

**Review of Algebra 1 \* Placement Test Review**

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**Evaluate each expression.**

1)  $2 - 6 \div 6$

2)  $6 - (4 - 2)$

3)  $1 - (-8) - \frac{12}{-3}$

4)  $9 - \frac{24}{-8} - (-5)$

**Evaluate each using the values given.**

5)  $-5x^2 - (x + y)$ ; use  $x = -2$ , and  $y = 5$

6)  $|-5|\left(\frac{n}{3} - p\right)$ ; use  $n = -9$ , and  $p = 2$

**Solve each proportion.**

7)  $\frac{v - 3}{v + 5} = -\frac{12}{7}$

8)  $\frac{11}{b - 1} = \frac{6}{b + 1}$

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

9) From 12 to 15

10) From 16.6 to 13

11) From 99 to 35

12) From 17 to 74

13) From 305 to 395

14) From 309 to 292

**Solve each problem.**

15) What is 42% of 66?

16) What is 98% of 1.8?

17) 98% of 74 is what?

18) 41% of what is 35?

19) 330 is 300% of what?

20) 13% of what is 260?

**Solve each equation.**

21)  $6x - 5x = 0$

22)  $17 = n + 2 + 4n$

23)  $-2(2m + 7) = -28 - 6m$

24)  $25 + r = -5(2 + 8r) + 6r$

25)  $-6n - 12(-11n + 8) = -10(n - 4)$

26)  $-28x + 6 = -3(1 + 7x) - 7x$

27)  $|-6n| = 6$

28)  $|5x| = 30$

29)  $|-7 - 8k| = 73$

30)  $|10a - 8| = 78$

31)  $-6|3 - 9x| = -18$

32)  $|9x - 9| + 4 = 76$

**Solve each equation. Remember to check for extraneous solutions.**

$$33) 2 = \sqrt{\frac{m}{4}}$$

$$34) 1 = \sqrt{n+5}$$

$$35) x = \sqrt{20-x}$$

$$36) p = \sqrt{10-9p}$$

$$37) -n + \sqrt{2n+34} = 5$$

$$38) -b + \sqrt{60-6b} = -10$$

**Simplify. Your answer should contain only positive exponents.**

$$39) n \cdot n^3 \cdot 2n$$

$$40) kk^2$$

$$41) a^2 \cdot 2a^0$$

$$42) 2x^3 \cdot 3x$$

$$43) ((-x^4 y^4)^{-5} \cdot 2xy^3)^0$$

$$44) (-2u^{-2}v^2)^2 \cdot -2v^{-5}$$

$$45) 2u^0 v^5 \cdot (2u^5 v^3)^3$$

$$46) -xy^5 \cdot (2yx^2)^2$$

$$47) \frac{(-2x^4 y^2)^3}{2y^{-2} \cdot 2x^{-2} y^2}$$

$$48) \left( -\frac{vu^3}{2u^4 v^{-3} \cdot -u^4 v^{-4}} \right)^3$$

49)  $\frac{a^{-4}b^{-1} \cdot ab^2}{(-a)^{-4}}$

50)  $-\frac{x^2y^0}{2yx^{-1} \cdot (2x^2)^{-1}}$

**Name each polynomial by degree and number of terms.**

51)  $6p^4 + 10p^3$

52)  $-8n + 3$

**Simplify each expression.**

53)  $(7n^4 - 14 - 5n^3) - (7 - 8n^3 + 11n^4)$

54)  $(12x + 10x^3 - 7) + (6x^3 + 14 + 4x)$

55)  $(13xy - 6y^2) + (14x^4 - 3y^2 + x^2y^2) - (-9y^2 - 4xy)$

56)  $(9 - 4a^3b^3) - (-6a^3b^3 - 14 - a) - (-6a^3b^3 + 2a)$

**Find each product.**

57)  $(2x + 4)(2x - 2)$

58)  $(4n + 5)(n + 4)$

59)  $(-5p + 8)(7p - 5)$

60)  $(-k + 3)(8k - 8)$

61)  $(4n - 6)(6n^2 + 3n + 8)$

62)  $(-x - 3)(6x^2 + 8x + 8)$

63)  $(m - 2)^2$

64)  $(r + 1)^2$

65)  $(n - 6)(n + 6)$

66)  $(8 - 6x)^2$

**Divide.**

67)  $(10v^4 + 30v^3 + 2v^2) \div 10v$

68)  $(18b^3 + 2b^2 + 3b) \div 6b$

**Factor each completely.**

69)  $p^2 - 9p + 18$

70)  $p^2 - 8p - 9$

71)  $15v^2 + 132v + 96$

72)  $5n^2 - 8n - 21$

73)  $6r^2 + 53r - 70$

74)  $-30a^2 + 51a - 18$

75)  $4n^2 - 25$

76)  $16m^2 - 25$

77)  $4p^2 + 12p + 9$

78)  $9x^2 + 24x + 16$

79)  $18b^2 - 2$

80)  $27n^2 - 3$

**Solve each equation by factoring.**

81)  $(3x + 1)(x + 4) = 0$

82)  $(r - 1)(r + 1) = 0$

83)  $v^2 - 8v + 7 = 0$

84)  $3x^2 + 12x + 9 = 0$

85)  $x^2 + 7x = 8$

86)  $n^2 = -9 - 6n$

**Solve each equation with the quadratic formula.**

87)  $n^2 - 2n - 3 = 0$

88)  $x^2 - 3x - 18 = 0$

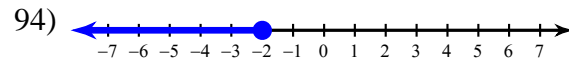
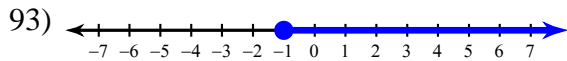
89)  $4r^2 = 24 - 10r$

90)  $4m^2 = 2 - 4m$

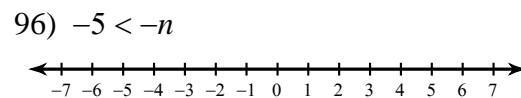
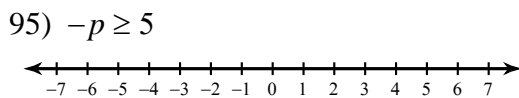
91)  $-2n^2 + 2n + 53 = -7$

92)  $-10x^2 - 12x + 45 = -9x^2 + 1 - 5x$

**Write an inequality for each graph.**

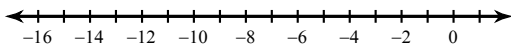


**Draw a graph for each inequality.**

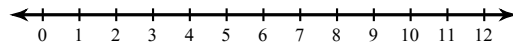


**Solve each compound inequality and graph its solution.**

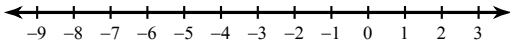
97)  $2a - 12 > -20$  or  $5 - 2a \geq 29$



