

Algebra 1 Exam Review

Date _____ Period _____

Evaluate each expression.

1) $4 + 2 + (15 \div 5)^2$

2) $(5 \times 2) \div (3 + 4 - 2)$

3) $6 \div 2 + 6 - (6 - 5)$

4) $4 - (4 + 2) \div (3 - 1)$

5) $4\frac{3}{4} - \frac{13}{7}$

6) $\left(-\frac{3}{2}\right) - \left(-\frac{3}{4}\right)$

7) $\left(-2\frac{7}{8}\right) + \left(-2\frac{3}{4}\right)$

8) $\left(-2\frac{1}{3}\right) - \frac{9}{5}$

Find each product.

9) $-2\frac{1}{4} \times \frac{1}{6}$

10) $-\frac{1}{6} \times -\frac{8}{5}$

11) $1\frac{2}{5} \times -\frac{1}{2}$

12) $-1\frac{1}{2} \times -\frac{9}{5}$

Find each quotient.

13) $\frac{1\frac{2}{5}}{3\frac{2}{3}}$

14) $\frac{\frac{3}{4}}{2\frac{1}{2}}$

15) $\frac{4}{-1\frac{1}{3}}$

16) $\frac{1\frac{1}{3}}{-3\frac{1}{4}}$

Simplify each expression.

17) $3(3n - 5)$

18) $-(x - 1)$

19) $9(-2 - 8b)$

20) $-(4v - 9)$

Solve each equation.

21) $7x + 10 = 6x - 4x$

22) $6n + 2 = 4n - 6$

23) $16 - 6x = -3x - 7x$

24) $4 + 4k = 4k + 3$

25) $-n + n - 7 = -1 - 3n$

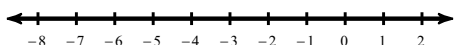
26) $7r + 3 = 1 + 8r - 2 + 10$

27) $-1 + r = r - 6 + 5$

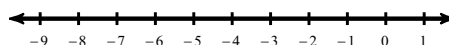
28) $4 + 2x = x - 4$

Solve each inequality and graph its solution.

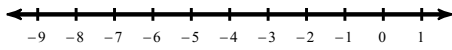
29) $-14 < x - 11$



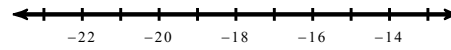
30) $-7 + x > -13$



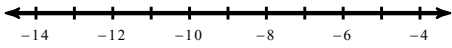
31) $n - 6 \leq -9$



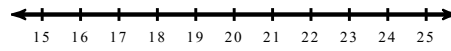
32) $180 \leq -12x$



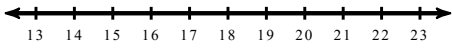
33) $6 \leq 7 + \frac{x}{10}$



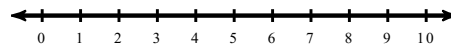
34) $176 \leq 10x - 4$



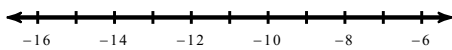
35) $-42 \geq -2(5 + n)$



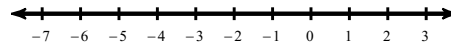
36) $\frac{n}{6} - 1 > 0$



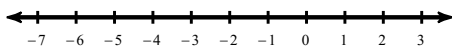
37) $6(n - 7) < -90$



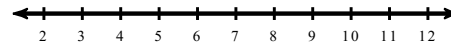
38) $-7(5 - 8n) - 7n \geq -84$



39) $8(8 - 2r) > 112$

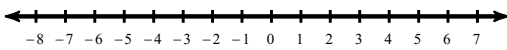


40) $2(5r + 3) + 3 \leq 89$

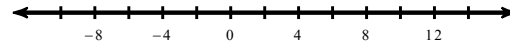


Solve each compound inequality and graph its solution.

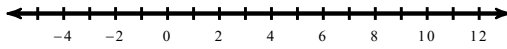
41) $-21 < 3k \leq 15$



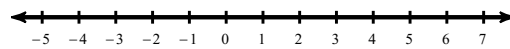
42) $-1 + v \leq -8$ or $v - 9 \geq 1$



43) $n + 7 \geq 16$ or $7 + n \leq 6$



44) $3x < 3$ and $-3x \leq 6$



Solve each proportion.

