{4}$

34. Given slope = 5

Given the following slope, what is the slope of a perpendicular line?

35. Given slope = $-\frac{3}{4}$

36. Given slope = 5

Write an equation of a line in *point-slope form* that goes through the given point and has the given slope.

37. $(3, 5)$; $m = 2$

38. $(6, 1)$; $m = \frac{1}{2}$

39. $(-1, 2)$; $m = -3$

40. $(2, -2)$; $m = -\frac{3}{4}$

Write an equation of a line in *slope-intercept form* that has the given y-intercept and the given slope.

41. y-intercept is -2 and the slope is $\frac{5}{8}$

42. y-intercept is 13 and the slope is 4

Write an equation of a line in *slope-intercept form* that goes through the given point and has the given slope.

43. $(0, 2)$; -2

44. $(0, -5)$; $\frac{4}{3}$

Write an equation of a line in *slope-intercept form* that goes through the given point and has the given slope.

45. $(-3, 4)$ and has a slope of 0

46. $(-3, 4)$ and has an undefined slope

Write the equation of the line in *slope intercept form* that goes through the given points.

47. $(-3, 4)$ and $(1, 12)$

48. $(2, 4)$ and $(-2, 0)$

Write in equation of the line in *slope-intercept form* that goes through the given points and has the given slope.

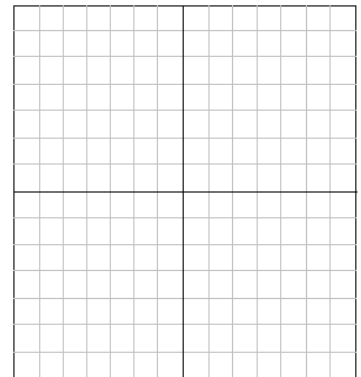
49. $(-3, 4)$ and has a slope of -2

50. $(-3, 4)$ and $m = 3$

51. Write the equation of the line that goes through $(0, 0)$ and $m = 3$.

52. Plot the following points on the given plane.

$(4, 0)$ $(0, -4)$ $(-1, 5)$ $(-5, -1)$

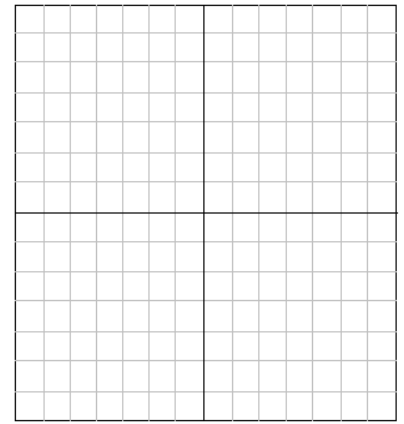
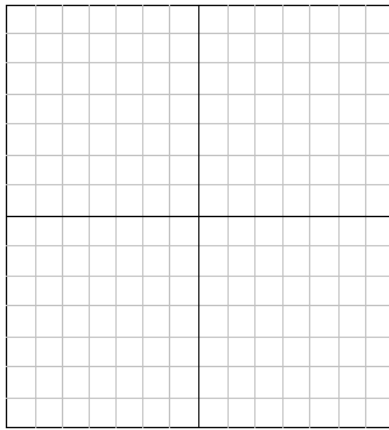
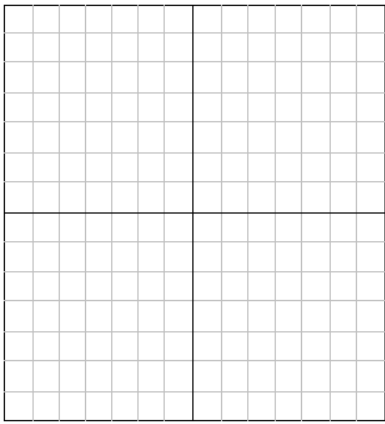


Graph each of the following equations.

53. $y = -x$

54. $y = 3x$

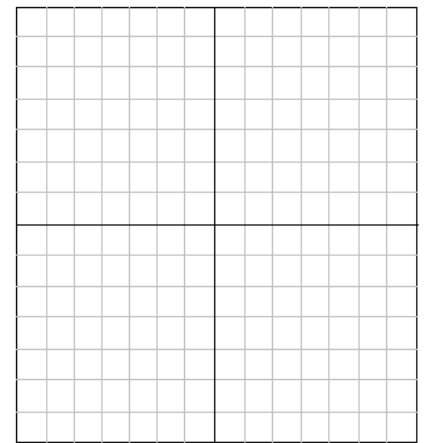
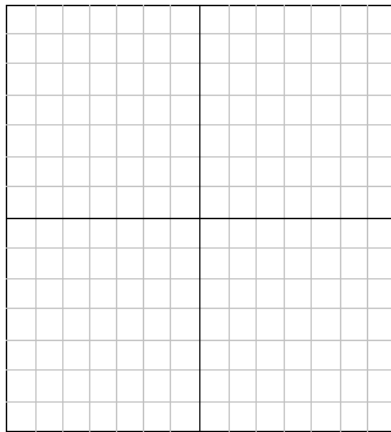
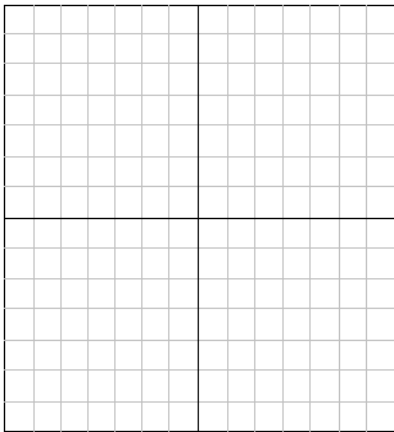
55. $y = \frac{1}{3}x$



56. $y = \frac{3}{2}x$

57. $y = \frac{2}{3}x + 4$

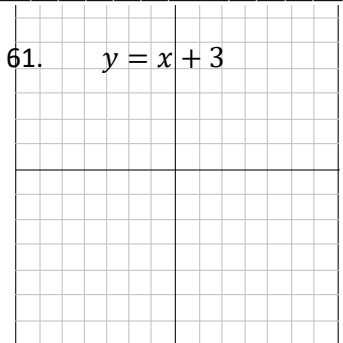
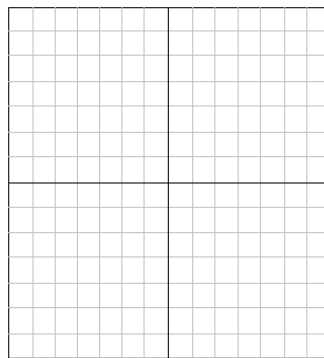
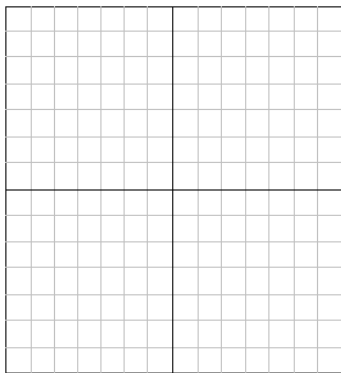
58. $3y = 9x - 6$



59. $y = -x + 3$

60. $y = x$

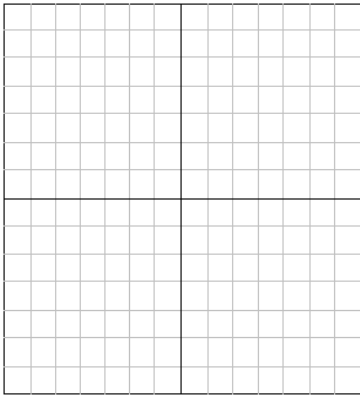
61. $y = x + 3$



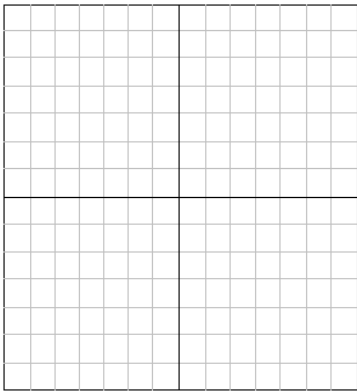
62. $y = x + 4$

63. $y = -\frac{2}{3}x + 3$

64. $y = -\frac{1}{3}x + 4$

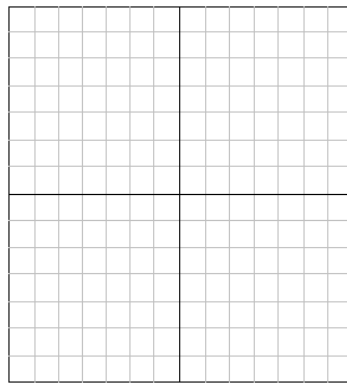


64. $y = -3x$

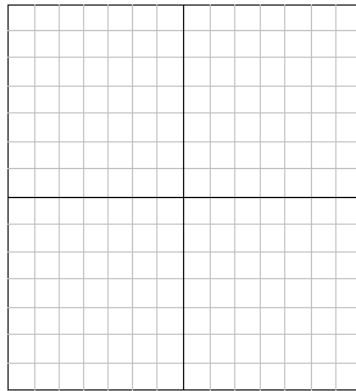


$x = 5$

68.