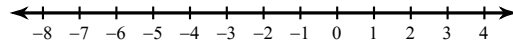
98)  $11 \leq 4 + 7n \leq 67$



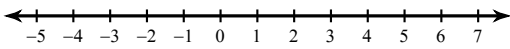
99)  $5x \geq -10$  or  $3x \leq -18$



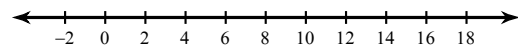
100)  $-1 < 3 + r \leq 4$



101)  $-14 - 15v \leq 18 - 19v < -19v - 1$

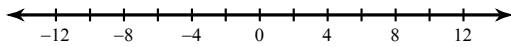


102)  $-17x - 3 \leq 13 - x$  and  $8 - 2x > -8 - x$

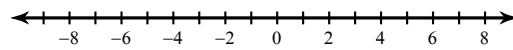


**Solve each inequality and graph its solution.**

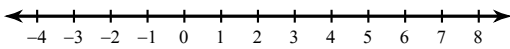
103)  $\left| \frac{n}{3} \right| > 3$



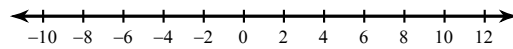
104)  $|3x| \geq 15$



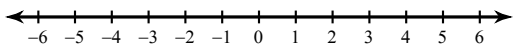
105)  $|4k - 5| < 5$



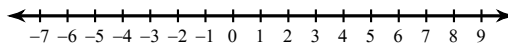
106)  $|9 - 6p| < 57$



107)  $3|3n - 6| > -9$



108)  $|6 - 6x| + 3 \leq 39$

**Simplify.**

109)  $\sqrt{8}$

110)  $\sqrt{27}$

111)  $3\sqrt{486v^3}$

112)  $-5\sqrt{256x}$

113)  $-5\sqrt{2} + 5\sqrt{2}$

114)  $-2\sqrt{5} + 5\sqrt{5}$

115)  $-2\sqrt{3} - 2\sqrt{12} - \sqrt{54}$

116)  $-3\sqrt{12} - 3\sqrt{45} - 2\sqrt{5}$

117)  $4\sqrt{112} - 2\sqrt{128} - 2\sqrt{7} - 2\sqrt{32}$

118)  $2\sqrt{80} + 2\sqrt{8} - \sqrt{20} + 4\sqrt{5}$

