Summer Packet: Algebra 1

Write each as an algebraic expression.

1) the sum of p and 8
2) 15 minus 6
3) 5 to the k
4) half of q
5) the difference of v and 18
6) the difference of 16 and 10
7) the difference of a number and 5 is 45
8) a number squared is equal to 25
9) the sum of n and 10 is equal to 27
10) a number plus 10 is 47
11) a number times 11 is equal to 28
12) x to the 9th is equal to 45
13) a number plus 7 is less than or equal to 34
14) n to the 2nd is less than 40
15) u increased by 10 is less than or equal to 8
16) a number times 8 is greater than 20
17) the a power of 15 is less than or equal to 5
18) x divided by 4 is greater than 12

Evaluate each expression.

19) $6(2 + 3 - 4)$
20) $4 + 3 - 1 - 3$
21) $12 \div 3 + 12 \div 6$
22) $6 \div 3 + 12 \div 6$
23) $4(4 \cdot 2 - 5)$
24) $(9 + 1) \div (6 - 1)$
25) $2 \div 2 + 6 \cdot 4 - 5$
26) $3 \cdot 12 \div 6 \cdot 3 - 3$
27) $(12 - (2 + 1 + 3)) \div 2$
28) $(3 + 4 - 3 + 1) \div 5$
29) $4 + 18 \div (2 + 1) - 4$
30) $10 \div 5 - 2^2 \div 4$
31) $5(2 \cdot 5 - (6 - 6) - 1)$
32) $4 \div (6 - (5(5 - 4) - 3))$
33) $6 + 6 - 5 - 4 + 5 + 2$
34) $(4 \cdot 2) \div 2$
35) $(6 \cdot 2) \div (3 + 4 - (1 + 2))$
36) $(6 + 6) \div (3 + 3 \cdot 3 - 6)$
37) $(1 + 18 - (4 - (8 - 5))) \div 3 - 3$
38) $(9 + 3) \div (4 - (6 - 6)(4 + 1))$
39) $4 + 5 + 5 - 6 - (1 + 1 + 1)$
40) $(2 + 14 + 3 + 5) \div (5 + 3 - 4)$
41) $12 \div (5 - 4 + 1) + 15 \div (3 + 2)$
42) $(4 - 2)^3 + 2 - (4 - (3 + 1))$

Evaluate each using the values given.

43) $pq \cdot 2^2$; use $p = 2$, and $q = 5$
44) $r^2 + 3 + p$; use $p = 5$, and $r = 5$
45) $4 + x + y \div 3$; use $x = 6$, and $y = 3$
46) $z(z - x) - 6$; use $x = 2$, and $z = 5$
47) $r - (q - (1 + q) \div 3)$; use $q = 2$, and $r = 4$
48) $5p - (m + 12)$; use $m = 1$, and $p = 4$
49) $(m - 1)^2(m + q)$; use $m = 3$, and $q = 4$
50) $y + x - (x - x) \div 6$; use $x = 5$, and $y = 1$
51) $m + (3 + q) \div 6 - m \div 5$; use $m = 5$, and $q = 3$
52) $(m - n)(p + 3 + m - m)$; use $m = 4$, $n = 1$, and $p = 2$
53) $(30 - h - (6 - j)) \div 2$; use $h = 3$, and $j = 5$
54) $(c + a)(a - c(a - b))$; use $a = 3$, $b = 3$, and $c = 3$

Evaluate each expression.

55) $(-4) + 6 + 7$
56) $6 - 7 + 1$
57) $4 + (-2) - (-8)$
58) $6 - 7 - (-3)$
59) $6 - (-8) - 8$
60) $2 - (-1) - (-8)$

61) $(-7) - (-2) - 4$

62) $(-7) + (-5) - 2$

63) $5 + 3 - 4 - 8$

64) $(-6) + (-8) - (-4) - (-7)$

65) $4 + 3 + 1 + (-7)$

66) $3 - (-8) - 8 - 6$

67) $2 + 2 + 4 + (-1)$

68) $(-1) + 1 - 7 - 4$

69) $8 + (-8) + (-3) - 7$

70) $3 + 8 + 4 - (-6)$

Find each product.

71) $(-8)(-4)$

72) $(-4)(4)$

73) $(-8)(-9)$

74) $(-4)(-7)$

75) $(2)(-4)$

76) $(-2)(-1)$

77) $(-3)(-9)(5)$

78) $(-9)(7)(-2)$

79) $(-6)(3)(4)$

80) $(9)(7)(-10)$

81) $(-10)(-5)(-10)$

82) $(-3)(-4)(6)$

83) $(-4)(-3)(3)(6)$

84) $(5)(2)(-6)(-5)$

85) $(2)(-3)(-1)(-1)$

86) $(5)(-2)(-5)(4)$

87) $(2)(-3)(6)(2)$

88) $(5)(-4)(4)(4)$

Find each quotient.

89) $\frac{5}{-5}$

90) $\frac{-50}{5}$

91) $\frac{70}{-7}$

92) $\frac{24}{6}$

93) $\frac{24}{-4}$

94) $\frac{-8}{-4}$

Simplify each expression.

95) $-2x - 2x$

96) $x - 2 - 5x$

97) $n + 4 + 4 - 5n$

98) $5n - 2 + 1 + 3n$

99) $x + 3 + 1$

100) $2x - 5x$

101) $2(m + 1)$

102) $5(-5x - 5)$

103) $5(p + 1)$

104) $-(-2 + 2n)$

105) $5(5 + 2a)$

106) $3(4r + 1)$

107) $5x - (5x - 4)$

108) $5(n - 1) - 3n$

109) $-2(-x - 1) - 1$

110) $3(-n - 4) + 4n$

111) $5(-2 - p) + p$

112) $-2 - (x + 5)$

113) $5(x - 5) - 4(1 + 4x)$

114) $-(n - 4) - 3(1 - n)$

115) $-5(-2 + 5n) - 5(3n + 3)$

116) $-3(1 + 2p) - 3(5 - 2p)$

117) $-5(-k + 2) - (k + 4)$

118) $-2(1 + 2a) - 4(-4 - 5a)$

Solve each equation.

119) $30 = n + 10$

120) $-216 = -12v$

121) $x - 19 = 1$

122) $-16 = \frac{x}{16}$

123) $-32 = -8k$

124) $n - 3 = -10$

125) $3 = \frac{p + 2}{5}$

126) $-3 + 10k = -203$

127) $4(k - 5) = 48$

128) $8b + 8 = -32$

129) $29 = 2n + 9$

130) $11 = \frac{m}{2} + 3$

131) $-14 = 3r + 8 - 4$

132) $-21 = 6m + 6 - 3$

133) $-n + 7n = -12$

134) $-b - 6b = 0$

135) $0 = 6m + 7m$

136) $6 = 7 - 2r - 5$

137) $-2n + 6n - 1 = 8 + n$

138) $-5m - 8m = 16 - 5m$

139) $4v - 2 = -7 - v$

140) $-6n - 5n = 12 - 7n$

141) $n + 2 - 3n - 2 = 3n - 5n$

142) $-3 - 2n = 2n + 5$

143) $161 = 7(-4a + 8) + 7a$

144) $3(4p - 5) = 81$

145) $312 = -8(1 - 5a)$

146) $-92 = -6(2x + 6) + 5x$

147) $96 = -8(7r + 3) - 4r$

148) $7(4k + 7) - 2 = 131$

149) $-4a - 24 = -6(4 - 4a)$

150) $-4(-8 + 5x) = -6x - 10$

151) $-22 - 2n = -3(n + 8)$

152) $-7(4 + 7x) = -28 - x$

153) $-22 - 5x = -2(2 + 7x)$

154) $-9 - 8a = 5 - 3(2a + 8)$

Solve each equation for the indicated variable.

