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SCHOOL

Ben Lipson Upper School

Summer Review for Students Entering Geometry CP

Students,

The following packet contains skills that you learned in Algebra 1. Understand how to do all the problems in this packet will not only get you off to a great start but will also make the entire year that much smoother. If you get stuck on any of the problems, helpful links are shown below. As always, Khan Academy may be used for video reinforcement.

Good Luck!

Students entering College Preparatory Geometry must be able to:

- ✓ Evaluate expressions
- ✓ Translate expressions
- ✓ Simplify expressions
- ✓ Solve equations, including proportions
- ✓ Find the slope of a line
- ✓ Graph the equation of a line
- ✓ Write the equation of a line, including parallel and perpendicular lines
- ✓ Multiply polynomials
- ✓ Classify triangles based off side lengths and angle measures
- ✓ Calculate the distance between two points
- ✓ Calculate the midpoint of a line segment
- ✓ Solve for a missing side using the Pythagorean Theorem

Helpful websites:

- www.khanacademy.com
- www.virtualnerd.com/algebra
- www.mathisfun.com
- www.purplemath.com

Geometry CP

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Summer Review Packet

Evaluate each using the values given.

1) $\frac{h+k}{4}$; use $h = 2$, and $k = 2$

2) c^2b; use $b = 5$, and $c = 2$

3) $p(4+r)$; use $p = 3$, and $r = 1$

4) $y + z + y$; use $y = 6$, and $z = 1$

5) m^2n; use $m = -2$, and $n = 6$

6) $x + x - z$; use $x = 4$, and $z = 1$

7) $2b - a^2$; use $a = -6$, and $b = 4$

8) $(x - z)^3$; use $x = 5$, and $z = 2$

9) $y(z - y)$; use $y = 2$, and $z = 5$

10) $p - (p - m)^2$; use $p = 5$, and $m = 7$

Write each as an algebraic expression.

11) a number decreased by 6

12) 9 less than x

13) a number squared

14) the sum of 12 and a number

15) 7 increased by 10

16) the quotient of 24 and a number, increased by 7

17) 15 less than twice a number

18) 13 decreased by three times a number

19) half of 14 times a number

20) 2 increased by a number

Simplify each expression.

21) $3 - 8(1 - 2m)$

22) $1 + 7(m - 4)$

23) $4(-1 + 7k) + 7k$

24) $5(2n - 8) - 7$

25) $5n + 3(6 + 4n)$

26) $7 + 4(v - 6)$

27) $-(r - 5) - 8(5 + 7r)$

28) $7(p + 6) - 10(6p - 9)$

29) $6(1 + 2x) - (8 - 10x)$

30) $-6(3 - 8m) + 9(m - 7)$

31) $-(4 - 7n) + 7(n + 5)$

32) $5(1 - 3r) + 4(8 - r)$

Solve each equation.

33) $2 + 2x = 34$

34) $-1 = \dfrac{-8 + p}{27}$

35) $4x - 3 = -15$

36) $-43 = -5m + 7$

37) $\frac{m}{10} + 10 = 9$

38) $4 = \frac{9 + b}{4}$

39) $-1 = k - 4 + 7$

40) $-6b - b = 0$

41) $22 = 4 + 8n - 2n$

42) $-19 = 6a - 1 + 3a$

43) $1 - 8x = 13 + 4x$

44) $6 - n = 11 + 1 - 2n - 8$

45) $3 - 3m = 3 + 8m$

46) $k + 8 = 11 + k$

47) $-16 - 8m = -8(m + 2)$

48) $4n + 32 = -5(n - 1)$

49) $-7(n - 8) = 7n - 28$

50) $34 + 7k = -8(6 - 6k)$

51) $8(m - 7) = -4(4m + 2) + 8m$

52) $3(2x + 6) = 3(x + 7)$

53) $-5(4n + 4) = -2(1 + n)$

54) $-2(6n - 2) = 7(-3n + 7)$

Solve each proportion.