119)  $\sqrt{2} \cdot \sqrt{4}$

120)  $\sqrt{4} \cdot \sqrt{2}$

121)  $-2\sqrt{15}(5 + \sqrt{10})$

122)  $5\sqrt{15}(\sqrt{10} + \sqrt{3})$



$$123) (6\sqrt{7x} - 2\sqrt{6})(6\sqrt{7} + 3\sqrt{6x})$$

$$124) (-5\sqrt{5n} + 5\sqrt{7})(5\sqrt{5n} - 2\sqrt{7})$$

$$125) \frac{2\sqrt{3}}{\sqrt{27}}$$

$$126) \frac{2\sqrt{16}}{4\sqrt{9}}$$

$$127) \frac{4}{4 + 2\sqrt{2}}$$

$$128) \frac{2}{3 + \sqrt{3}}$$

**Simplify. Use absolute value signs when necessary.**

$$129) 7\sqrt{128m^3np^4}$$

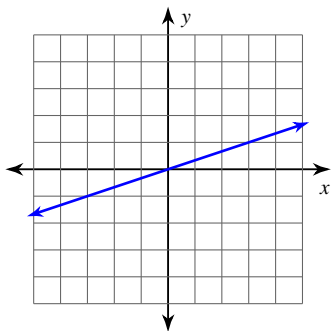
$$130) -\sqrt{576m^5p^3q}$$

**Find the slope of each line.**

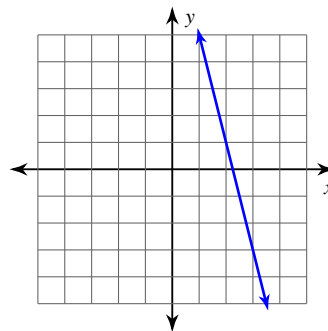
$$131) y = \frac{5}{4}x + 5$$

$$132) y = -\frac{5}{2}x + 5$$

133)



134)



Find the slope of a line parallel to each given line.

135)  $x = 4y$

136)  $1 - y = 4x$

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

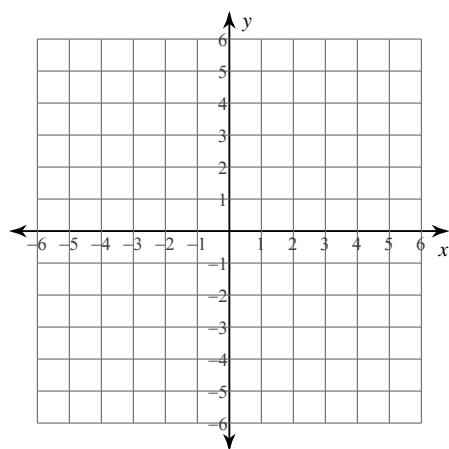
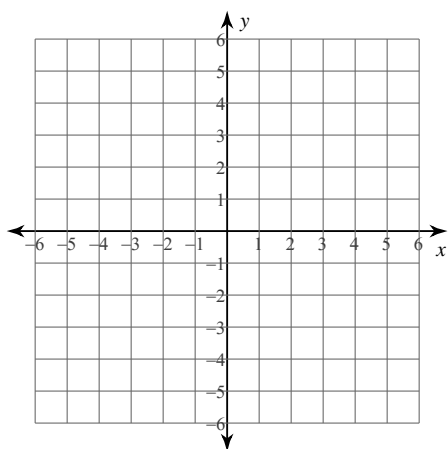
137)  $(17, 2), (-3, -4)$

138)  $(4, -18), (-12, 20)$

Sketch the graph of each line.

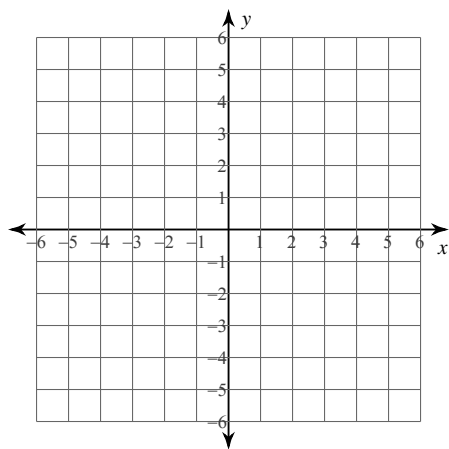
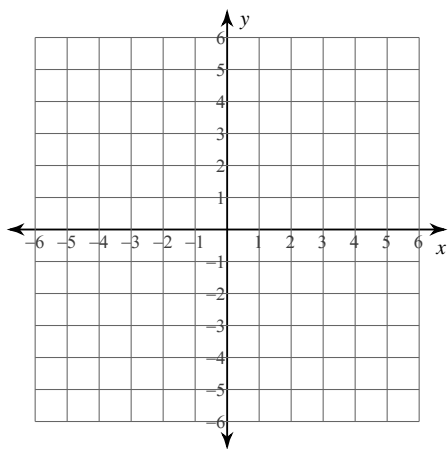
139)  $y = x - 3$