155) $k - x = w - v$, for x

156) $x + k = w - v$, for x

157) $ca = r + d$, for a

158) $\frac{m}{a} = p - n$, for a

159) $\frac{k}{a} = w - v$, for a

160) $u = \frac{ka}{b}$, for a

161) $g = c - a - b$, for a

162) $cx = dr$, for x

163) $g = ca - b$, for a

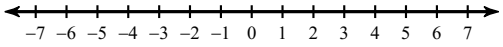
164) $ma = pn$, for a

165) $u = b - ka$, for a

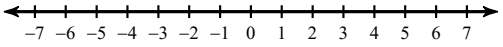
166) $xk = w - v$, for x

Draw a graph for each inequality.

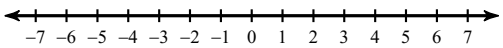
167) $x \le -4$



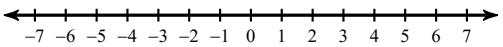
168) $p \le -5$



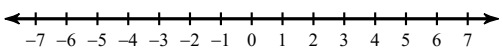
169) $x < -5$



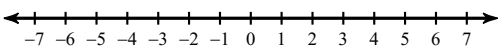
170) $v \le -3$



171) $n < 2$

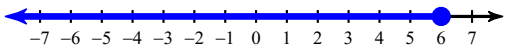


172) $n \ge -6$



Write an inequality for each graph.

173)



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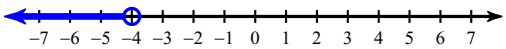

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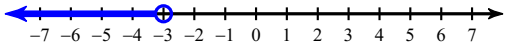

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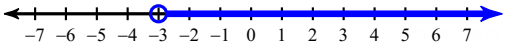
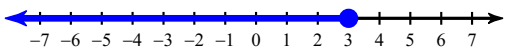
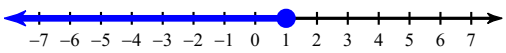
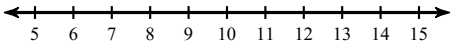


177) 

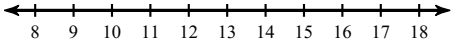
178) 

Solve each inequality and graph its solution.

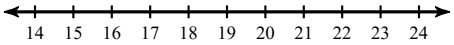
179) $\frac{n}{19} > \frac{8}{19}$



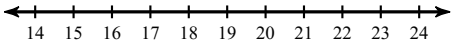
180) $r + 9 \geq 22$



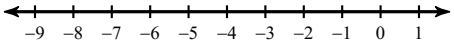
181) $-9b \leq -180$



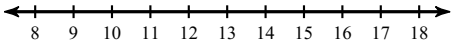
182) $v - 11 \geq 8$



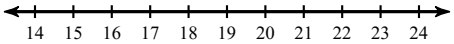
183) $-13 < x - 10$



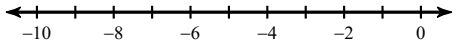
184) $2 < b - 10$



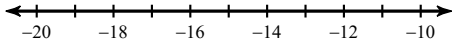
185) $-8 + \frac{v}{20} \geq -7$



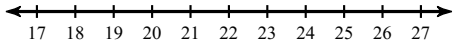
186) $\frac{b}{2} - 3 < -5$



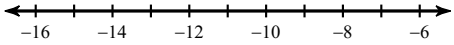
187) $2 \geq 6 + \frac{b}{4}$



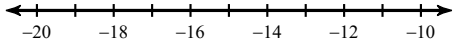
188) $79 \geq 3 + 4n$



189) $72 < -8(b + 5)$



190) $9 + 9x \leq -108$



Solve each proportion.

191) $\frac{8}{x} = \frac{10}{5}$

192) $\frac{5}{3} = \frac{m}{6}$

193) $\frac{4}{2} = \frac{3}{a}$

194) $\frac{2}{5} = \frac{8}{v}$

195) $\frac{x+4}{2} = \frac{10}{8}$

196) $\frac{5}{2} = \frac{10}{v+4}$

197) $\frac{6}{8} = \frac{5}{r+7}$

198) $\frac{5}{6} = \frac{10}{x+4}$

199) $\frac{b-8}{b} = \frac{7}{5}$

200) $\frac{v}{v-9} = \frac{5}{10}$

201) $\frac{10}{x+3} = \frac{6}{x}$

202) $\frac{6}{x} = \frac{4}{x+5}$

Solve each problem.

203) 19% of what is 32.8?

204) 27 is 380% of what?

205) 23 is 68% of what?

206) What percent of 126 is 23.6?

207) What percent of 100 is 84.6?

208) 59% of what is 1?

209) 45% of what is 60?

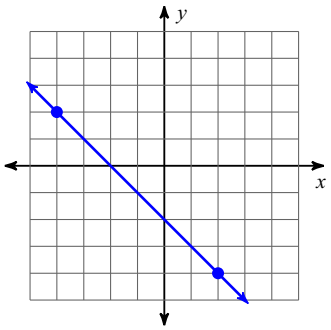
210) 49 is 75% of what?

211) 112 is what percent of 129?

212) 23% of what is 98?

Find the slope of each line.

213)



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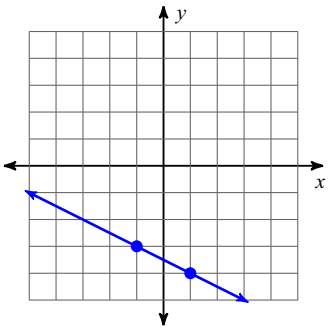

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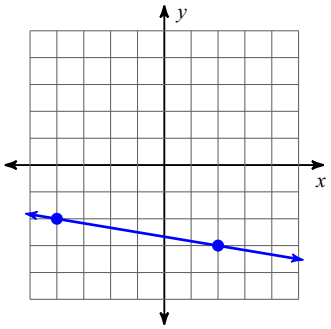

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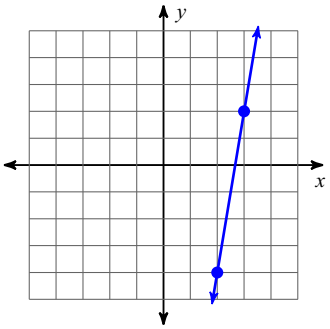

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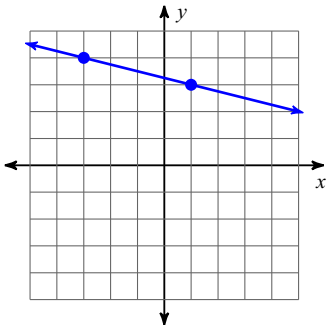

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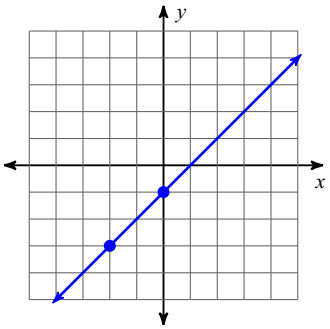

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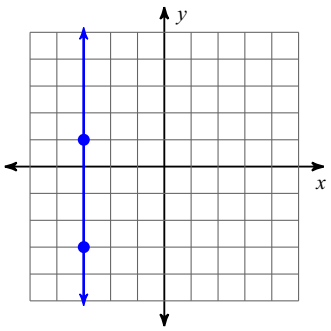

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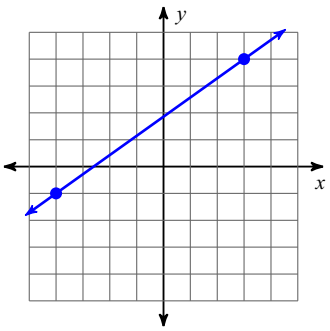


Find the slope of the line through each pair of points.

221) $(18, -19), (18, 6)$

222) $(17, 16), (-12, -1)$

223) $(17, -3), (-1, 0)$

224) $(-7, 11), (-9, -20)$

225) $(5, -13), (19, -14)$

226) $(-1, 15), (13, 11)$

227) $(15, 9), (2, 20)$

228) $(15, 5), (14, -18)$

Find the slope of each line.