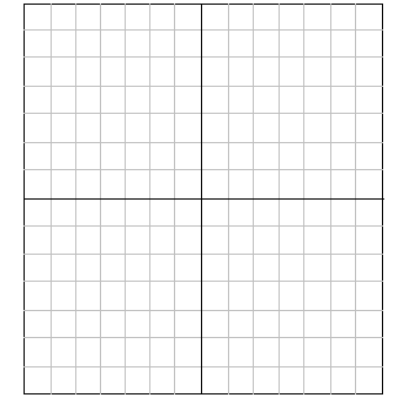


66. $y = \frac{4}{3}x - 2$

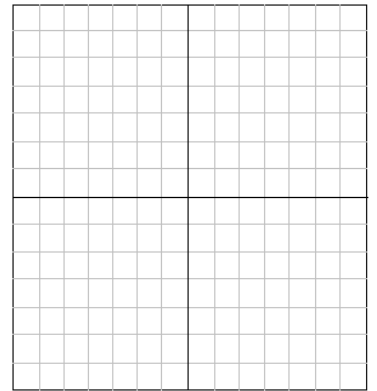


70.

$y = 2$

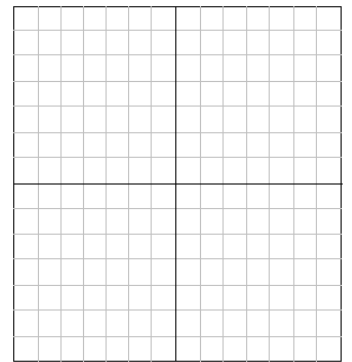
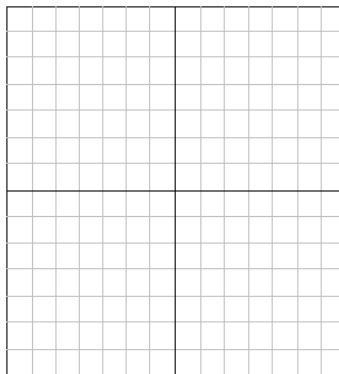
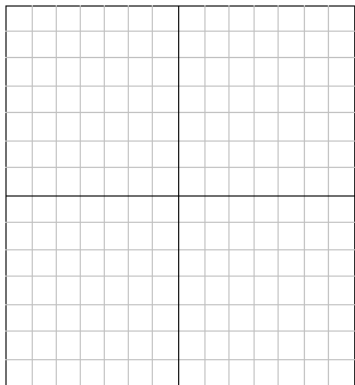


67. $y = \frac{3}{2}x - 4$

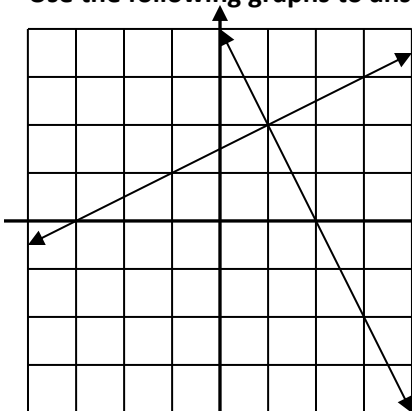


$x = 2$

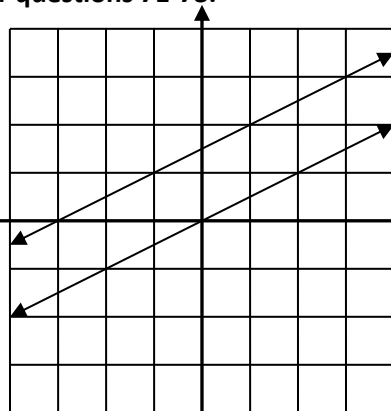
69.



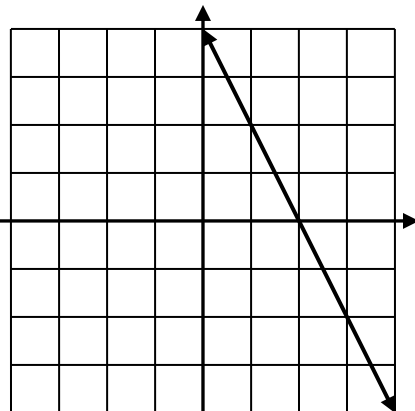
Use the following graphs to answer questions 71-73.



Graph A



Graph B



Graph C

71. Which of the graphs above suggests one solution to the system of linear equations?

72. Which of the graphs above suggests no solutions to the system of linear equations?

73. Which of the graphs above suggests an infinite number of solutions to the system of linear equations?

74. When algebraically solving the system of linear equations represented in Graph A, one might get
 a. $x=1, y=2$ b. $2=2$ c. $2=3$ d. none of these

75. When algebraically solving the system of linear equations represented in Graph B, one might get
 a. $x=1, y=2$ b. $2=2$ c. $2=3$ d. none of these

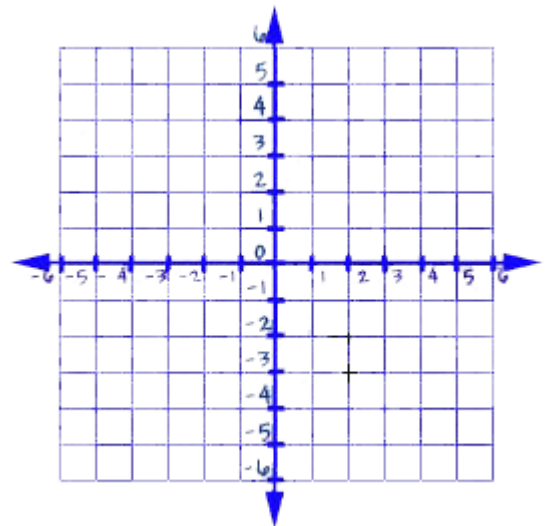
76. When algebraically solving the system of linear equations represented in Graph C, one might get
 a. $x=1, y=2$ b. $2=2$
 c. $2=3$ d. none of these

77. Graph the following equations $y=3x+4$ and $y=-3x-2$ on the same plane.

Use the quadratic formula to solve each of the following equations.

78. $x^2 + 3x - 2 = 0$

79. $3x^2 + 6x - 6 = 0$



80. $2x^2 - 1 = 3x$

81. $4x^2 + 13x - 12 = 0$

Solve.

82. $-5 - a > 25$

83. $-7 + a < 21$

84. $-7a > 35$

85. $-3x < 15$

86. $25 \geq 5a$

87. $30 \leq 2x$

88. $\frac{a}{10} \leq -7$

89. $\frac{a}{5} \geq -9$

90. $-\frac{a}{5} \geq 3$

91. $-\frac{a}{3} \leq 4$

92. $-\frac{1}{7}a \leq 3$

93. $-\frac{1}{3}a \geq 2$

94. $4x + 5 \geq 5$

95. $5x \geq 10$

96. $x - 4 \geq 8$

97. $x - 7 \geq 3$

98. $a + 4 \leq 12$

99. $a + 7 \leq 21$

100. $5a > 20$

101. $4a > 40$

102. $-2x - 5 > 4x - 8$

103. $4x - 3 > 2x + 3$

104. $x + 5 \leq 3(x - 3)$

105. $-2x + 5 > -(3x + 2)$

Simplify the following radicals.