140)  $y = 4x - 2$

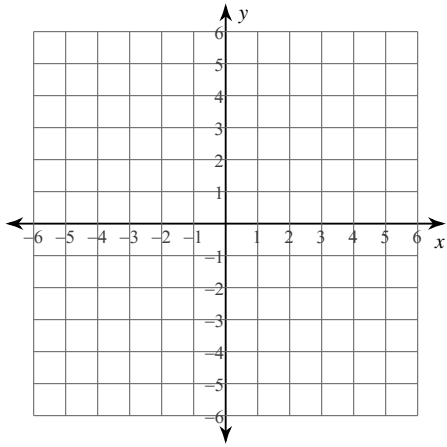


141)  $y + 6x = 3$

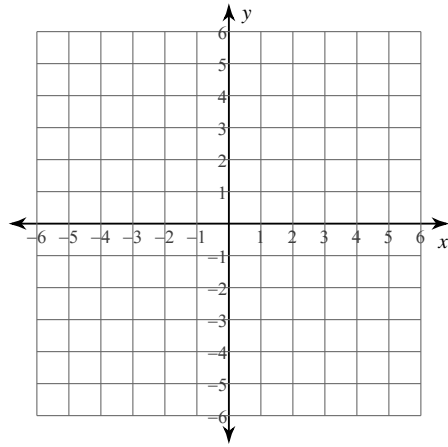
142)  $0 = -8x - 15 + 3y$



143)  $2x - 3y = -6$

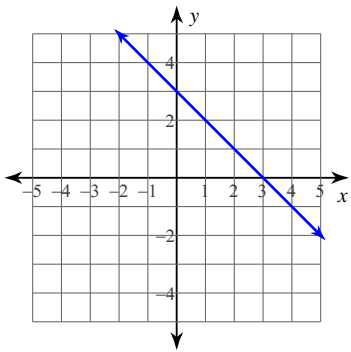


144)  $3x + 4y = -4$



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

145)



146)  $3x + 7y = -28$

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

148)  $\frac{1}{5}x = -y - 4$

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

149) Slope =  $-\frac{1}{3}$ , y-intercept = 5

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

150) through:  $(3, 1)$ , slope =  $\frac{4}{3}$

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

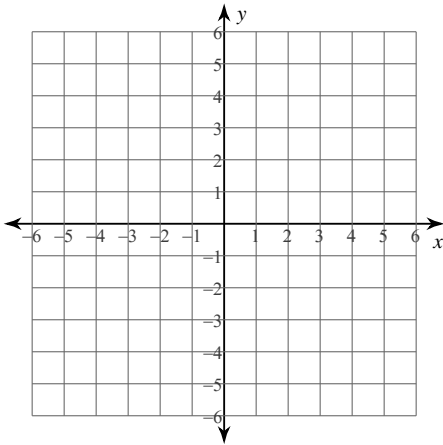
151) through:  $(-3, -2)$  and  $(1, -1)$

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

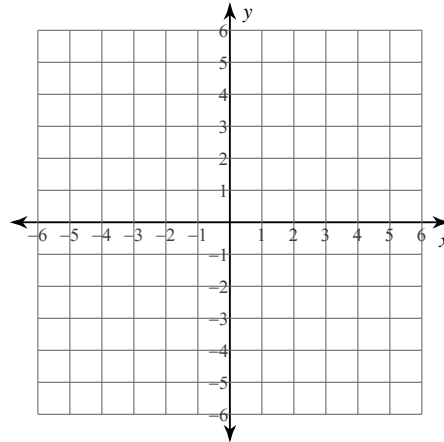
152) through:  $(-4, 5)$ , parallel to  $y = -\frac{7}{4}x + 1$

Sketch the graph of each linear inequality.