229) $y = -x - 2$

230) $y = \frac{7}{4}x - 2$

231) $y = -x + 1$

232) $y = \frac{1}{4}x - 4$

233) $y = -2x - 3$

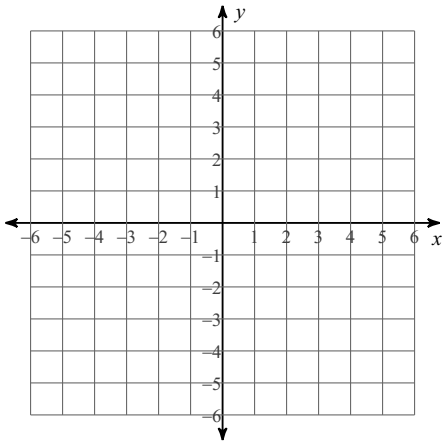
234) $y = 2x + 1$

235) $x = -2$

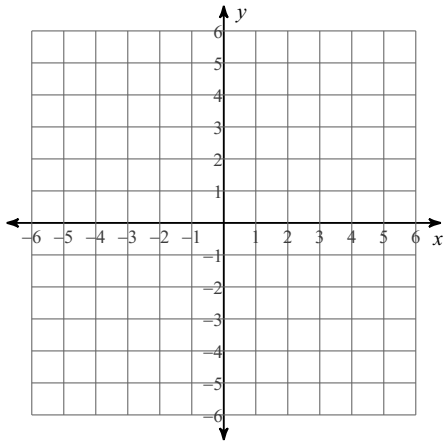
236) $y = 3x + 1$

Sketch the graph of each line.