106. $\sqrt{36}$

107. $-\sqrt{81}$

108. $\sqrt{2-1}$

109. $\sqrt{-5+5}$

110. $\sqrt{48}$

111. $\sqrt{75}$

112. $\sqrt{45}$

113. $\sqrt{\frac{36}{81}}$

114. $\sqrt{\frac{2}{9}}$

115. $\sqrt{\frac{25}{100}}$

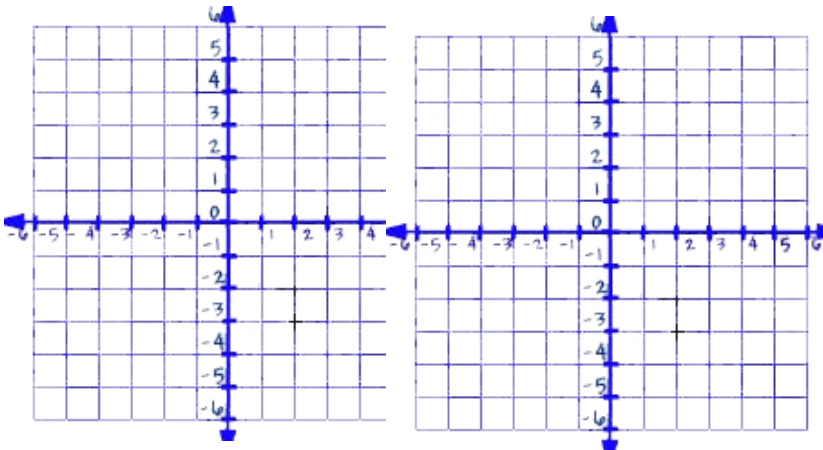
116. When graphing $y = x^2 - 5$, what is the x-coordinate of the vertex?

117. When graphing $y = x^2 + 4$, what is the x-coordinate of the vertex?

Graph the following equations.

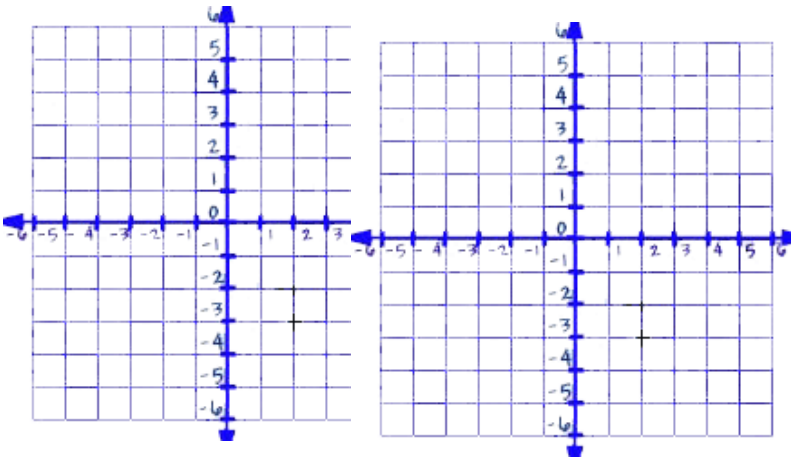
118. $y = x^2$

119. $y = x^2 + 4$



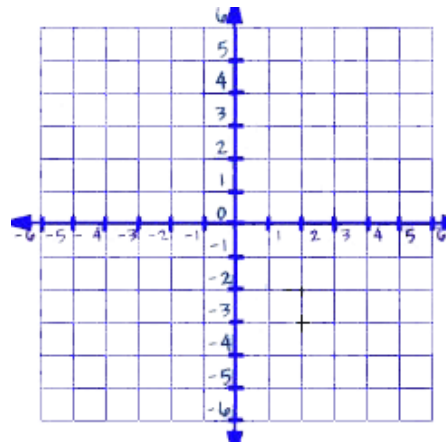
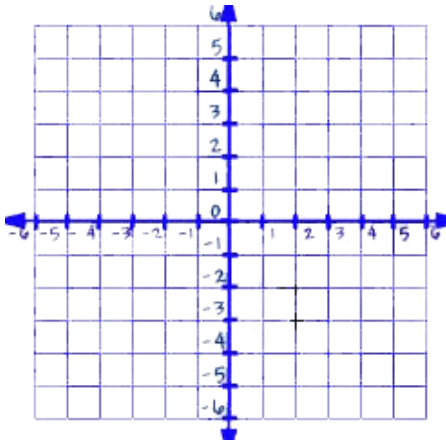
120. $y = x^2 - 4$

121. $y = (x + 4)^2$



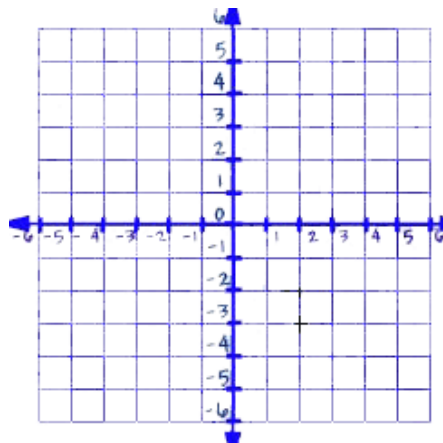
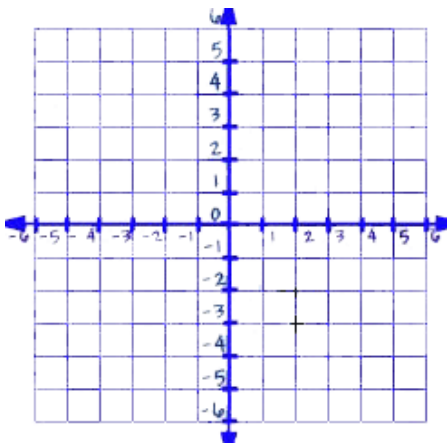
122. $y = (x - 4)^2$

123. $y = (x - 4)^2 + 4$



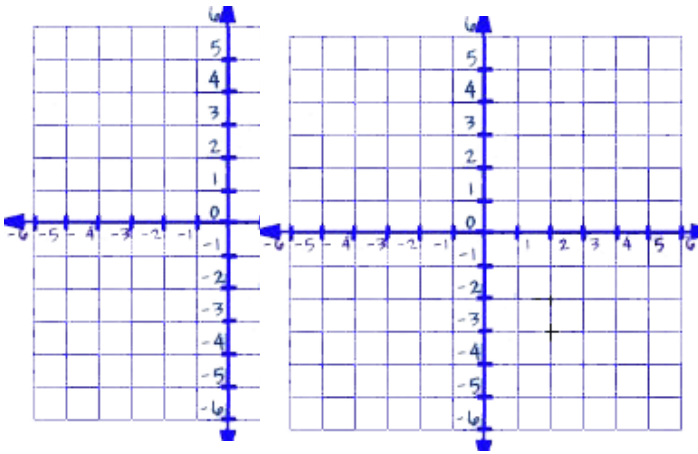
124. $y = (x + 4)^2 + 4$

125. $y = -x^2$



126. $y = 4x^2$

127. $y = \frac{1}{4}x^2$



128. Find the vertex for: $y = (x-7)^2 + 5$

129. Find the vertex for: $y = (x+1)^2 - 5$

130. Find the vertex for: $y = -2(x+5)^2 + 7$

131. Find the vertex for: $y = \frac{2}{3}(x+3)^2 - 18$

Express radicals in simplest form.

132. $3\sqrt{24}$

133. $9\sqrt{128}$

134. $\sqrt{3} \cdot \sqrt{3}$

135. $\sqrt{107} \cdot \sqrt{107}$

136. $\sqrt{6} \cdot \sqrt{12}$

137. $\sqrt{2} \cdot \sqrt{26}$

138. $6\sqrt{50}$

139. $\frac{1}{3}\sqrt{162}$

140. When graphing $y = ax^2 + bx + c$, how do you calculate the x-coordinate of the vertex?

141. After finding the x-coordinate of the vertex, how do you find the y-coordinate?

Find the x-coordinate of the vertex of the given equations.