153)  $y > x - 4$



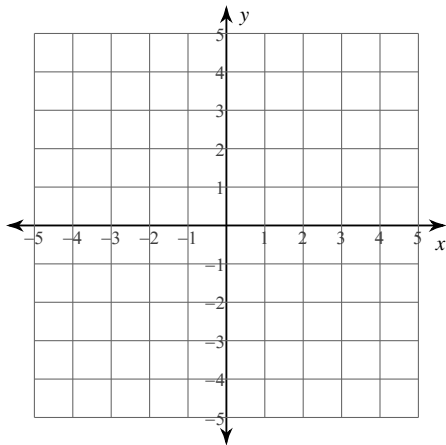
154)  $y \leq -\frac{1}{3}x - 3$



**Solve each system by graphing.**

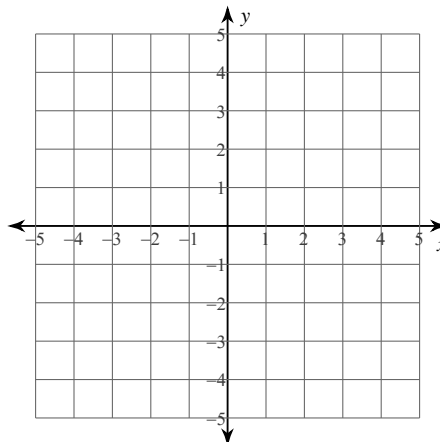
155)  $y = \frac{1}{3}x + 4$

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



156)  $y = -x + 1$

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



**Solve each system by substitution.**

157)  $x + 5y = 20$

$-3x - 5y = -20$

158)  $7x + y = 7$

$-7x - 8y = -7$

**Solve each system by elimination.**

159)  $5x + y = -13$

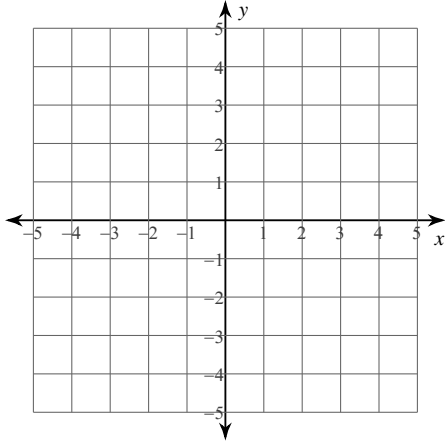
$x + 2y = 1$

160)  $6x - 9y = -30$

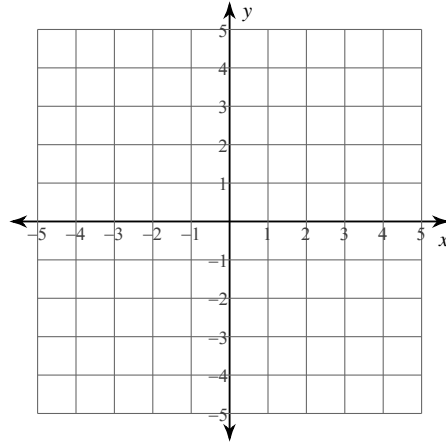
$-x + 18y = 5$

**Sketch the solution to each system of inequalities.**

161)  $y < -5x + 3$   
 $y > x - 3$



162)  $y \leq \frac{5}{3}x - 2$   
 $y > \frac{1}{3}x + 2$



**Evaluate each function.**

163)  $g(x) = 4x - 1$ ; Find  $g(-6)$

164)  $h(a) = 2a - 1$ ; Find  $h(2)$

165)  $f(x) = 2 \cdot 2^x + 1$ ; Find  $f(1)$

166)  $p(t) = -3|t + 1|$ ; Find  $p(2)$

167)  $g(n) = 3n + 1$ ; Find  $g(-n)$

168)  $h(n) = 2n + 2$ ; Find  $h(-1 - n)$

**Perform the indicated operation.**

169)  $g(x) = x + 5$   
 $f(x) = -x + 1$   
Find  $g(-10) + f(-10)$

170)  $f(x) = 3x + 5$   
 $g(x) = -x^3 - 3x^2 - x$   
Find  $f(-5) + g(-5)$

171)  $h(a) = 3a + 1$   
 $g(a) = -a^2 + 1$   
 Find  $h(10) - g(10)$

172)  $g(a) = 2a + 3$   
 $h(a) = 2a + 1$   
 Find  $g(-7) - h(-7)$

173)  $g(t) = 2t + 1$   
 $h(t) = 3t + 3$   
 Find  $g(5) \cdot h(5)$

174)  $g(t) = 4t - 4$   