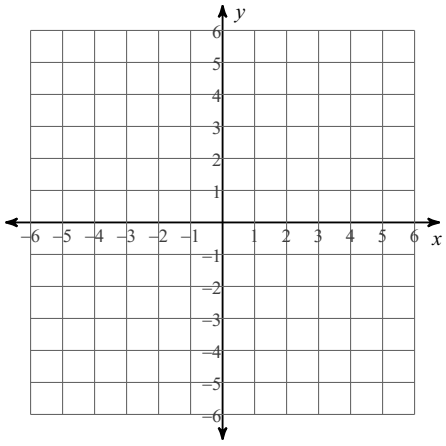
237) x-intercept = –1, y-intercept = –5



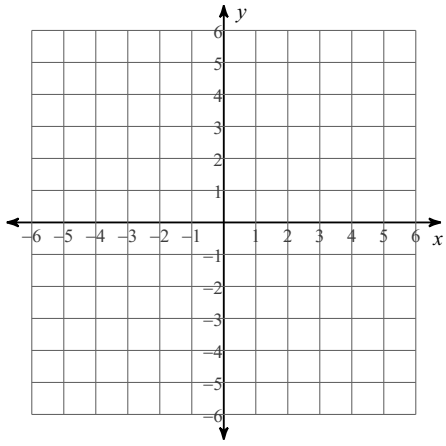
238) x-intercept = 5, y-intercept = 4



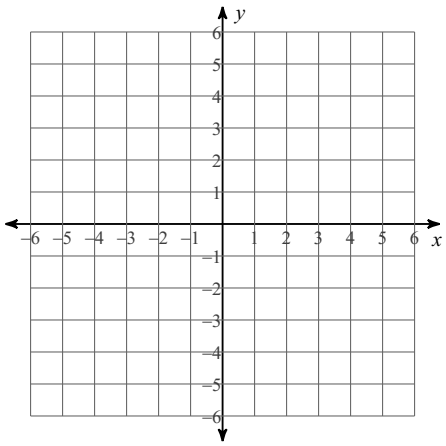
239) x-intercept = –1, y-intercept = –1



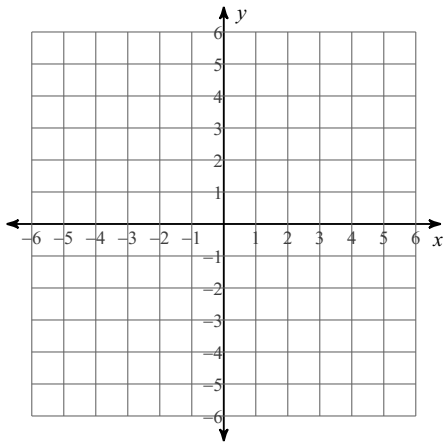
240) x-intercept = 2, y-intercept = 1



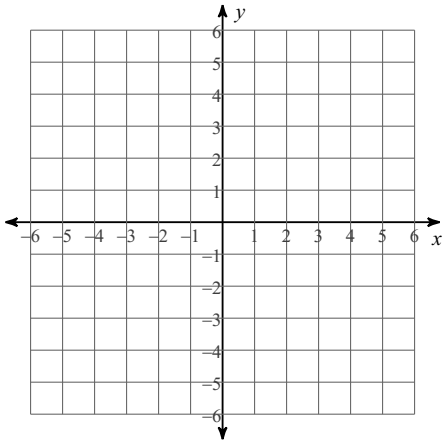
241) $y = 3x + 1$



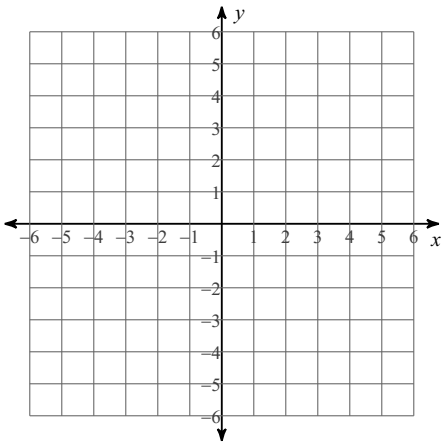
242) $y = -x + 5$



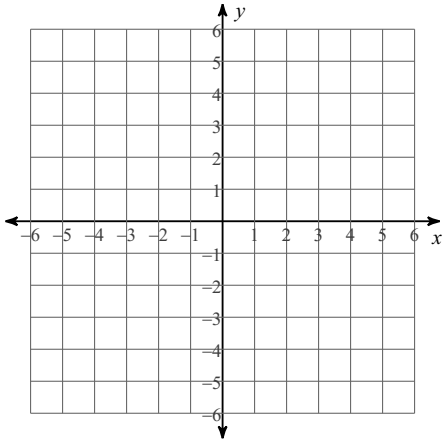
243) $y = -x - 3$



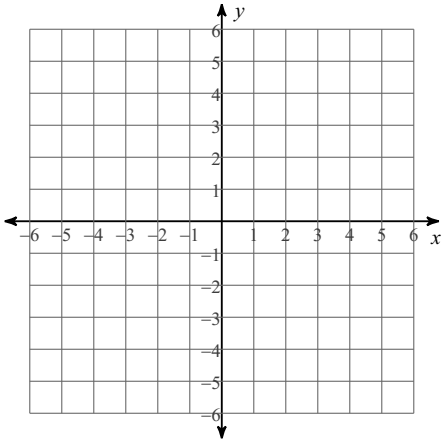
244) $y = -\frac{1}{5}x + 2$



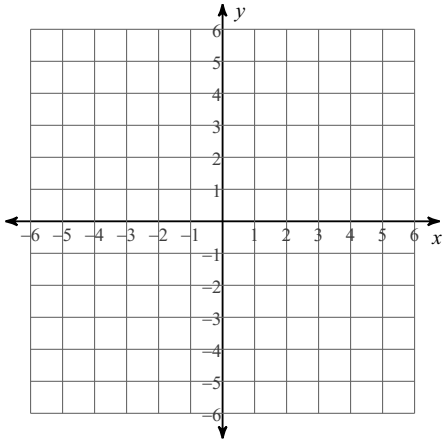
245) $y = x$



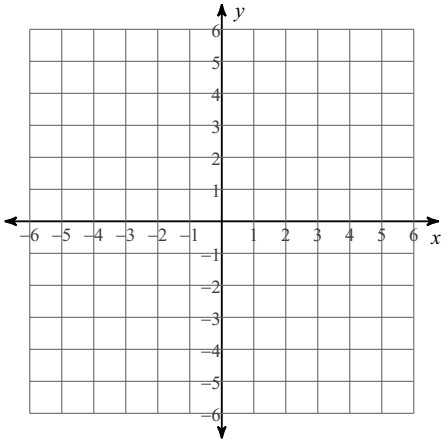
246) $y = -2x + 5$



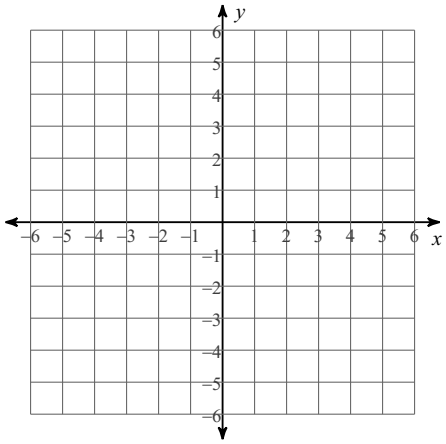
247) $y = -\frac{1}{5}x - 1$



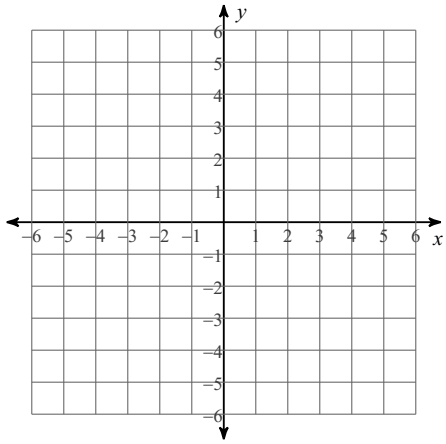
248) $y = -\frac{1}{4}x + 3$



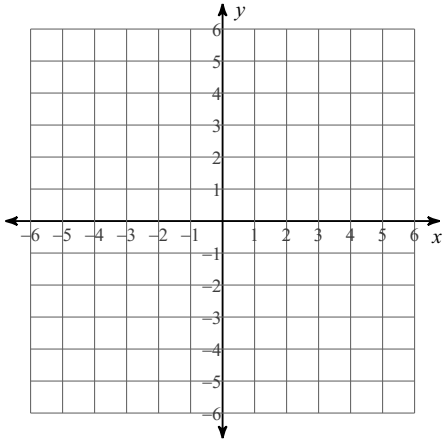
249) $3x + y = 5$



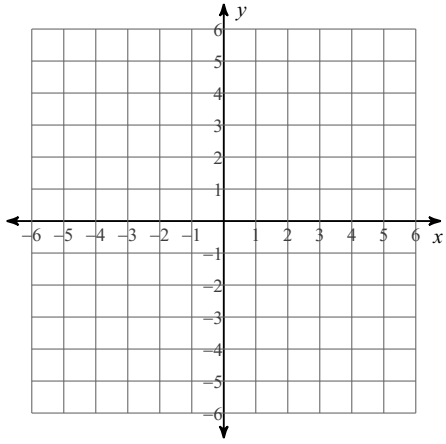
250) $3x - y = 2$



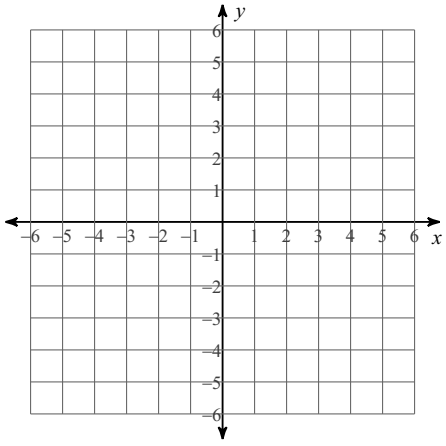
251) $3x - 5y = -15$



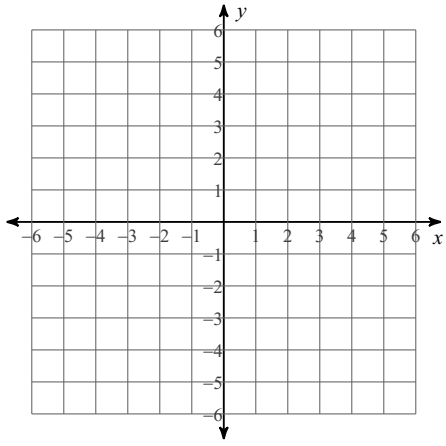
252) $7x - 2y = -4$



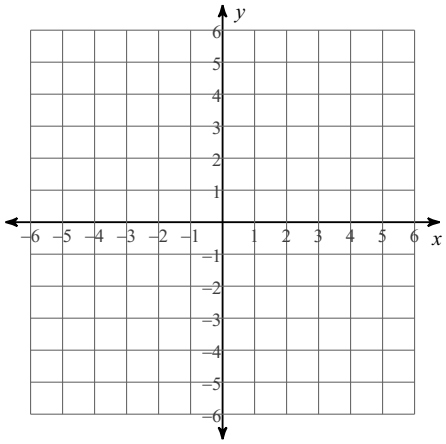
253) $7x - 5y = -25$



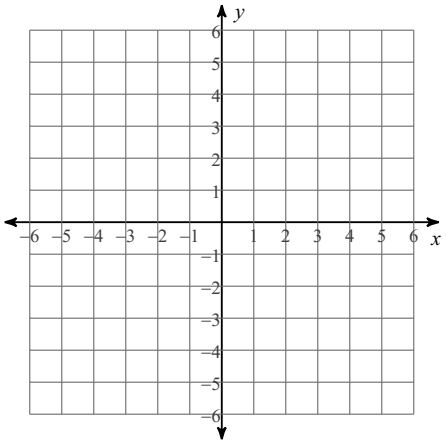
254) $x = 0$



255) $x - y = 0$

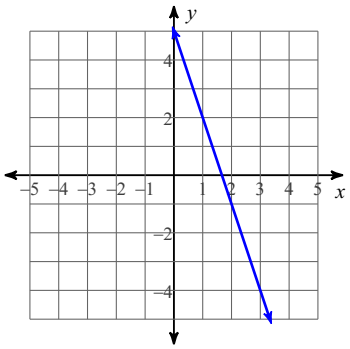


256) $7x + 2y = -10$

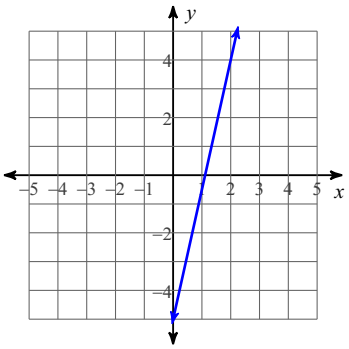


Write the slope-intercept form of the equation of each line.

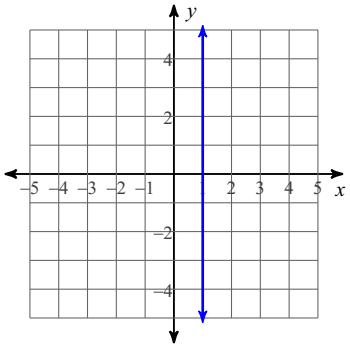
257)



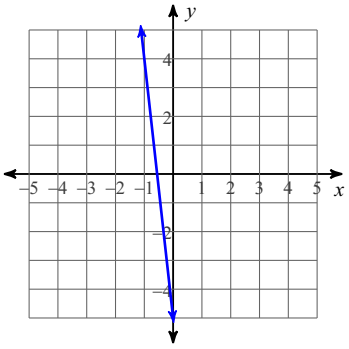
258)



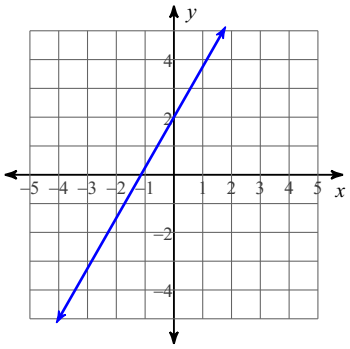
259)



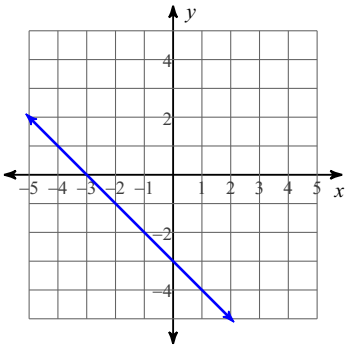
260)