142. $y = x^2 + 4x + 7$

143. $y = x^2 - 4x + 7$

144. $y = -x^2 - 16x + 1$

145. $y = -x^2 + 16x + 1$

146. $y = 3x^2 + 12x - 11$

147. $y = -2x^2 - 14x - 9$

148. $y = -2x^2 + 7x - 5$

149. $y = 15x^2 - 12x + 17$

150. $y = x^2 - 4$

151. $y = -7x^2$

Algebra 1

Placement Exam Review Part 2 Answers

1. Given $y = mx + b$ what does m represent? What does b represent?

m is the slope, b is the y-intercept

2. What axis is generally used for x ?

Horizontal axis

3. What axis is generally used for y ?

Vertical axis

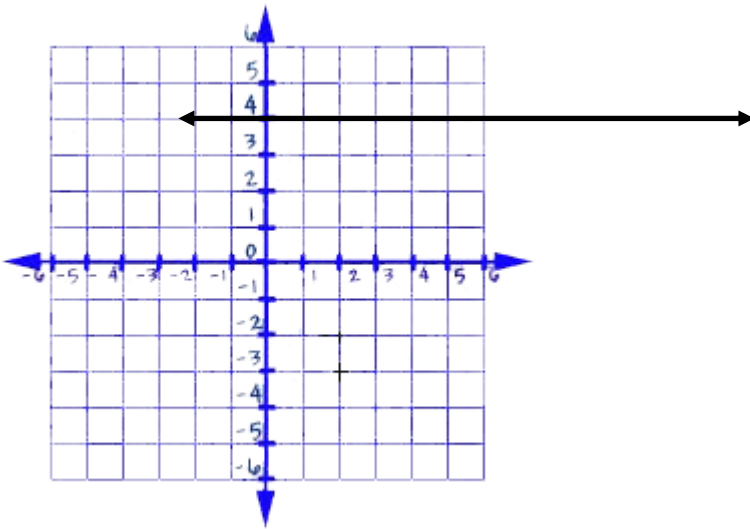
4. Given the equation $y = \frac{5}{8}x - 4$ what is the slope? What is the y-intercept?

Slope = $\frac{5}{8}$, y-intercept = $(0, -4)$

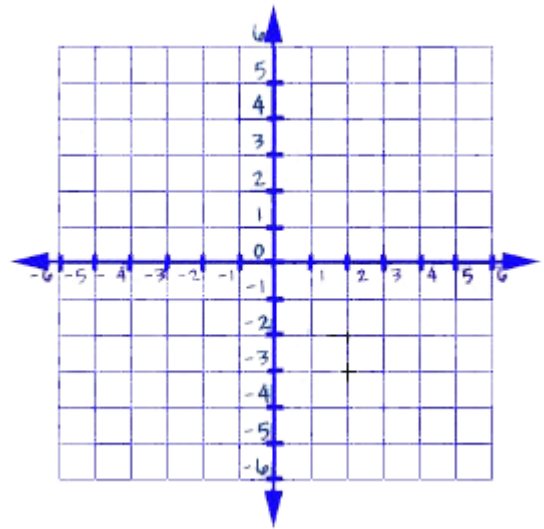
5. Given the equation $y = -\frac{2}{3}x + 7$ what is the slope of the line parallel to this line? What is the slope of the line perpendicular to this line?

Parallel slope = $-\frac{2}{3}$, Perpendicular slope = $\frac{3}{2}$

6. Graph the function $x = -2$



7. Graph the function $y = 4$



8. Find the slope of the line that passes through the points $(6, 2)$ and $(-3, 7)$.

Slope = $-\frac{5}{9}$

What is the x-intercept of the given function?

9. $4x - y = 8$
 $(2, 0)$

10. $3x - 2y = 24$
 $(8, 0)$

11. $5x + 2y = 10$
 $(2, 0)$

12. $-2x + 4y = 8$
 $(-4, 0)$

What is the y-intercept of the given function?

13. $4x - y = 8$
 $(0, -8)$

14. $3x - 2y = 24$
 $(0, -12)$

15. $5x + 2y = 10$
 (0, 5)

What is the slope of the given function?

17. $4x - y = 8$
 slope = 4

Convert the given function into slope-intercept form.

19. $4x - y = 8$
 $y = 4x - 8$

16. $-2x + 4y = 8$
 (0, 2)

18. $3x - 2y = 24$
 slope = $\frac{3}{2}$

20. $3x - 2y = 24$
 $y = \frac{3}{2}x - 12$

21. Which point is on the line $y = \frac{2}{3}x + 1$?

- a) (-3, 1) b) (2, 1)
 c) (3, 3) d) (-2, 3)

C

22. Which point is on the line $y = \frac{1}{4}x - 2$?

- a) (0, 2) b) (4, -1)
 c) (4, -2) d) (2, 0)

B

23. Which point is on the line $3x - y = 9$?

- a) (6, 2) b) (4, -2)
 c) (3, 0) d) (-3, 0)

C

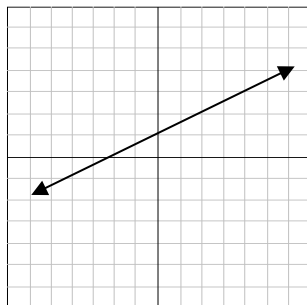
24. Which point is on the line $5x + y = 10$?

- a) (2, 0) b) (2, -5)
 c) (5, -10) d) (0, -5)

A

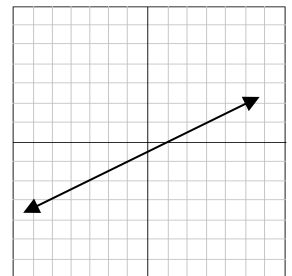
25. Which point is on the line shown on the graph?

- a) (1, 0)
 b) (3, 4)
 c) (4, 3) ← this one
 d) (0, -2)



26. Which point is on the line shown on the graph?

- a) (2, 0)
 b) (3, 1) ← this one
 c) (3, -3)
 d) (-3, 1)



27. Is (4, 3) a solution to the equation $y = -3x + 10$?

No

28. Is (4, 3) a solution to the equation $y = 3x - 9$?

Yes

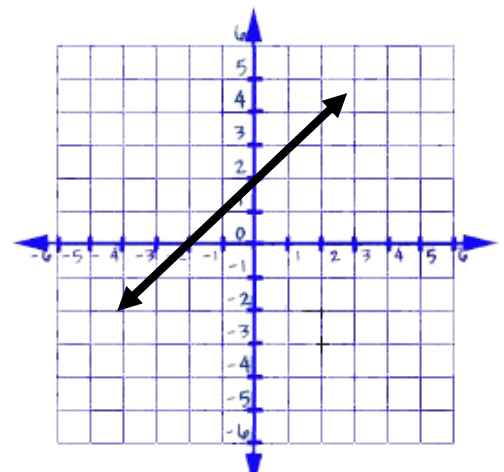
For problems 29 and 30 use the graph to the right.

29. Is the point (3, 1) a solution to the equation of this line?

No

30. Is the point (-2, 0) a solution to the equation of this line?

Yes



Convert the following equations to standard form with integer coefficients.

$$31. y = \frac{1}{2}x - 4$$

$$x - 2y = 8$$

$$32. y = -\frac{2}{3}x + 1$$

$$2x + 3y = 3$$

Given the following slope, what is the slope of a parallel line?

$$33. \text{ Given slope} = -\frac{3}{4}$$

$$\text{Parallel slope} = -\frac{3}{4}$$

$$34. \text{ Given slope} = 5$$

$$\text{Parallel slope} = 5$$

Given the following slope, what is the slope of a perpendicular line?

$$35. \text{ Given slope} = -\frac{3}{4}$$

$$\text{Perpendicular slope} = \frac{4}{3}$$

$$36. \text{ Given slope} = 5$$

$$\text{Perpendicular slope} = -\frac{1}{5}$$

Write an equation of a line in *point-slope form* that goes through the given point and has the given slope.

$$37. (3, 5); m = 2$$

$$y - 5 = 2(x - 3)$$

$$38. (6, 1); m = \frac{1}{2}$$

$$y - 1 = \frac{1}{2}(x - 6)$$

$$39. (-1, 2); m = -3$$

$$y - 2 = -3(x + 1)$$

$$40. (2, -2); m = -\frac{3}{4}$$

$$y + 2 = -\frac{3}{4}(x - 2)$$

Write an equation of a line in *slope-intercept form* that has the given y-intercept and the given slope.

$$41. \text{ y-intercept is } -2 \text{ and the slope is } \frac{5}{8}$$

$$y = \frac{5}{8}x - 2$$

$$42. \text{ y-intercept is } 13 \text{ and the slope is } 4$$

$$y = 4x + 13$$

Write an equation of a line in *slope-intercept form* that goes through the given point and has the given slope.

$$43. (0, 2); -2$$

$$y = -2x + 2$$

$$44. (0, -5); \frac{4}{3}$$

$$y = \frac{4}{3}x - 5$$

Write an equation of a line in *slope-intercept form* that goes through the given point and has the given slope.

$$45. (-3, 4) \text{ and has a slope of } 0$$

$$y = 4$$

$$46. (-3, 4) \text{ and has an undefined slope}$$

$$x = -3$$

Write the equation of the line in *slope intercept form* that goes through the given points.