 $h(t) = t^3 - 5t^2$   
 Find  $g(5) \cdot h(5)$

175)  $f(n) = 2n^3 + 5n$   
 $g(n) = n + 3$   
 Find  $f(1) \div g(1)$

176)  $h(n) = 3n - 3$   
 $g(n) = -n^2 - 4n$   
 Find  $h(-10) \div g(-10)$

177)  $g(x) = -x - 4$   
 $h(x) = -2x^2 - 2x$   
 Find  $g(x) + h(x)$

178)  $g(x) = x^2 + 5x$   
 $h(x) = 2x + 5$   
 Find  $g(x) - h(x)$

179)  $h(x) = 4x - 2$   
 $g(x) = 3x^2 + 1$   
 Find  $h(x) \cdot g(x)$

180)  $g(x) = x^3 + 5x$   
 $f(x) = x + 5$   
 Find  $g(x) \div f(x)$

**State the excluded values for each.**

181)  $\frac{3b^2 + 3b}{b + 1}$

182)  $\frac{r^2 - 5r - 36}{r - 9}$

183)  $\frac{49x + 70}{28x}$

184)  $\frac{16n^2 + 24n}{24n}$

**Simplify each and state the excluded values.**

$$185) \frac{70v}{21v^2}$$

$$186) \frac{70x^4}{30x^4}$$

$$187) \frac{6}{6a + 27}$$

$$188) \frac{2x + 18}{x + 9}$$

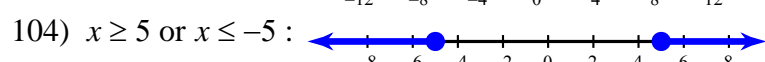
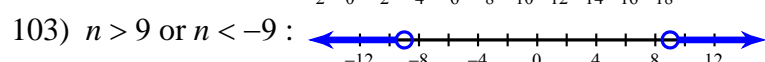
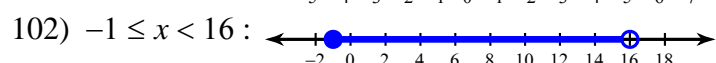
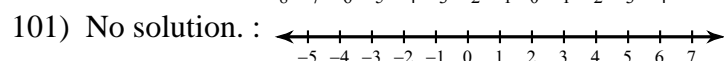
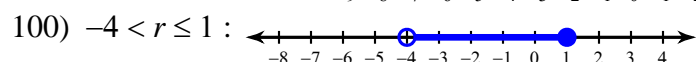
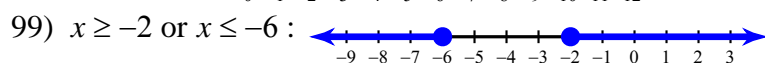
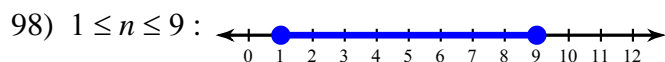
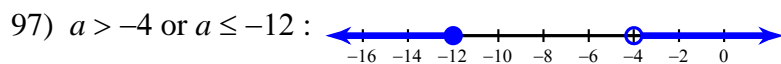
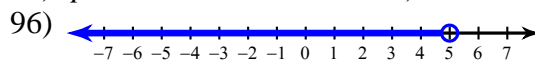
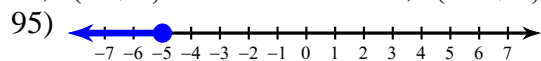
$$189) \frac{k^2 + 5k - 36}{9k + 81}$$

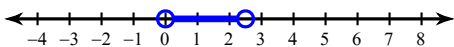
$$190) \frac{p^2 - 4p - 12}{p^2 - 7p - 18}$$

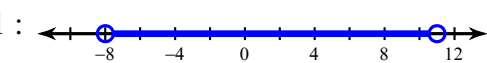


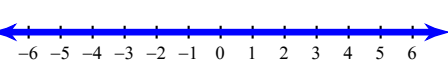
# Answers to Review of Algebra 1 \* Placement Test Review