261)



262)



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

263) Slope = $\frac{3}{2}$, y-intercept = 5

264) Slope = $\frac{2}{5}$, y-intercept = 1

265) Slope = $\frac{3}{2}$, y-intercept = –2

266) Slope = $\frac{4}{5}$, y-intercept = –2

267) Slope = 0, y-intercept = 0

268) Slope = $-\frac{4}{3}$, y-intercept = -1

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

269) $5x + 7y = -56$

270) $5x - 4y = 0$

271) $x - y = -4$

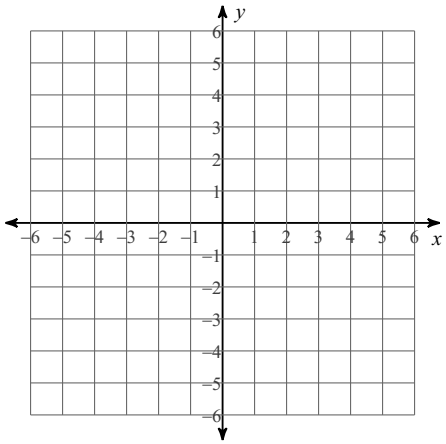
272) $5x - y = 6$

273) $x - y = -10$

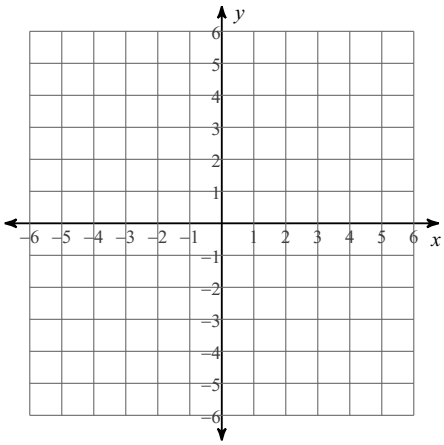
274) $4x + 5y = -10$

Sketch the graph of each linear inequality.