45) $\frac{9}{x} = \frac{8}{4}$

46) $\frac{7}{10} = \frac{r}{4}$

47) $\frac{2}{x} = \frac{9}{10}$

48) $\frac{x}{10} = \frac{9}{8}$

49) $\frac{9}{6} = \frac{x - 9}{8}$

50) $\frac{8}{10} = \frac{b - 2}{4}$

51) $\frac{8}{v - 1} = \frac{2}{9}$

52) $\frac{8}{6} = \frac{x - 8}{5}$

53) $\frac{a}{a + 2} = \frac{2}{4}$

54) $\frac{p - 2}{3} = \frac{p}{2}$

55) $\frac{2}{b + 4} = \frac{4}{b}$

56) $\frac{6}{5} = \frac{n - 1}{n}$

Solve each problem.

57) 20 is 330% of what?

58) What percent of 48 is 16?

59) 37 is what percent of 41?

60) What percent of 37.3 is 26?

Find each percent change. State if it is an increase or a decrease.

61) From 62 to 91

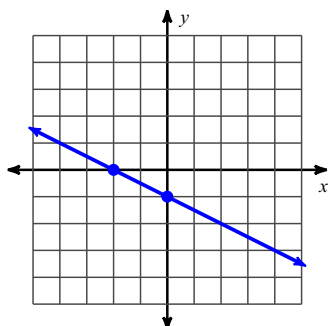
62) From 70 to 67

63) From 83 to 14

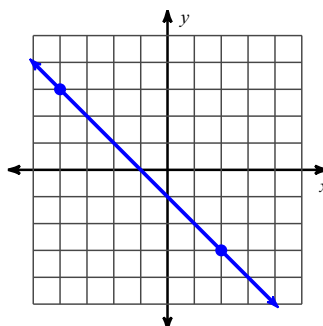
64) From 52 to 92.3

Find the slope of each line.

65)



66)



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

67) $(0, -18), (17, -11)$

68) $(8, 17), (-17, -14)$

69) $(-20, 5), (10, -7)$

70) $(-18, 15), (15, 1)$

Find the value of x or y so that the line through the points has the given slope.

71) $(3, y)$ and $(-2, 1)$; slope: $-\frac{3}{5}$

72) $(x, 2)$ and $(-4, 1)$; slope: $\frac{1}{4}$

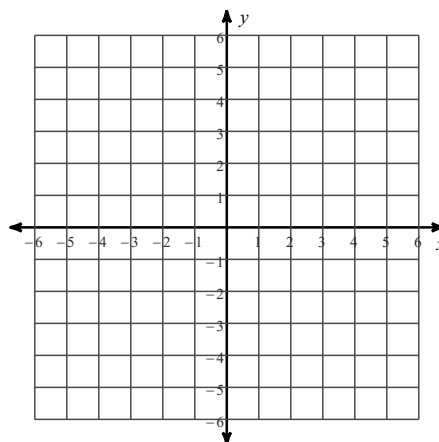
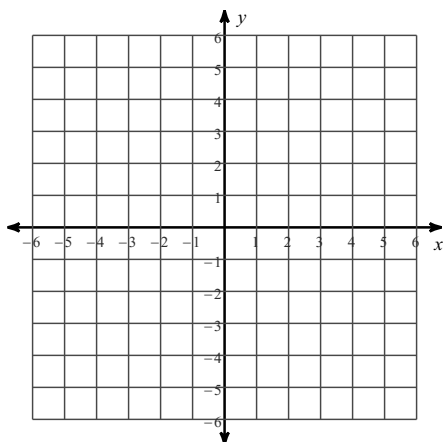
73) $(5, 1)$ and $(0, y)$; slope: $\frac{2}{5}$

74) $(-5, y)$ and $(-4, 1)$; slope: -2

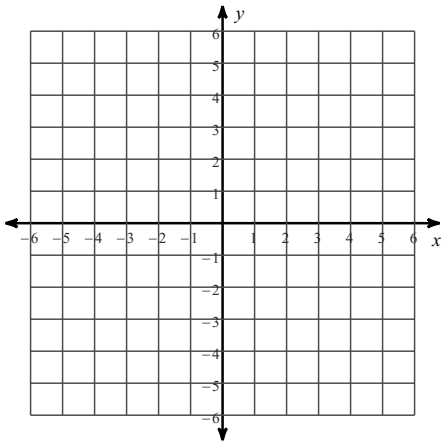
Sketch the graph of each line.