55) $\frac{8}{2} = \frac{5}{n}$

56) $\frac{v}{4} = \frac{9}{8}$

57) $\frac{3}{b}=\frac{7}{6}$

58) $\frac{10}{4}=\frac{v}{5}$

59) $\frac{6}{4}=\frac{x+8}{x}$

60) $\frac{8}{5}=\frac{n}{n+5}$

61) $\frac{b+2}{b}=\frac{7}{10}$

62) $\frac{8}{n+1}=\frac{2}{n}$

63) $\frac{6}{r+6}=\frac{3}{r+4}$

64) $\frac{n-4}{3}=\frac{n+3}{10}$

65) $\frac{a+4}{a-3}=\frac{3}{9}$

66) $\frac{3}{4}=\frac{p-1}{p+5}$

67) $\frac{10}{r+2}=\frac{4}{r-10}$

68) $\frac{7}{5}=\frac{v+1}{v+3}$

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

69) $(4,-8),(-17,-6)$

70) $(-6,-15),(3,17)$

71) $(-20,17),(-19,6)$

72) $(-20,-13),(15,-8)$

73) $(9,-9),(-11,-16)$

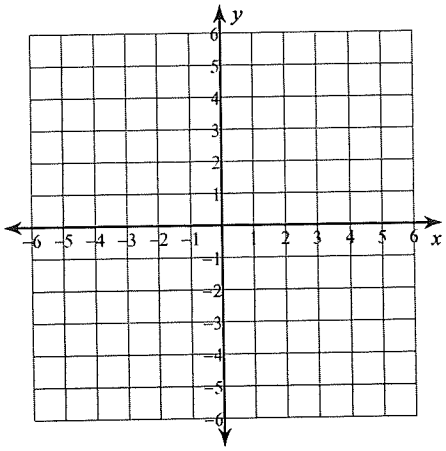
74) $(-13,-18),(16,-9)$

75) $(10, 4), (9, -16)$

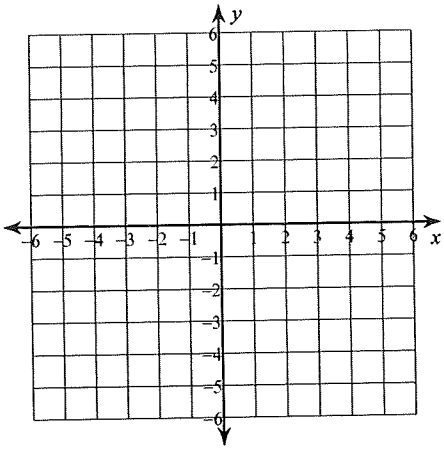
76) $(1, -5), (-16, 10)$

Sketch the graph of each line.