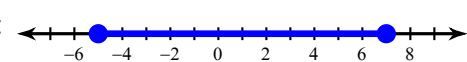
- |  |  |                                       |                              |
|--|--|---------------------------------------|------------------------------|
| 1) 1                                   | 2) 4                                   | 3) 13                                 | 4) 17                        |
| 5) -23                                 | 6) -25                                 | 7) $\{-2.05\}$                        | 8) $\{-3.4\}$                |
| 9) 25% increase                        | 10) 21.7% decrease                     | 11) 64.6% decrease                    | 12) 335.3% increase          |
| 13) 29.5% increase                     | 14) 5.5% decrease                      | 15) 27.7                              | 16) 1.76                     |
| 17) 72.5                               | 18) 85.4                               | 19) 110                               | 20) 2000                     |
| 21) $\{0\}$                            | 22) $\{3\}$                            | 23) $\{-7\}$                          | 24) $\{-1\}$                 |
| 25) $\{1\}$                            | 26) No solution.                       | 27) $\{-1, 1\}$                       | 28) $\{6, -6\}$              |
| 29) $\left\{-10, \frac{33}{4}\right\}$ | 30) $\left\{\frac{43}{5}, -7\right\}$  | 31) $\left\{0, \frac{2}{3}\right\}$   | 32) $\{9, -7\}$              |
| 33) $\{16\}$                           | 34) $\{-4\}$                           | 35) $\{4\}$                           | 36) $\{1\}$                  |
| 37) $\{1\}$                            | 38) $\{10\}$                           | 39) $2n^5$                            | 40) $k^3$                    |
| 41) $2a^2$                             | 42) $6x^4$                             | 43) 1                                 | 44) $-\frac{8}{u^4v}$        |
| 45) $16v^{14}u^{15}$                   | 46) $-4x^5y^7$                         | 47) $-2x^{14}y^6$                     | 48) $\frac{v^{24}}{8u^{15}}$ |
| 49) $ba$                               | 50) $-\frac{x^5}{y}$                   | 51) quartic binomial                  | 52) linear binomial          |
| 53) $-4n^4 + 3n^3 - 21$                | 54) $16x^3 + 16x + 7$                  | 55) $14x^4 + x^2y^2 + 17xy$           |                              |
| 56) $8a^3b^3 - a + 23$                 | 57) $4x^2 + 4x - 8$                    | 58) $4n^2 + 21n + 20$                 | 59) $-35p^2 + 81p - 40$      |
| 60) $-8k^2 + 32k - 24$                 | 61) $24n^3 - 24n^2 + 14n - 48$         | 62) $-6x^3 - 26x^2 - 32x - 24$        |                              |
| 63) $m^2 - 4m + 4$                     | 64) $r^2 + 2r + 1$                     | 65) $n^2 - 36$                        | 66) $64 - 96x + 36x^2$       |
| 67) $v^3 + 3v^2 + \frac{v}{5}$         | 68) $3b^2 + \frac{b}{3} + \frac{1}{2}$ | 69) $(p-3)(p-6)$                      | 70) $(p+1)(p-9)$             |
| 71) $3(5v+4)(v+8)$                     | 72) $(5n+7)(n-3)$                      | 73) $(r+10)(6r-7)$                    | 74) $-3(2a-1)(5a-6)$         |
| 75) $(2n+5)(2n-5)$                     | 76) $(4m+5)(4m-5)$                     | 77) $(2p+3)^2$                        | 78) $(3x+4)^2$               |
| 79) $2(3b+1)(3b-1)$                    | 80) $3(3n+1)(3n-1)$                    | 81) $\left\{-\frac{1}{3}, -4\right\}$ | 82) $\{1, -1\}$              |
| 83) $\{1, 7\}$                         | 84) $\{-3, -1\}$                       | 85) $\{1, -8\}$                       | 86) $\{-3\}$                 |
| 87) $\{3, -1\}$                        | 88) $\{6, -3\}$                        | 89) $\{1.5, -4\}$                     | 90) $\{0.366, -1.366\}$      |
| 91) $\{-5, 6\}$                        | 92) $\{-11, 4\}$                       | 93) $p \geq -1$                       | 94) $a \leq -2$              |



105)  $0 < k < \frac{5}{2}$  : 

106)  $-8 < p < 11$  : 

107) { All real numbers. } : 

108)  $-5 \leq x \leq 7$  : 

109)  $2\sqrt{2}$

110)  $3\sqrt{3}$

111)  $27v\sqrt{6v}$

112)  $-80\sqrt{x}$

113) 0

114)  $3\sqrt{5}$

115)  $-6\sqrt{3} - 3\sqrt{6}$

116)  $-6\sqrt{3} - 11\sqrt{5}$

117)  $14\sqrt{7} - 24\sqrt{2}$

118)  $10\sqrt{5} + 4\sqrt{2}$

119)  $2\sqrt{2}$

120)  $2\sqrt{2}$

121)  $-10\sqrt{15} - 10\sqrt{6}$

122)  $25\sqrt{6} + 15\sqrt{5}$

123)  $216\sqrt{x} + 18x\sqrt{42} - 12\sqrt{42}$

124)  $-125n + 35\sqrt{35n} - 70$

125)  $\frac{2}{3}$

126)  $\frac{2}{3}$

127)  $2 - \sqrt{2}$

128)  $\frac{3 - \sqrt{3}}{3}$

129)  $56p^2|m|\sqrt{2mn}$

130)  $-24m^2|p|\sqrt{mpq}$

131)  $\frac{5}{4}$

132)  $-\frac{5}{2}$

133)  $\frac{1}{3}$

134) -4

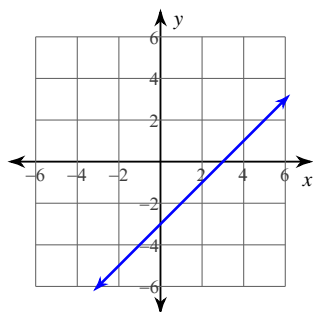
135)  $\frac{1}{4}$

136) -4

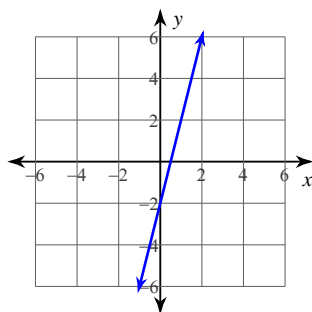
137)  $\frac{3}{10}$

138)  $-\frac{19}{8}$

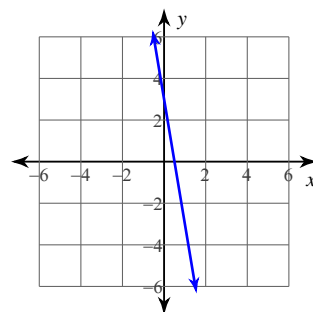
139)