75) $x - 4y = -4$

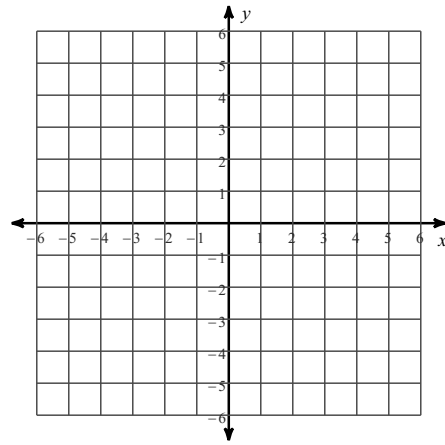
76) $6x + y = 3$



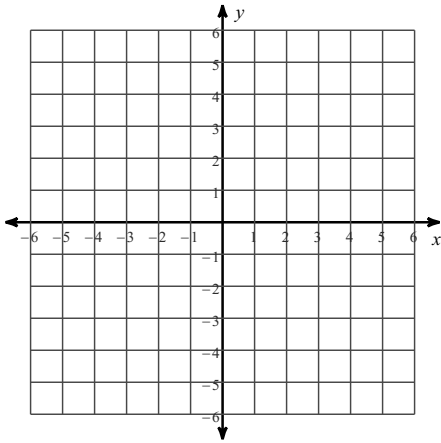
77) $5x + y = -5$



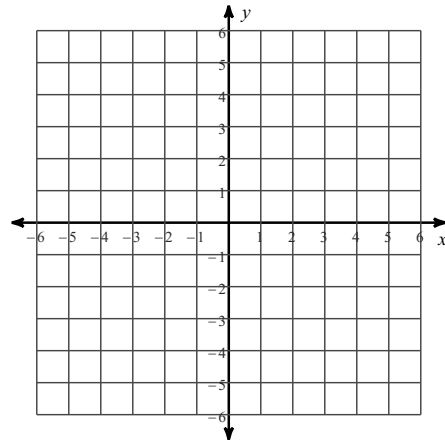
78) $x + 3y = 6$



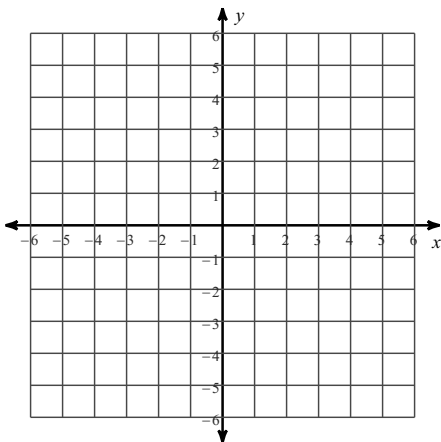
79) $y = \frac{4}{3}x$



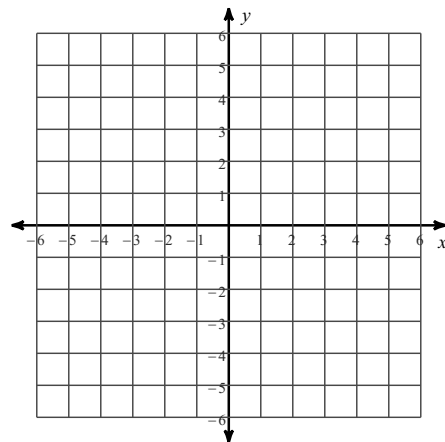
80) $y = -2x + 2$



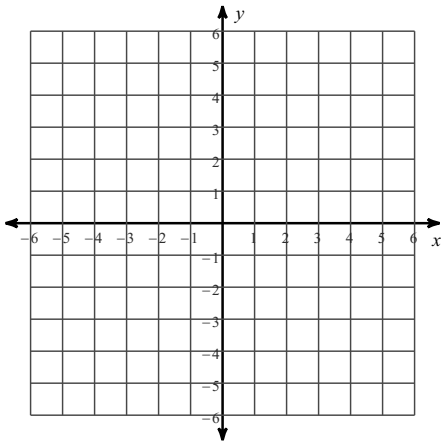
81) $y = -\frac{9}{5}x - 5$



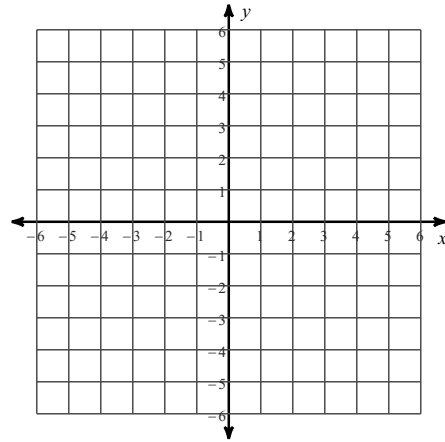
82) $y = -\frac{9}{2}x - 4$



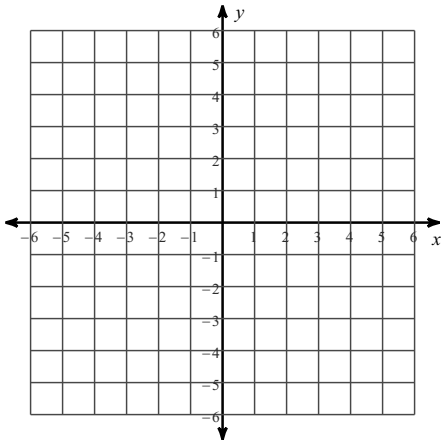
83) $0 = x + 2y$



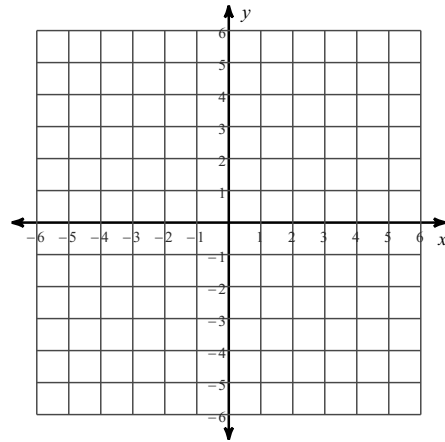
84) $y + \frac{3}{5}x = 1$



85) $5 = -y$



86) $-5y = 15 - 8x$



Write the slope-intercept form of the equation of the line through the given point with the given slope.

87) through: $(-5, -3)$, slope = $-\frac{2}{5}$