$$47. (-3, 4) \text{ and } (1, 12)$$

$$y = 2x + 10$$

$$48. (2, 4) \text{ and } (-2, 0)$$

$$y = x + 2$$

Write in equation of the line in *slope-intercept form* that goes through the given points and has the given slope.

$$49. (-3, 4) \text{ and has a slope of } -2$$

$$y = -2x - 2$$

$$50. (-3, 4) \text{ and } m = 3$$

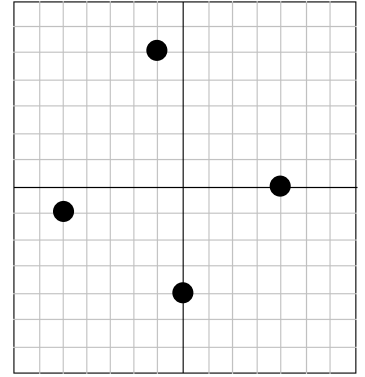
$$y = 3x + 13$$

51. Write the equation of the line that goes through $(0,0)$ and $m = 3$.

$$y = 3x$$

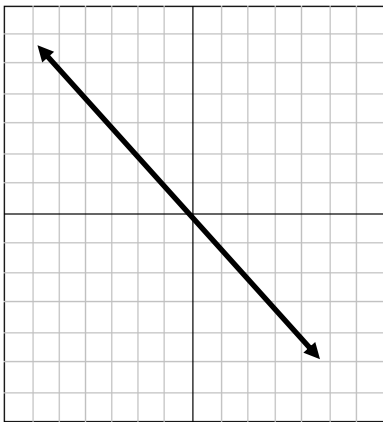
52. Plot the following points on the given plane.

$(4,0)$ $(0,-4)$ $(-1,5)$ $(-5,-1)$

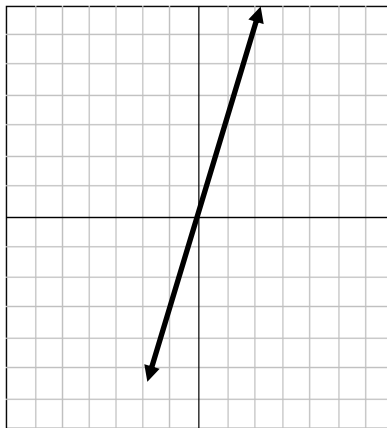


Graph each of the following equations.