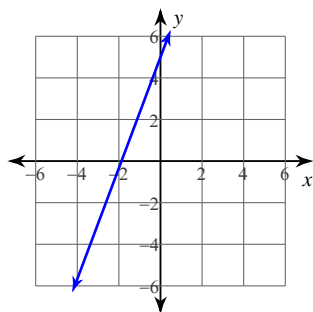
140)



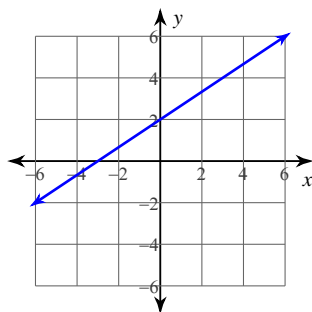
141)



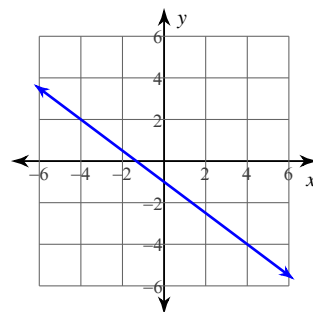
142)



143)



144)



145)  $y = -x + 3$

146)  $y = -\frac{3}{7}x - 4$

147)  $y = -\frac{3}{2}x - 5$

148)  $y = -\frac{1}{5}x - 4$

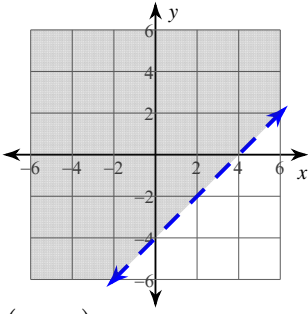
149)  $y = -\frac{1}{3}x + 5$

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

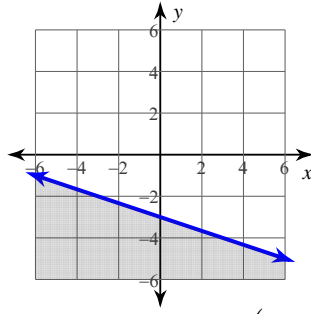
151)  $y = \frac{1}{4}x - \frac{5}{4}$

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

153)

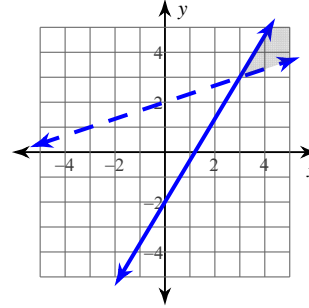
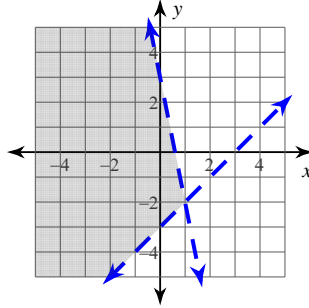


154)

155)  $(-3, 3)$ 156)  $(4, -3)$ 157)  $(0, 4)$ 158)  $(1, 0)$ 159)  $(-3, 2)$ 160)  $(-5, 0)$ 

161)

162)

163)  $-25$ 164)  $3$ 165)  $5$ 166)  $-9$ 167)  $-3n + 1$ 168)  $-2n$ 169)  $6$ 170)  $45$ 171)  $130$ 172)  $2$ 173)  $198$ 174)  $0$ 175)  $\frac{7}{4}$ 176)  $\frac{11}{20}$ 177)  $-2x^2 - 3x - 4$ 178)  $x^2 + 3x - 5$ 179)  $12x^3 - 6x^2 + 4x - 2$ 180)  $\frac{x^3 + 5x}{x + 5}$ 181)  $\{-1\}$ 182)  $\{9\}$ 183)  $\{0\}$ 184)  $\{0\}$ 185)  $\frac{10}{3v}; \{0\}$ 186)  $\frac{7}{3}; \{0\}$ 187)  $\frac{2}{2a + 9}; \left\{-\frac{9}{2}\right\}$ 188)  $2; \{-9\}$ 189)  $\frac{k - 4}{9}; \{-9\}$ 190)  $\frac{p - 6}{p - 9}; \{9, -2\}$