88) through: $(-1, -5)$, slope = 2

89) through: $(-3, -2)$, slope = -2

Write the slope-intercept form of the equation of the line through the given points.

90) through: $(-4, 4)$ and $(-3, -3)$

91) through: $(0, 4)$ and $(-4, 3)$

92) through: $(5, 4)$ and $(5, 0)$

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

93) through: $(-5, 1)$, parallel to $y = -\frac{1}{3}x - 4$

94) through: $(5, -4)$, parallel to $y = -\frac{1}{5}x - 2$

95) through: $(5, 0)$, parallel to $y = -\frac{4}{5}x - 4$

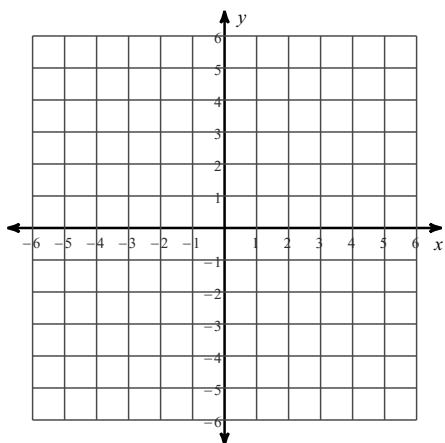
96) through: $(4, 0)$, perp. to $y = \frac{4}{5}x - 5$

97) through: $(-4, -3)$, perp. to $y = -\frac{4}{5}x - 2$

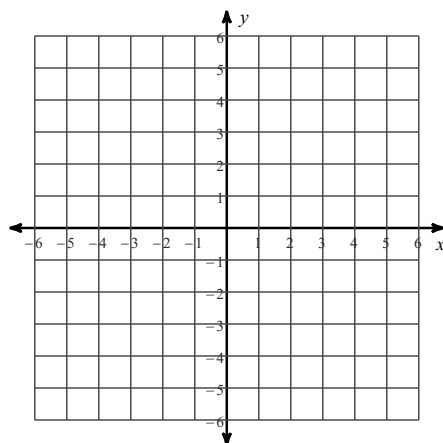
98) through: $(-4, 3)$, perp. to $y = 4x + 2$

Sketch the graph of each linear inequality.