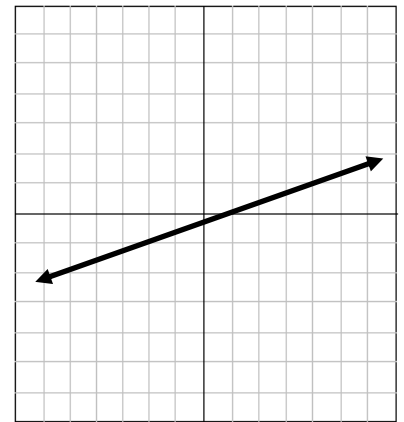
53. $y = -x$



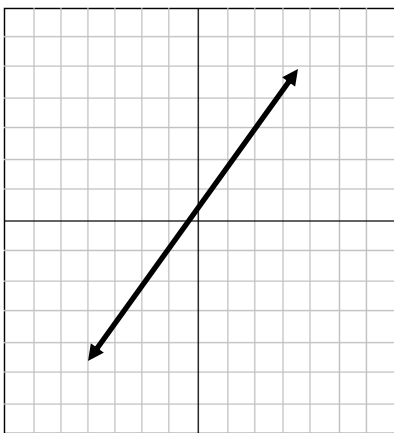
54. $y = 3x$



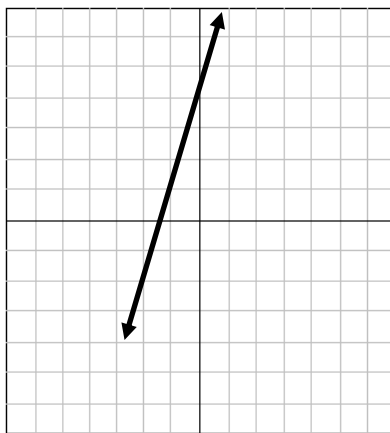
55. $y = \frac{1}{3}x$



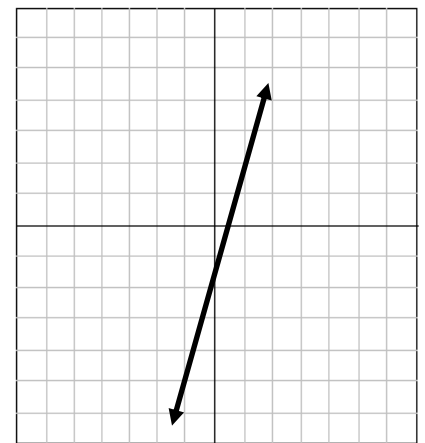
56. $y = \frac{3}{2}x$



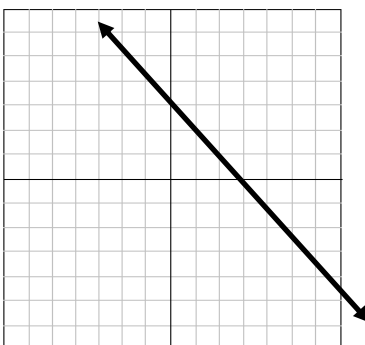
57. $y = \frac{2}{3}x + 4$



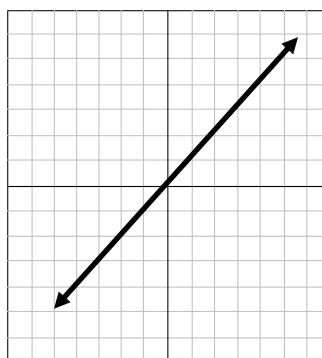
58. $3y = 9x - 6$



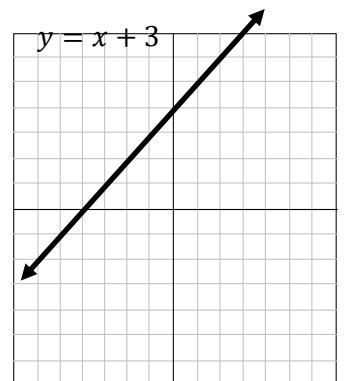
59. $y = -x + 3$



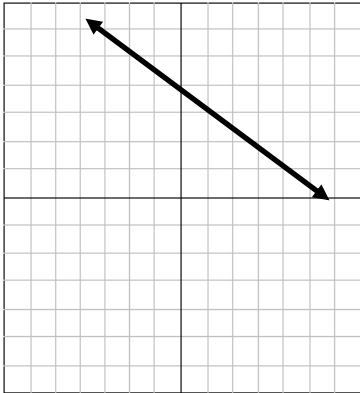
60. $y = x$



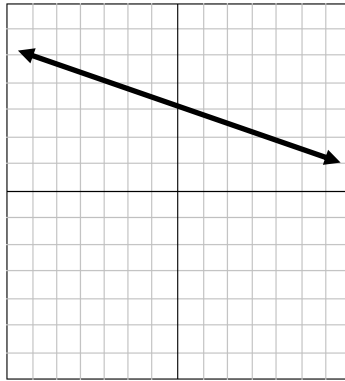
61. $y = x + 3$



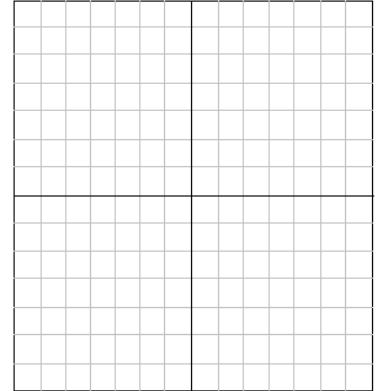
62. $y = x + 4$



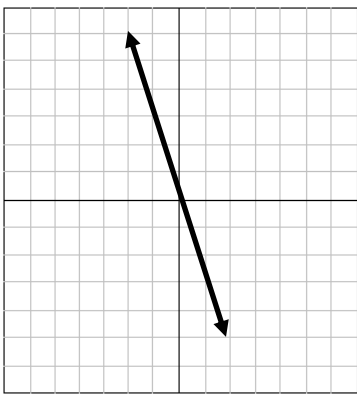
63. $y = -\frac{2}{3}x + 3$



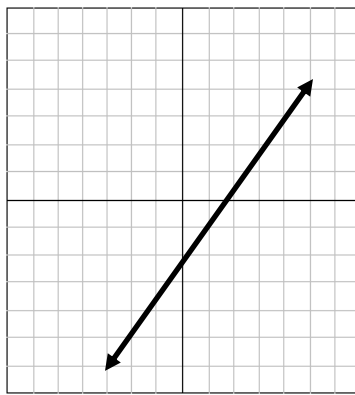
64. $y = -\frac{1}{3}x + 4$



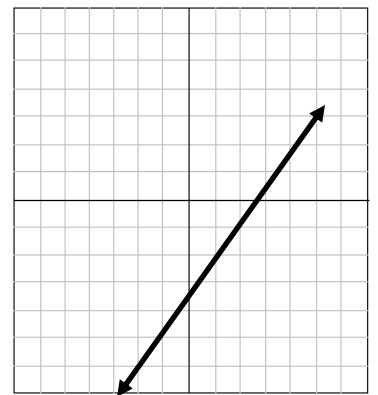
65. $y = -3x$



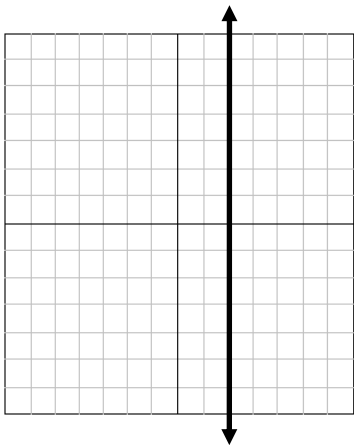
66. $y = \frac{4}{3}x - 2$



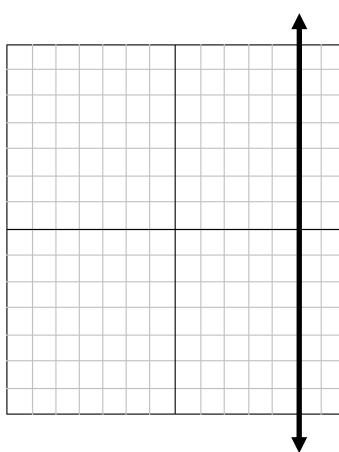
67. $y = \frac{3}{2}x - 4$



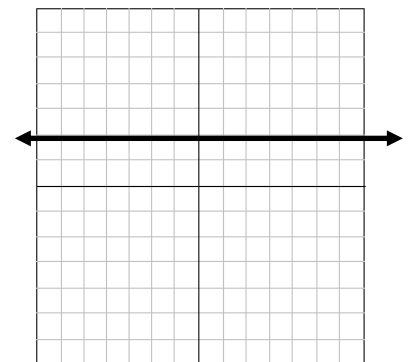
68. $x = 2$



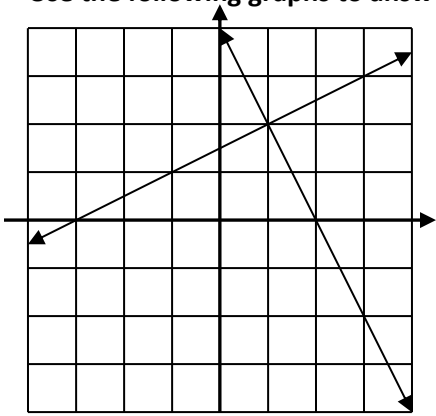
69. $x = 5$



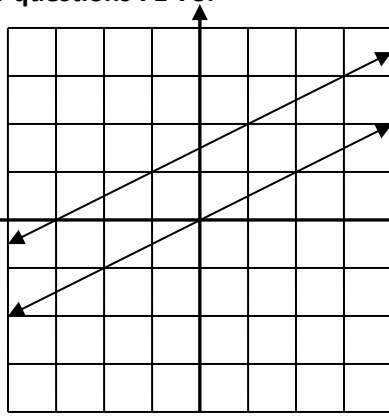
70. $y = 2$



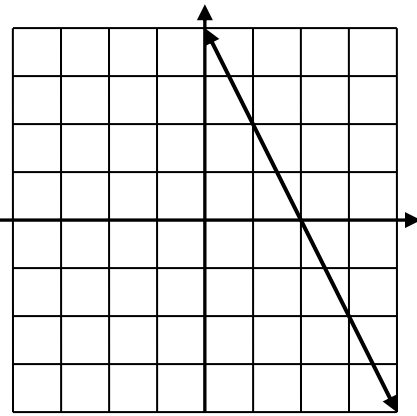
Use the following graphs to answer questions 71-73.



Graph A



Graph B



Graph C

71. Which of the graphs above suggests one solution to the system of linear equations?

A

72. Which of the graphs above suggests no solutions to the system of linear equations?

B

73. Which of the graphs above suggests an infinite number of solutions to the system of linear equations?

C

74. When algebraically solving the system of linear equations represented in Graph A, one might get

- a. $x = 1, y = 2$ b. $2 = 2$ c. $2 = 3$ d. none of these

A

75. When algebraically solving the system of linear equations represented in Graph B, one might get

- a. $x = 1, y = 2$ b. $2 = 2$ c. $2 = 3$ d. none of these

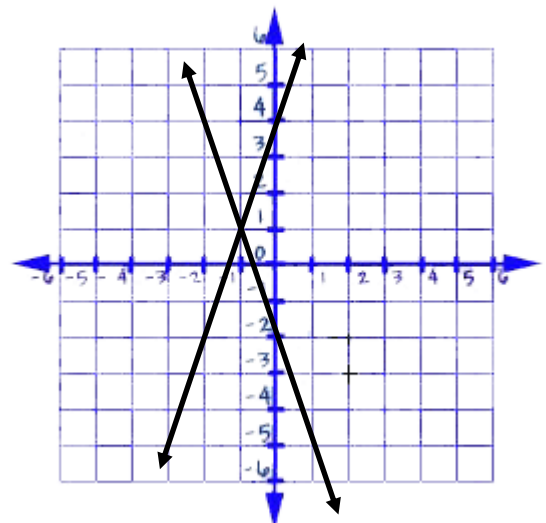
C

76. When algebraically solving the system of linear equations represented in Graph C, one might get

- a. $x = 1, y = 2$ b. $2 = 2$ c. $2 = 3$ d. none of these

B

77. Graph the following equations $y = 3x + 4$ and $y = -3x - 2$ on the same plane.



Simplify.**Use the quadratic formula to solve each of the following equations.**

78. $x^2 + 3x - 2 = 0$

$$\begin{aligned}
 x &= \frac{-3 \pm \sqrt{(3)^2 - 4(1)(-2)}}{2(1)} \\
 &= \frac{-3 \pm \sqrt{9+8}}{2} \\
 &= \frac{-3 \pm \sqrt{17}}{2}
 \end{aligned}$$

79. $3x^2 + 6x - 6 = 0$

$$\begin{aligned}
 x &= \frac{-6 \pm \sqrt{(6)^2 - 4(3)(-6)}}{2(3)} \\
 &= \frac{-6 \pm \sqrt{36+72}}{6} \\
 &= \frac{-6 \pm \sqrt{108}}{6} \\
 &= \frac{-6 \pm 6\sqrt{3}}{6} \\
 &= -1 \pm \sqrt{3}
 \end{aligned}$$

80. $2x^2 - 1 = 3x$

$$\begin{aligned}
 2x^2 - 3x - 1 &= 0 \\
 x &= \frac{3 \pm \sqrt{(-3)^2 - 4(2)(-1)}}{2(2)} \\
 &= \frac{3 \pm \sqrt{9+8}}{4} \\
 &= \frac{3 \pm \sqrt{17}}{4}
 \end{aligned}$$

81. $4x^2 + 13x - 12 = 0$

$$\begin{aligned}
 x &= \frac{-13 \pm \sqrt{(13)^2 - 4(4)(-12)}}{2(4)} \\
 &= \frac{-13 \pm \sqrt{169+192}}{8} \\
 &= \frac{-13 \pm \sqrt{361}}{8} \\
 &= \frac{-13 \pm 19}{8} \\
 x &= \frac{-13+19}{8} = \frac{6}{8} = \frac{3}{4} \\
 \text{and } x &= \frac{-13-19}{8} = \frac{-32}{8} = -4
 \end{aligned}$$

Solve.