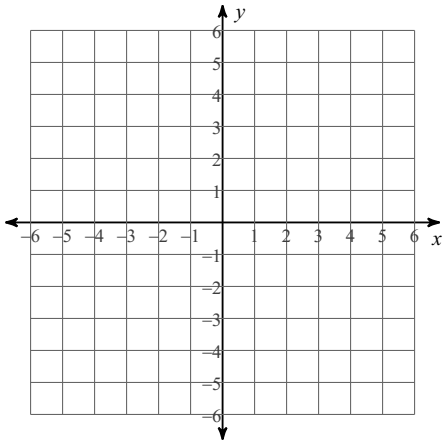
275) $y < \frac{1}{5}x - 3$



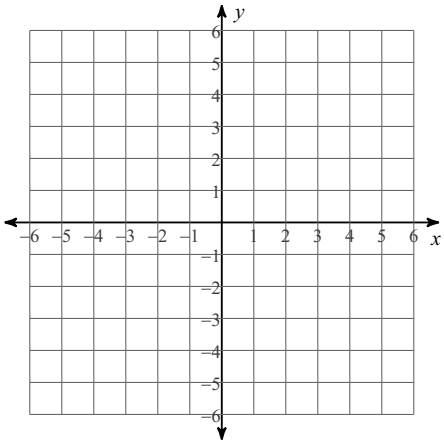
276) $y > 1$



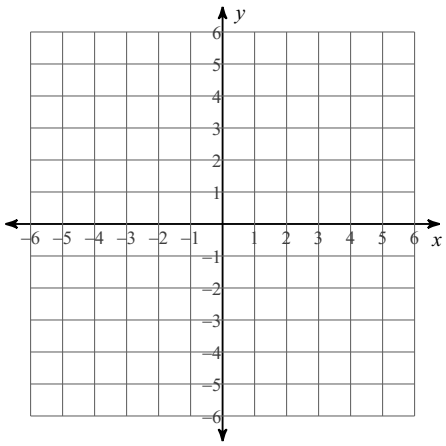
277) $y > -4x$



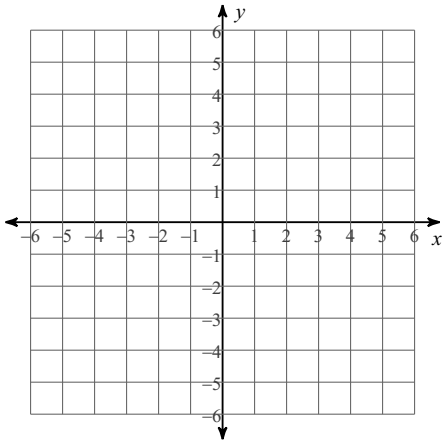
278) $y < -5x - 4$



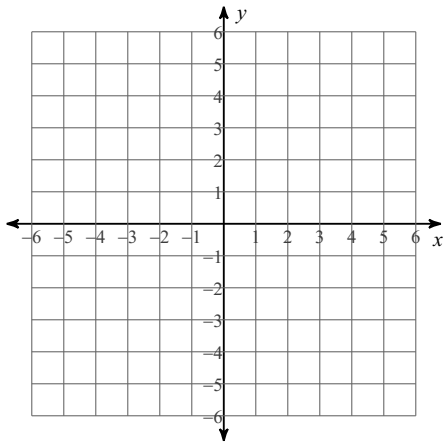
279) $y \leq -3x + 5$



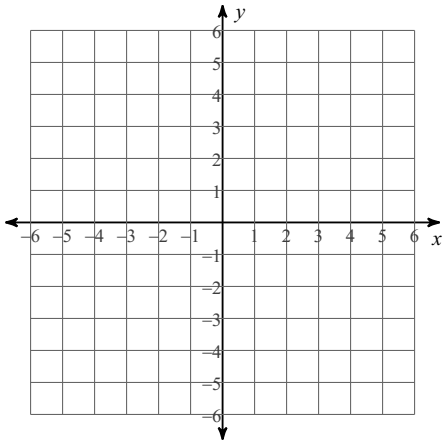
280) $y < 6x - 4$



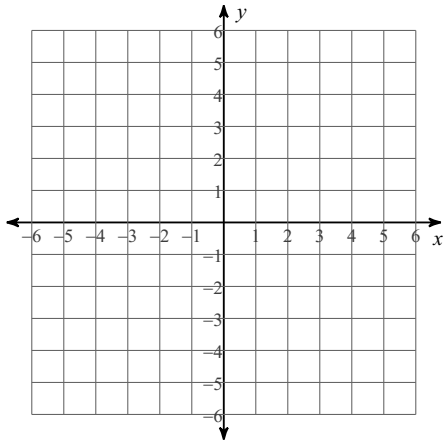
281) $y \geq -\frac{2}{5}x - 5$



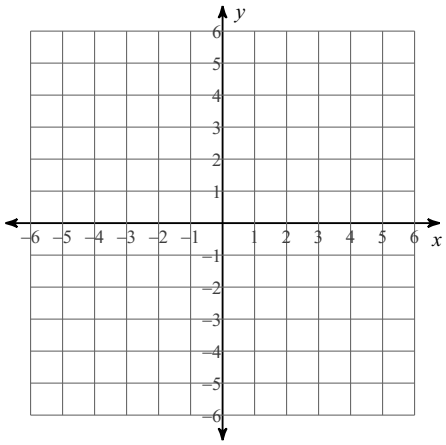
282) $y < -3x + 4$



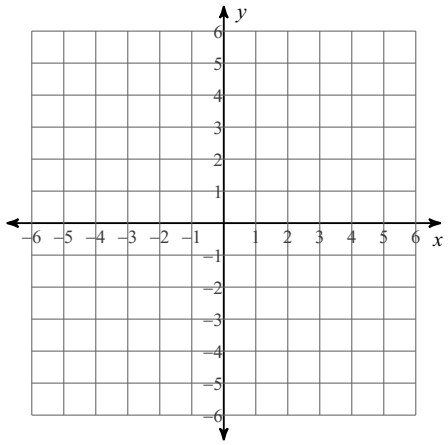
283) $x + 4y \geq 0$



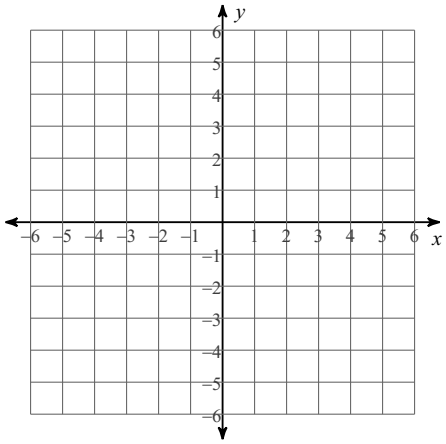
284) $x + y \geq -3$



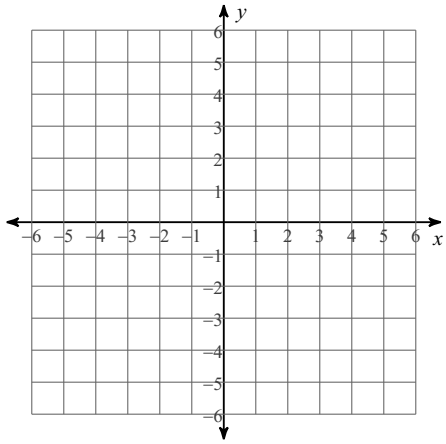
285) $2x - y \geq -5$



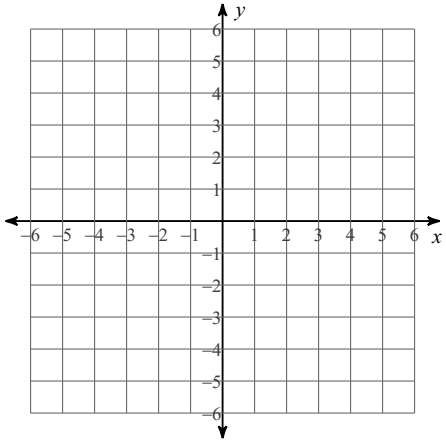
286) $x - 4y \geq 12$



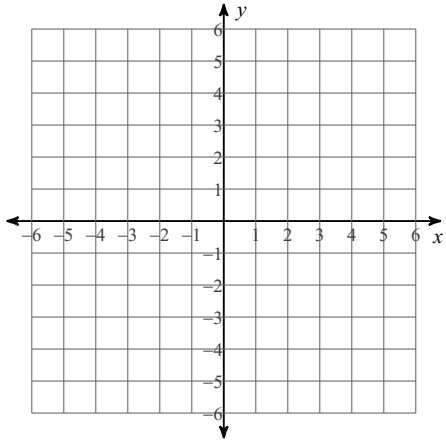
287) $3x - 2y \leq 2$



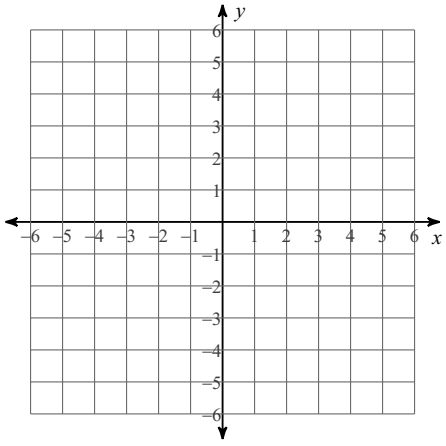
288) $5x + 2y \geq -4$



289) $7x - 5y \geq 25$



290) $5x + y \leq 2$



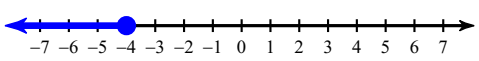
Answers to Summer Packet: Algebra 1 (ID: 1)

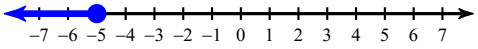
1) $p + 8$
2) $15 - 6$
3) 5^k
4) $\frac{q}{2}$
5) $v - 18$
6) $16 - 10$
7) $n - 5 = 45$
8) $n^2 = 25$
9) $n + 10 = 27$
10) $n + 10 = 47$
11) $n \cdot 11 = 28$
12) $x^9 = 45$
13) $n + 7 \leq 34$
14) $n^2 < 40$
15) $u + 10 \leq 8$
16) $n \cdot 8 > 20$
17) $15^a \leq 5$
18) $\frac{x}{4} > 12$
19) 6
20) 3
21) 6
22) 4
23) 12
24) 2
25) 20
26) 15
27) 3
28) 1
29) 6
30) 1
31) 45
32) 1
33) 10
34) 4
35) 3
36) 2
37) 3
38) 3
39) 5
40) 6
41) 9
42) 10
43) 40
44) 33
45) 11
46) 9
47) 3
48) 7
49) 28
50) 6
51) 5
52) 15
53) 13
54) 18
55) 9
56) 0
57) 10
58) 2
59) 6
60) 11
61) −9
62) −14
63) −4
64) −3
65) 1
66) −3
67) 7
68) −11
69) −10
70) 21
71) 32
72) −16
73) 72
74) 28
75) −8
76) 2
77) 135
78) 126
79) −72
80) −630
81) −500
82) 72
83) 216
84) 300
85) −6
86) 200
87) −72
88) −320
89) −1
90) −10
91) −10
92) 4
93) −6
94) 2
95) $-4x$
96) $-4x - 2$
97) $-4n + 8$
98) $8n - 1$
99) $x + 4$
100) $-3x$
101) $2m + 2$
102) $-25x - 25$
103) $5p + 5$
104) $2 - 2n$
105) $25 + 10a$
106) $12r + 3$
107) 4
108) $2n - 5$
109) $2x + 1$
110) $n - 12$
111) $-10 - 4p$
112) $-7 - x$
113) $-11x - 29$
114) $2n + 1$
115) $-5 - 40n$
116) −18
117) $4k - 14$
118) $14 + 16a$
119) $\{20\}$
120) $\{18\}$
121) $\{20\}$
122) $\{-256\}$
123) $\{4\}$
124) $\{-7\}$
125) $\{13\}$
126) $\{-20\}$
127) $\{17\}$
128) $\{-5\}$
129) $\{10\}$
130) $\{16\}$
131) $\{-6\}$
132) $\{-4\}$
133) $\{-2\}$
134) $\{0\}$
135) $\{0\}$
136) $\{-2\}$
137) $\{3\}$
138) $\{-2\}$
139) $\{-1\}$
140) $\{-3\}$
141) { All real numbers. }
142) $\{-2\}$
143) $\{-5\}$
144) $\{8\}$
145) $\{8\}$
146) $\{8\}$
147) $\{-2\}$
148) $\{3\}$
149) $\{0\}$
150) $\{3\}$
151) $\{-2\}$
152) $\{0\}$
153) $\{2\}$
154) $\{5\}$
155) $x = k - w + v$
156) $x = -k + w - v$
157) $a = \frac{r + d}{c}$
158) $a = \frac{m}{p - n}$
159) $a = \frac{k}{w - v}$
160) $a = \frac{ub}{k}$
161) $a = -g + c - b$
162) $x = \frac{dr}{c}$
163) $a = \frac{g + b}{c}$

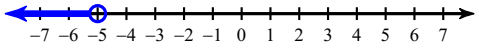
164) $a = \frac{pn}{m}$

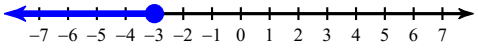
165) $a = \frac{-u + b}{k}$

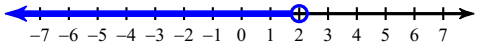
166) $x = \frac{w - v}{k}$

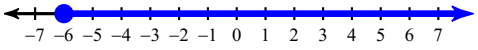
167) 

168) 

169) 

170) 

171) 

172) 