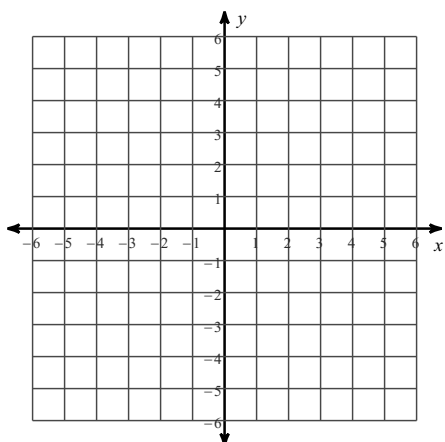
99) $y \leq \frac{9}{2}x - 4$



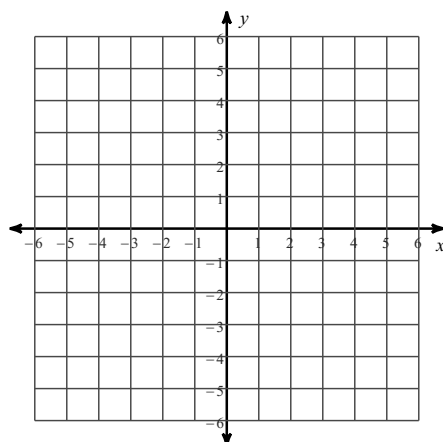
100) $y \leq -\frac{1}{3}x - 5$



101) $x + 3y > -12$



102) $2x + 5y < 15$



Solve each system of equations

103) $x + 2y = -6$
 $-6x - 2y = -14$

104) $4x - y = 4$
 $5x + y = -4$

105) $3x + 4y = -8$
 $3x + y = -11$

106) $x - 3y = -13$
 $2x - 3y = -17$

107) $-4x - 4y = -8$
 $2x - 2y = 0$

108) $-4x - 3y = -12$
 $2x + 4y = 6$

109) $-2x - 4y = 0$
 $-3x - 5y = -2$

110) $-6x - 5y = 2$
 $-5x - 6y = 9$

Simplify. Your answer should contain only positive exponents.

111) $2x^3 y^2 \cdot 2xy$

112) $3x^3 y^2 \cdot 2x^4 y^4$

113) $3x^2 y^3 \cdot x^2 y^3$

114) $vu^2 \cdot 3u^3 v^2$

115) $(2uv)^3$

116) $(y^2)^3$

117) $(3m^2 n^3)^4$

118) $(3x^4)^4$

119) $(xy^2)^4 \cdot (yx^2)^4$

120) $(x^3 y^3 \cdot (x^3)^3)^2$

121) $(2xy^2)^4 \cdot y$

123) $\frac{3x^4y^4}{3x^3y^2}$

125) $\frac{x^2y^4}{2x^4y^4}$

127) $\left(\frac{x^2y^3}{2xy^4}\right)^3$

129) $\frac{m^4n^2}{(2n^4)^4}$

131) $(m^3n^2 \cdot 2m^3n^3)^2$

133) $(m^4n^2 \cdot 2m^2n^4)^0$

135) $\frac{2n^2}{m^4n^3}$

137) $\frac{4x^2y^4}{x}$

139) $\frac{(m^3)^4}{2m^4}$

141) $\left(\frac{2y}{xy}\right)^2$

122) $(x^2y^2)^4 \cdot 2xy^4$

124) $\frac{2x^4y^3}{yx^3}$

126) $\frac{4x^4y^2}{2x^4y^3}$

128) $\frac{x^2y^3}{(x^2)^4}$

130) $\frac{(2b^4)^2}{2a^2b^4}$

132) $2x^0 \cdot (2x^4)^3$

134) $u^3 \cdot (u^2v^2)^2$

136) $\frac{2x^3}{4xy}$

138) $\frac{4a}{a^2b^2}$

140) $\frac{2y^2}{(2yx^3)^4}$

142) $\left(\frac{(2x^3y^3)^3}{(x^4y^4)^2}\right)^4$

Simplify each expression.