82. $-5 - a > 25$
 $a < -30$

83. $-7 + a < 21$
 $a < 28$

84. $-7a > 35$
 $a < -5$

85. $-3x < 15$
 $x > -5$

86. $25 \geq 5a$
 $a \leq 5$

87. $30 \leq 2x$
 $x \geq 15$

$$88. \frac{a}{10} \leq -7$$

$$a \leq -70$$

$$89. \frac{a}{5} \geq -9$$

$$a \geq -45$$

$$90. -\frac{a}{5} \geq 3$$

$$a \leq -15$$

$$91. -\frac{a}{3} \leq 4$$

$$a \geq -12$$

$$92. -\frac{1}{7}a \leq 3$$

$$a \geq -21$$

$$93. -\frac{1}{3}a \geq 2$$

$$a \leq -6$$

$$94. 4x + 5 \geq 5$$

$$x \geq 0$$

$$95. 5x \geq 10$$

$$x \geq 2$$

$$96. x - 4 \geq 8$$

$$x \geq 12$$

$$97. x - 7 \geq 3$$

$$x \geq 10$$

$$98. a + 4 \leq 12$$

$$a \leq 8$$

$$99. a + 7 \leq 21$$

$$a \leq 14$$

$$100. 5a > 20$$

$$a > 4$$

$$101. 4a > 40$$

$$a > 10$$

$$102. -2x - 5 > 4x - 8$$

$$x < \frac{1}{2}$$

$$103. 4x - 3 > 2x + 3$$

$$2x > 6$$

$$x > 3$$

$$104. x + 5 \leq 3(x - 3)$$

$$x + 5 \leq 3x - 9$$

$$-2x \leq -14$$

$$x \geq 7$$

$$105. -2x + 5 > -(3x + 2)$$

$$-2x + 5 > -3x - 2$$

$$x > -7$$

Simplify the following radicals.

$$106. \frac{\sqrt{36}}{6}$$

$$107. \frac{-\sqrt{81}}{-9}$$

$$108. \frac{\sqrt{2-1}}{1}$$

$$109. \frac{\sqrt{-5+5}}{0}$$

$$110. \frac{\sqrt{48}}{\sqrt{16 \cdot 3}}$$

$$4\sqrt{3}$$

$$111. \frac{\sqrt{75}}{\sqrt{25 \cdot 3}}$$

$$5\sqrt{3}$$

$$112. \frac{\sqrt{45}}{\sqrt{9 \cdot 5}}$$

$$3\sqrt{5}$$

$$113. \frac{\sqrt{\frac{36}{81}}}{\frac{\sqrt{36}}{\sqrt{81}}} = \frac{6}{9} = \frac{2}{3}$$

$$114. \frac{\sqrt{\frac{2}{9}}}{\frac{\sqrt{2}}{\sqrt{9}}} = \frac{\sqrt{2}}{3}$$

$$115. \quad \sqrt{\frac{25}{100}}$$

$$\frac{5}{10} = \frac{1}{2}$$

116. When graphing $y = x^2 - 5$, what is the x-coordinate of the vertex?

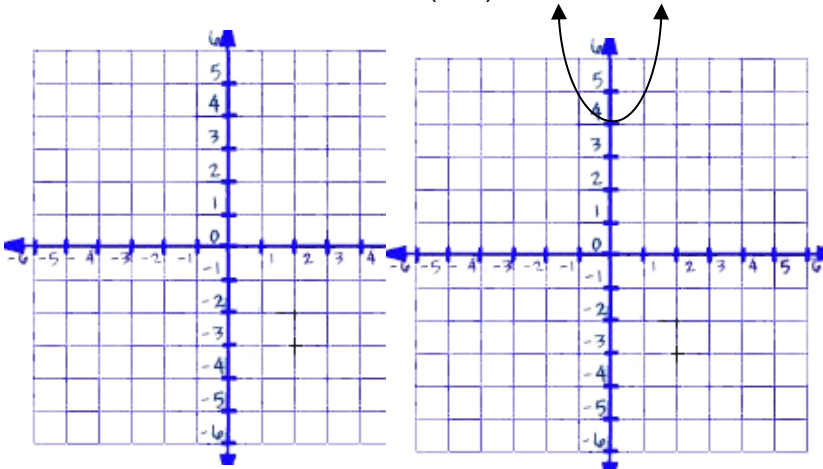
$$x = \frac{-b}{2a} = \frac{-0}{2(1)} = \frac{0}{2} = 0$$

117. When graphing $y = x^2 + 4$, what is the x-coordinate of the vertex?

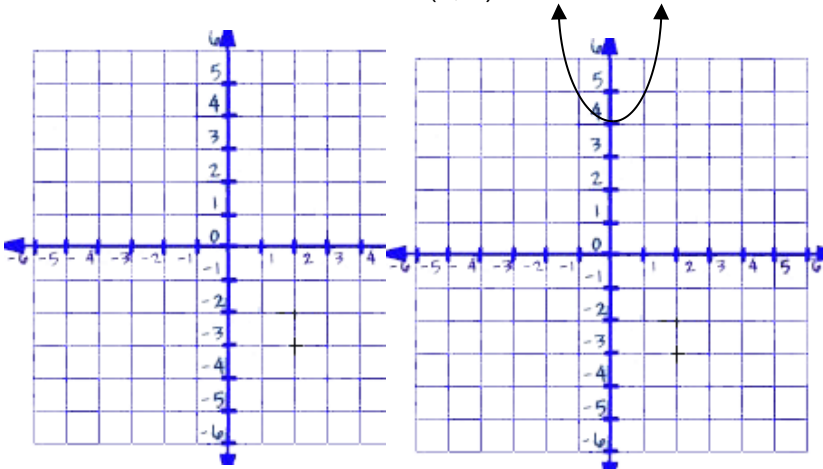
$$x = \frac{-b}{2a} = \frac{-0}{2(1)} = \frac{0}{2} = 0$$

Graph the following equations.

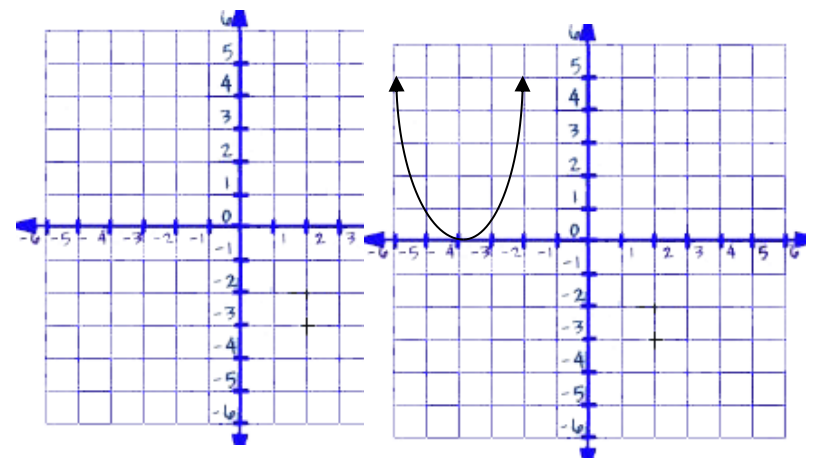
118. $y = x^2$ Vertex (0, 0)



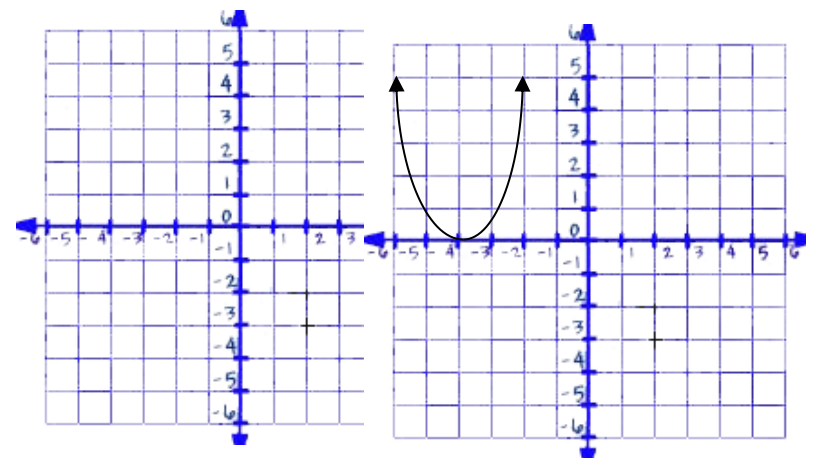
119. $y = x^2 + 4$ Vertex (0, 4)