173) $n \le 6$

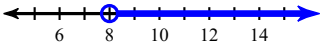
174) $a < -4$

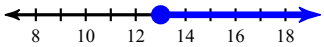
175) $k < -3$

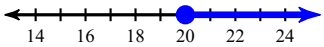
176) $b > -3$

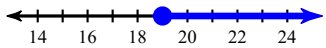
177) $x \le 3$

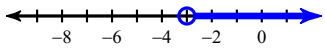
178) $x \le 1$

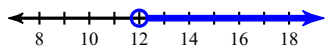
179) $n > 8$: 

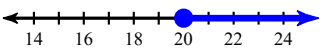
180) $r \ge 13$: 

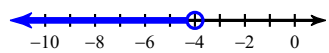
181) $b \ge 20$: 

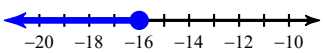
182) $v \ge 19$: 

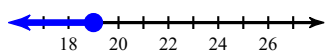
183) $x > -3$: 

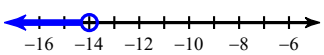
184) $b > 12$: 

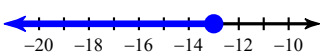
185) $v \ge 20$: 

186) $b < -4$: 

187) $b \le -16$: 

188) $n \le 19$: 

189) $b < -14$: 

190) $x \le -13$: 

191) $\{4\}$

192) $\{10\}$

193) $\left\{\frac{3}{2}\right\}$

194) $\{20\}$

195) $\left\{-\frac{3}{2}\right\}$

196) $\{0\}$

197) $\left\{-\frac{1}{3}\right\}$

198) $\{8\}$

199) $\{-20\}$

200) $\{-9\}$

201) $\left\{\frac{9}{2}\right\}$

202) $\{-15\}$

203) 172.6

204) 7.1

205) 33.8

206) 18.7%

207) 84.6%

208) 1.69

209) 133.3

210) 65.3

211) 86.8%

212) 426.1

213) -1

214) $-\frac{1}{2}$

215) $-\frac{1}{6}$

216) 6

217) $-\frac{1}{4}$

218) 1

219) Undefined

220) $\frac{5}{7}$

221) Undefined

222) $\frac{17}{29}$

223) $-\frac{1}{6}$

224) $\frac{31}{2}$

225) $-\frac{1}{14}$

226) $-\frac{2}{7}$

227) $-\frac{11}{13}$

228) 23

229) -1

230) $\frac{7}{4}$

231) -1

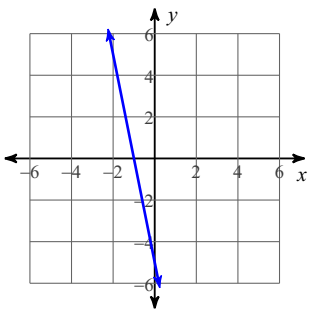
232) $\frac{1}{4}$

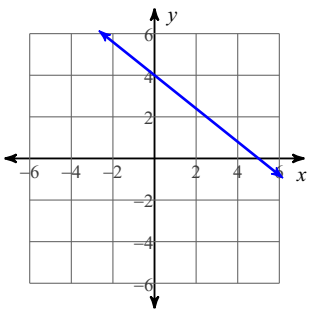
233) -2

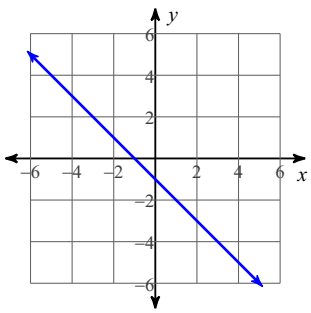
234) 2

235) Undefined

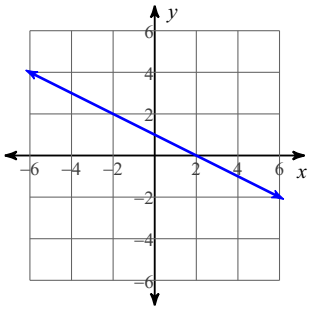
236) 3

237) 

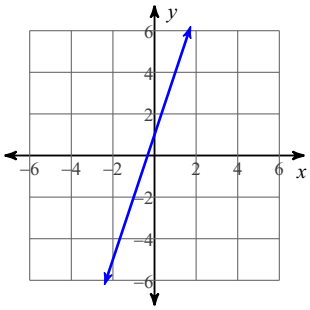
238) 

239) 

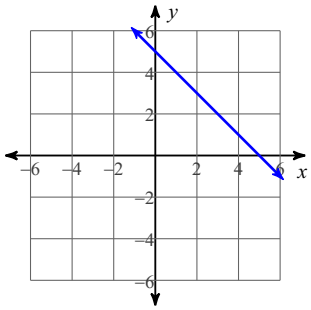
240)



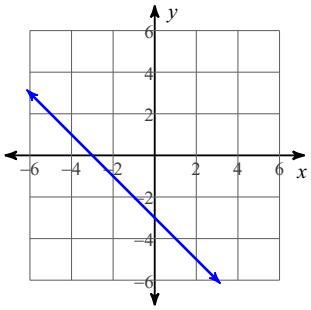
241)



242)



243)



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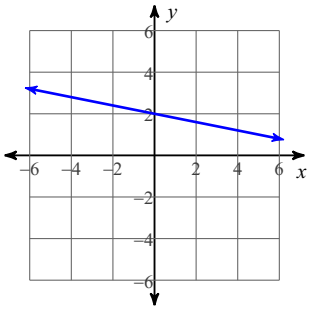
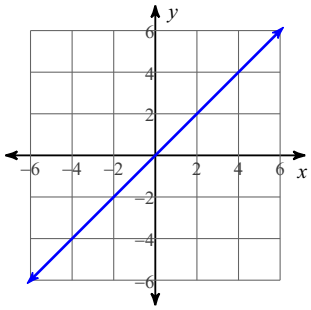
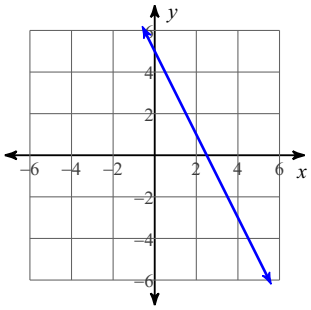


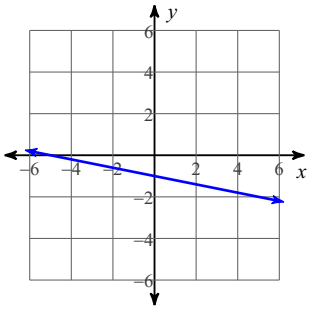
245)



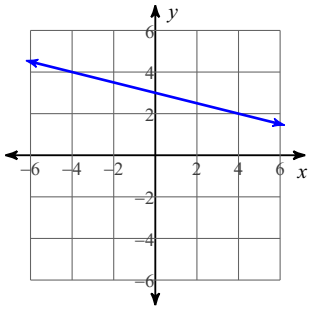
246)



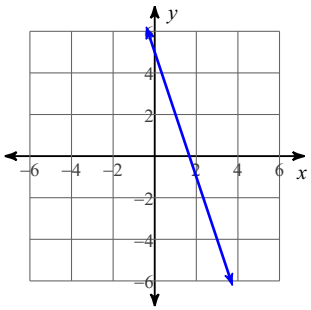
247)



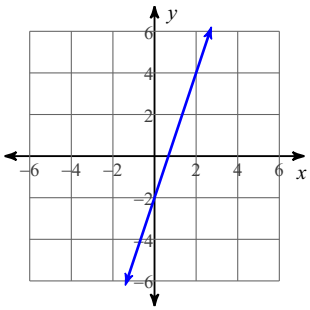
248)



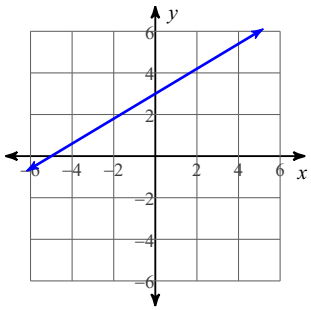
249)