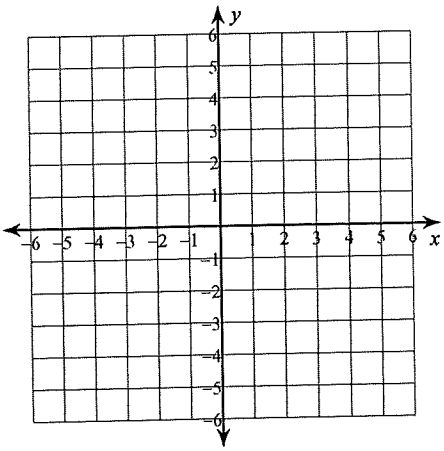
77) $2x - y = 2$



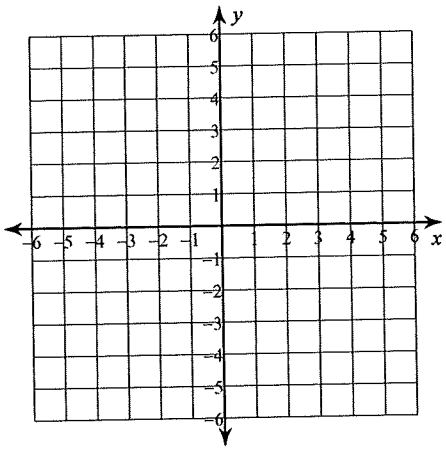
78) $3x + 5y = 10$



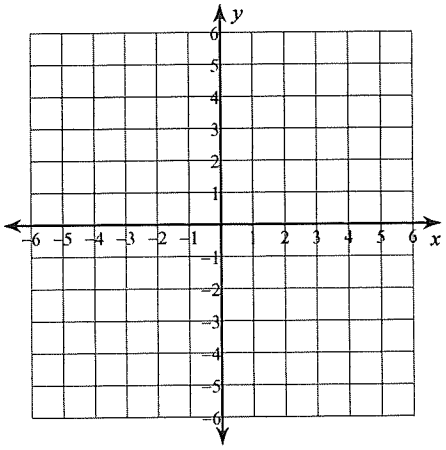
79) $3x - 4y = 0$



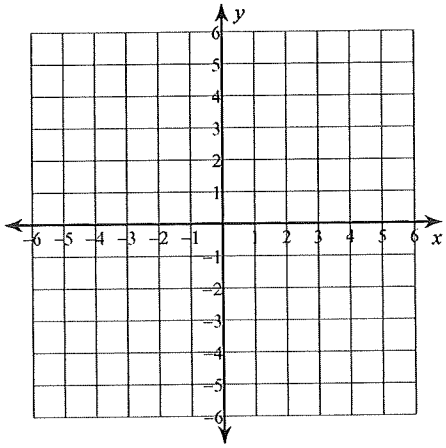
80) $4x + y = 4$



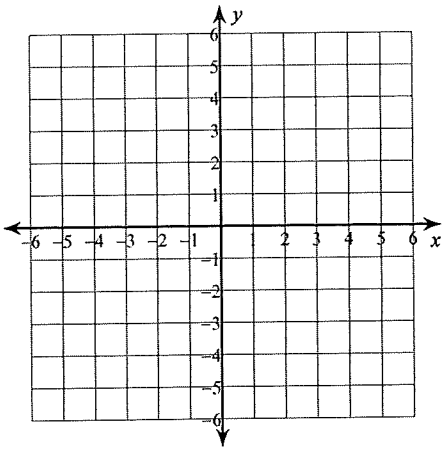
81) $x = y - 5$



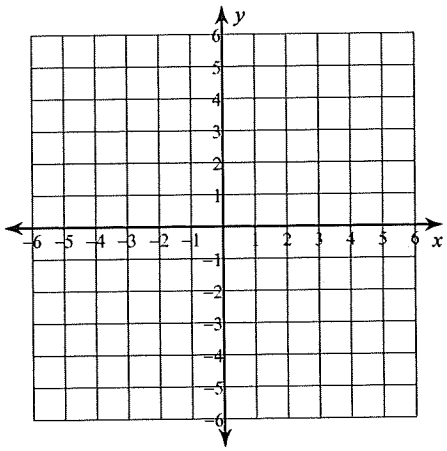
82) $1 = \frac{1}{2}y + \frac{3}{2}x$



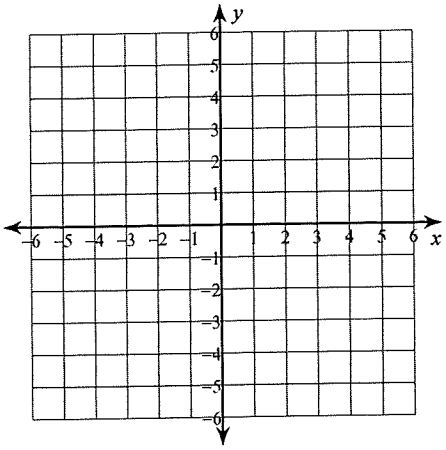
83) $0 = 5 + y + x$



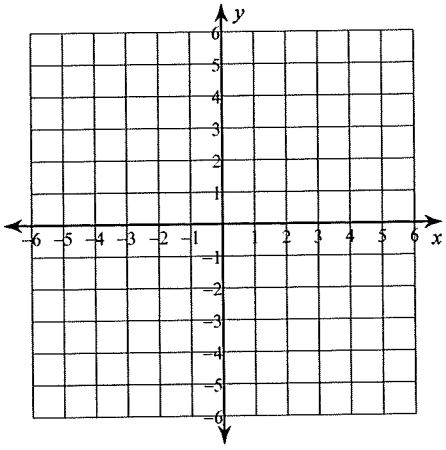
84) $-\frac{3}{10}x + \frac{2}{5}y = 2$



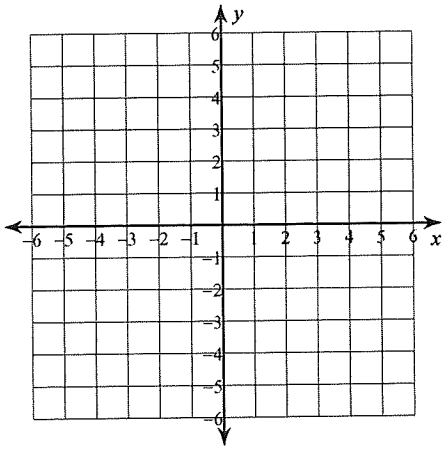
85) $x = -2$



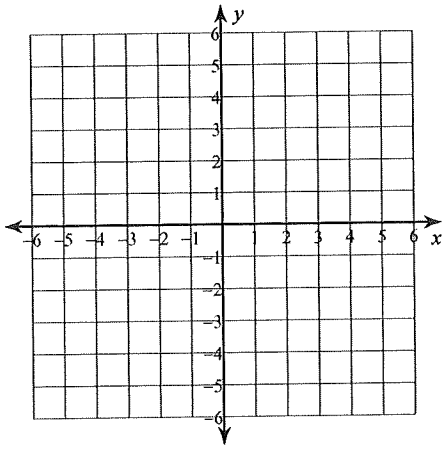
86) $-x + 3y = 0$



87) $-6 = 2y - 4x$



88) $1 - \frac{1}{3}y + \frac{7}{9}x = 0$



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

89) $4x - 3y = 24$

90) $8x - 7y = 28$

91) $3x + 4y = 24$

92) $x + 6y = -12$

93) $4x - y = 4$

94) $x + 2y = 14$

95) $x - 4y = -32$

96) $x - y = 4$

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

97) through: $(-5, 5)$, slope $= 0$

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

99) through: $(1, 3)$, slope $= 2$

100) through: $(-2, 2)$, slope $= \frac{1}{2}$

101) through: $(-5, 3)$, slope $= -\frac{4}{5}$

102) through: $(3, 5)$, slope $= \frac{10}{3}$

103) through: $(-2, 5)$, slope $= 9$

104) through: $(3, -1)$, slope $= -2$

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

105) through: $(0, 1)$ and $(-3, -4)$

106) through: $(-2, -1)$ and $(0, -1)$

107) through: $(-4, 5)$ and $(0, 4)$

108) through: $(0, 0)$ and $(4, -2)$

109) through: $(3, 2)$ and $(0, 5)$