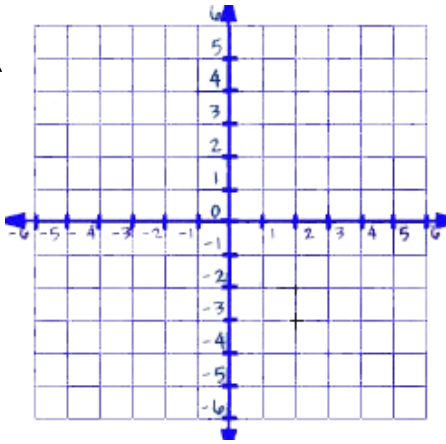
120. $y = x^2 - 4$ Vertex (0, -4)



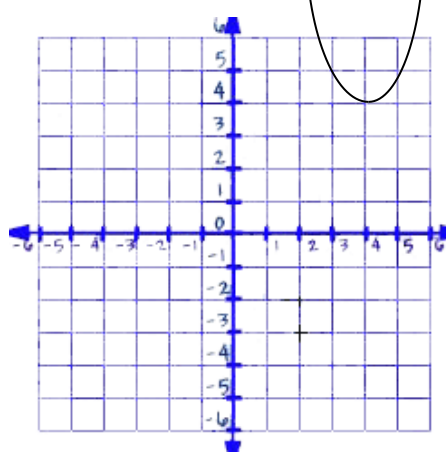
121. $y = (x + 4)^2$ Vertex (-4, 0)



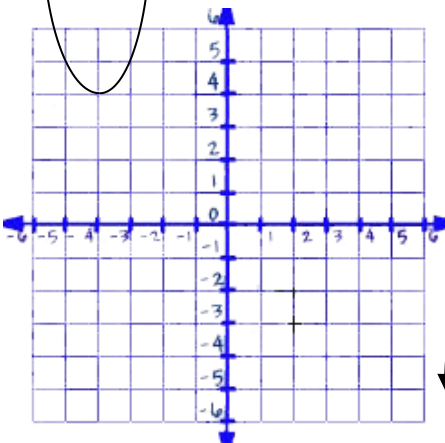
122. $y = (x-4)^2$
Vertex (4, 0)



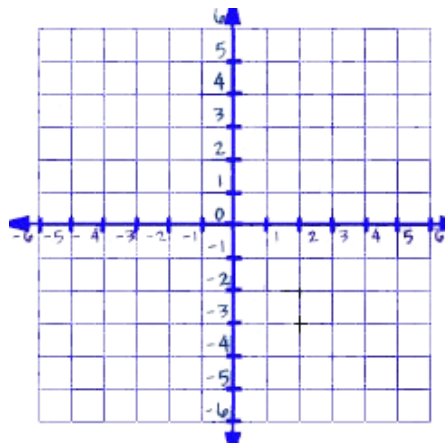
123. $y = (x-4)^2 + 4$
Vertex (4, 4)



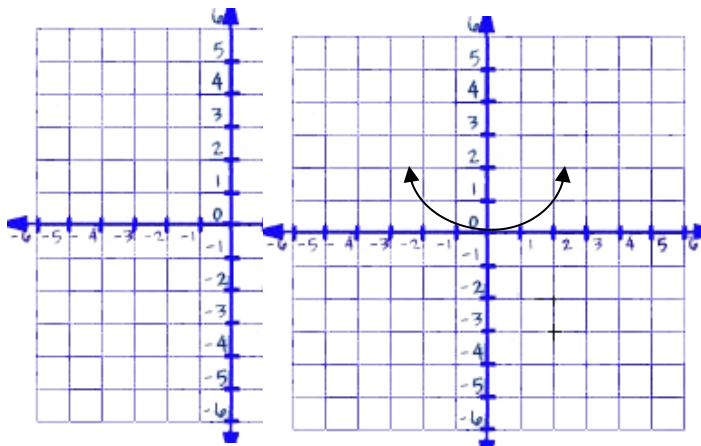
124. $y = (x+4)^2 + 4$
Vertex (-4, 4)



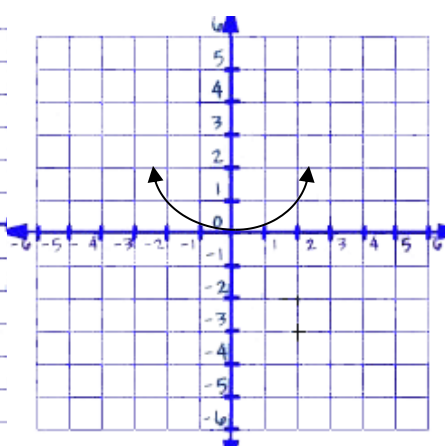
125. $y = -x^2$
Vertex (0, 0)



126. $y = 4x^2$ Vertex (0, 0)



127. $y = \frac{1}{4}x^2$ Vertex (0, 0)



128. Find the vertex for: $y = (x-7)^2 + 5$
(7, 5)

130. Find the vertex for:
 $y = -2(x+5)^2 + 7$

(-5, 7)

129. Find the vertex for: $y = (x+1)^2 - 5$
(-1, -5)

131. Find the vertex for:
 $y = \frac{2}{3}(x+3)^2 - 18$

(-3, -18)

Express radicals in simplest form.

132. $3\sqrt{24}$
 $3\sqrt{4 \cdot 6}$
 $3 \cdot 2\sqrt{6}$
 $6\sqrt{6}$

135. $\sqrt{107} \cdot \sqrt{107}$
 $\sqrt{107 \cdot 107}$
107

138. $6\sqrt{50}$
 $6\sqrt{25 \cdot 2}$
 $6 \cdot 5\sqrt{2}$
 $30\sqrt{2}$

133. $9\sqrt{128}$
 $9\sqrt{64 \cdot 2}$
 $9 \cdot 8\sqrt{2}$
 $72\sqrt{2}$

136. $\sqrt{6} \cdot \sqrt{12}$
 $\sqrt{6 \cdot 12} = \sqrt{72}$
 $\sqrt{36 \cdot 2} = 6\sqrt{2}$

139. $\frac{1}{3}\sqrt{162}$
 $\frac{1}{3}\sqrt{81 \cdot 2}$
 $\frac{1}{3} \cdot 9\sqrt{2}$
 $3\sqrt{2}$

134. $\sqrt{3} \cdot \sqrt{3}$
 $\sqrt{3 \cdot 3}$
 $\sqrt{9}$
3

137. $\sqrt{2} \cdot \sqrt{26}$
 $\sqrt{2 \cdot 26} = \sqrt{52}$
 $\sqrt{4 \cdot 13} = 2\sqrt{13}$

140. When graphing $y = ax^2 + bx + c$, how do you calculate the x-coordinate of the vertex?

Use $x = \frac{-b}{2a}$

141. After finding the x-coordinate of the vertex, how do you find the y-coordinate?
Plug in the x value into your equation for all your x's. Solve for y.

Find the x-coordinate of the vertex of the given equations.

142. $y = x^2 + 4x + 7$
 $x = \frac{-b}{2a} = \frac{-4}{2(1)} = \frac{-4}{2} = -2$

143. $y = x^2 - 4x + 7$
 $x = \frac{-b}{2a} = \frac{-(-4)}{2(1)} = \frac{4}{2} = 2$

144. $y = -x^2 - 16x + 1$
 $x = \frac{-b}{2a} = \frac{-(-16)}{2(-1)} = \frac{16}{-2} = -8$

145. $y = -x^2 + 16x + 1$
 $x = \frac{-b}{2a} = \frac{-16}{2(-1)} = \frac{-16}{-2} = 8$

146. $y = 3x^2 + 12x - 11$
 $x = \frac{-b}{2a} = \frac{-12}{2(3)} = \frac{-12}{6} = -2$

147. $y = -2x^2 - 14x - 9$
 $x = \frac{-b}{2a} = \frac{-(-14)}{2(-2)} = \frac{14}{-4} = -\frac{7}{2}$

148. $y = -2x^2 + 7x - 5$
 $x = \frac{-b}{2a} = \frac{-7}{2(-2)} = \frac{-7}{-4} = \frac{7}{4}$

149. $y = 15x^2 - 12x + 17$
 $x = \frac{-b}{2a} = \frac{-(-12)}{2(15)} = \frac{12}{30} = \frac{2}{5}$

150. $y = x^2 - 4$
 $x = \frac{-b}{2a} = \frac{-0}{2(1)} = \frac{0}{2} = 0$

151. $y = -7x^2$
 $x = \frac{-b}{2a} = \frac{-0}{2(-7)} = \frac{0}{-14} = 0$