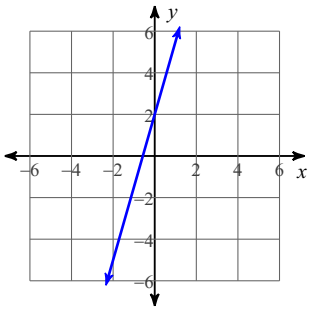
250)



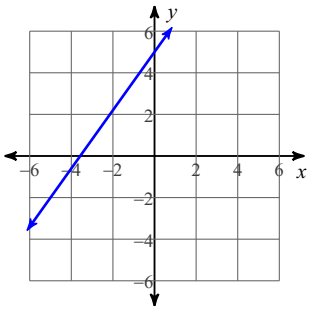
251)



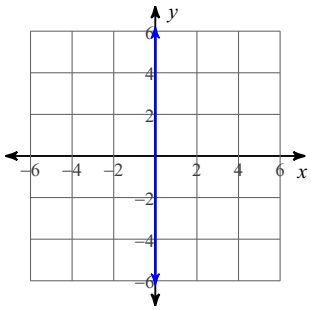
252)



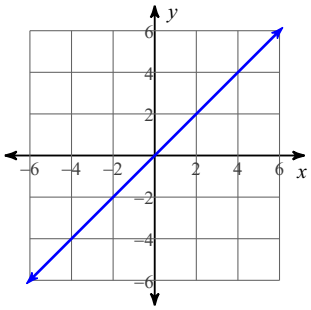
253)



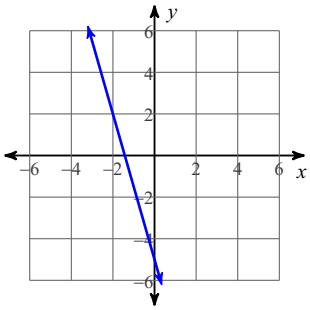
254)



255)



256)



257) $y = -3x + 5$

258) $y = \frac{9}{2}x - 5$

259) $x = 1$

260) $y = -9x - 5$

261) $y = \frac{7}{4}x + 2$

262) $y = -x - 3$

263) $y = \frac{3}{2}x + 5$

264) $y = \frac{2}{5}x + 1$

265) $y = \frac{3}{2}x - 2$

266) $y = \frac{4}{5}x - 2$

267) $y = 0$

268) $y = -\frac{4}{3}x - 1$

269) $y = -\frac{5}{7}x - 8$

270) $y = \frac{5}{4}x$

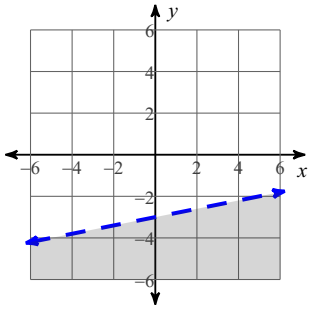
271) $y = x + 4$

272) $y = 5x - 6$

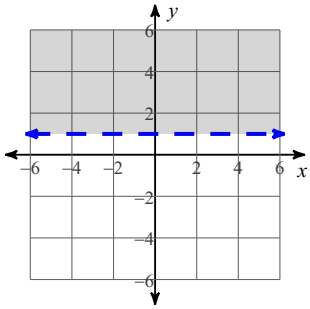
273) $y = x + 10$

274) $y = -\frac{4}{5}x - 2$

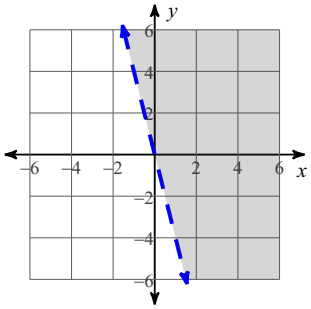
275)



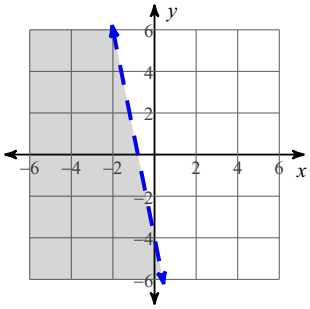
276)



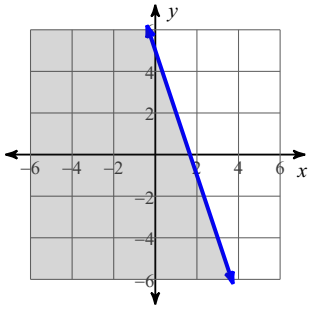
277)



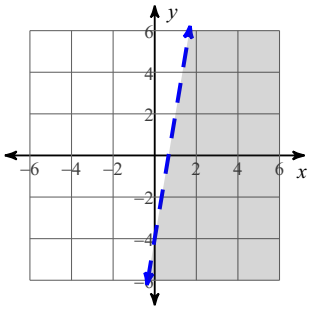
278)



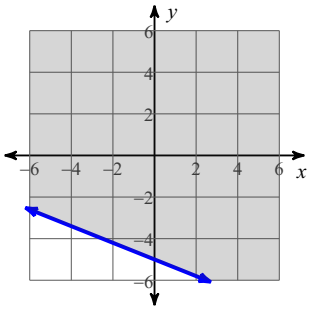
279)



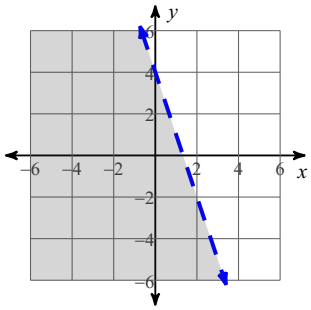
280)



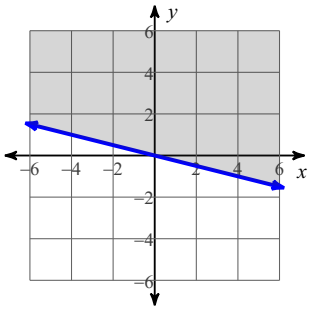
281)



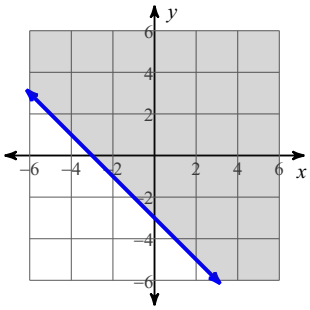
282)



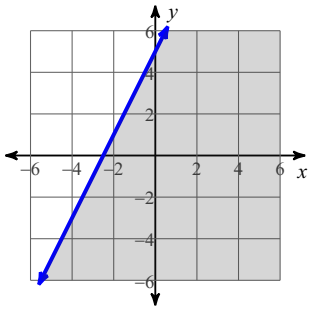
283)



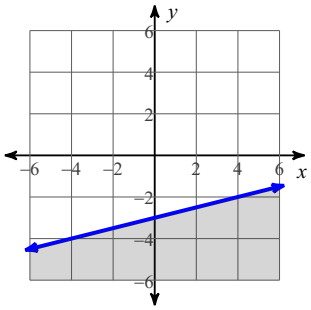
284)



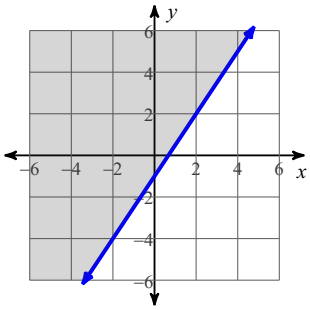
285)



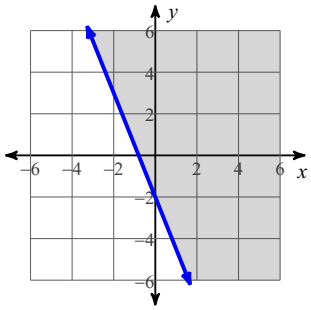
286)



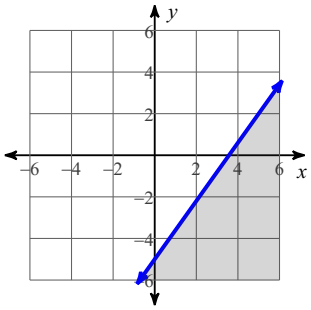
287)



288)



289)



290)