143) $(7 + 6x - x^3) - (2 + 7x^3 - 6x)$

145) $(4n^4 - 5 - 5n^3) + (6 - n^4 - 3n^3)$

147) $(6n^3 + 8n + 2n^2) - (n^2 - 3n^3 + 8n)$

144) $(5b^3 - 2b - 6) - (4 + 4b - 7b^3)$

146) $(6r^3 + r^2 + 1) - (8r - 7r^3 + 6r^2)$

148) $(3b^4 + 1 - 5b^3) + (8b^3 - 4b^4 - 4b^2)$

Find each product.

149) $(5x + 5)(5x - 1)$

151) $(5x - 2)(3x + 8)$

153) $(8v - 8)(5v + 7)$

155) $(4k + 2)(3k + 5)$

157) $(7r - 4)(8r - 8)$

159) $(5b + 3)(5b + 5)$

161) $(x + 3)^2$

163) $(5v - 4)^2$

165) $(6 + 5x)^2$

150) $(v - 8)(8v + 2)$

152) $(7m - 4)(6m - 4)$

154) $(a + 1)(5a - 4)$

156) $(8m + 7)(5m - 2)$

158) $(5k + 1)(2k + 6)$

160) $(2n + 1)(6n - 5)$

162) $(n + 7)(n - 7)$

164) $(5n - 1)^2$

166) $(3n + 2)(3n - 2)$

Factor the common factor out of each expression.

167) $-7x^3 - 14x$

168) $30p - 40$

169) $7x^3y^3 + 49$

170) $45y^3x + 72y^4$

Factor each completely.

171) $x^2 - 14x + 45$

172) $b^2 + 4b - 12$

173) $n^2 + 19n + 90$

174) $m^2 - m - 2$

175) $x^2 + 14x + 48$

176) $b^2 - b - 90$

177) $n^2 - 12n + 35$

178) $n^2 - 14n + 45$

179) $3n^2 - 6n - 240$

180) $4x^2 + 8x - 320$

181) $2p^2 - 8p - 24$

182) $3x^2 - 12x - 96$

183) $6x^2 + 7x - 3$

184) $4v^2 - 9v - 9$

185) $6x^2 + 31x + 28$

186) $6x^2 + 25x + 14$

187) $6x^2 - 13x + 5$

188) $6x^2 + 17x - 14$

189) $6x^2 - 5x - 6$

190) $6x^2 + x - 15$

191) $25b^2 - 16$

192) $9k^2 - 25$

193) $9n^2 - 4$

194) $9v^2 - 16$

195) $4x^2 - 12x + 9$

196) $n^2 + 10n + 25$

197) $9m^2 - 30m + 25$

198) $4v^2 - 4v + 1$

Solve each equation by factoring.

199) $x^2 + 5x - 24 = 0$

200) $n^2 + 4n - 32 = 0$

201) $b^2 - 3b - 40 = 0$

202) $v^2 - 4v = 0$

203) $3b^2 - 20b + 25 = 0$

204) $5n^2 - 23n + 12 = 0$

205) $21n^2 + 20n + 4 = 0$

206) $5p^2 + 11p - 12 = 0$

207) $7r^2 - 27r - 10 = -6$

208) $7n^2 + 50n - 46 = 2$

209) $15b^2 + 28b - 27 = 5$

210) $5x^2 - 36x = -7$

Solve each equation with the quadratic formula.

211) $2v^2 - 91 = -v$

212) $4x^2 = -5x + 114$

Find the value of c that completes the square.

213) $x^2 + 4x + c$

214) $x^2 - 17x + c$

215) $x^2 + 5x + c$

216) $x^2 - 20x + c$

Solve each equation by completing the square.

217) $v^2 - 4v - 91 = -9$

218) $10x^2 + 20x - 14 = -6$

Simplify.

219) $\sqrt{63n}$

220) $\sqrt{80n^3}$

221) $\sqrt{32n^4}$

222) $\sqrt{180x^4}$