110) through: $(0, -2)$ and $(-3, 2)$

111) through: $(-5, -5)$ and $(0, 4)$

112) through: $(0, -1)$ and $(-1, 2)$

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

113) through: $(1, 5)$, parallel to $y = 10x - 2$

114) through: $(5, 0)$, parallel to $y = \frac{3}{5}x + 3$

115) through: $(3, 4)$, parallel to $y = \frac{2}{3}x$

116) through: $(5, 2)$, parallel to $y = \frac{4}{5}x + 2$

117) through: $(1, -5)$, parallel to $y = -3x - 1$

118) through: $(2, 4)$, parallel to $y = 4x - 5$

119) through: $(-3, 0)$, perp. to $y = \frac{3}{4}x + 4$

120) through: $(-4, 3)$, perp. to $y = 2x - 5$

121) through: $(2, 4)$, perp. to $y = -2x - 2$

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

123) through: $(-2, 0)$, perp. to $y = \frac{2}{5}x + 1$

124) through: $(-5, -4)$, perp. to $y = -\frac{5}{9}x - 5$

Simplify each expression.

125) $(2x^2 + 7 + 5x) + (3 - 6x^2 + 2x)$

126) $(3n - 4 + 5n^2) + (2n^2 + 7 + 6n)$

127) $(4x^2 - 4 + 2x) + (3x + 2x^2 - 4)$

128) $(3b - 3 - 8b^2) + (7b^2 - 7 + 3b)$

129) $(2n + 8n^2 - 6) + (4 + 4n + n^2)$

130) $(3n - 4n^2 + 7) - (8 - n^2 + 2n)$

Find each product.

131) $2(3v - 5)$

132) $2v(3v + 7)$

133) $6(2r - 6)$

134) $2x(8x + 5)$

135) $6x(x + 6)$

136) $2(2x - 6)$

137) $(4b+1)(2b-8)$

138) $(7x+4)(7x-8)$

139) $(7m+5)(3m+2)$

140) $(7x-1)(8x-7)$

141) $(3x+4)(6x-4)$

142) $(7x+3)(7x-3)$

Simplify.

143) $\sqrt{245}$

144) $\sqrt{48}$

145) $\sqrt{18}$

146) $\sqrt{63}$

147) $\sqrt{147}$

148) $\sqrt{72}$

149) $\sqrt{252}$

150) $\sqrt{45}$

151) $\sqrt{32}$

152) $\sqrt{144}$

Geometry CP

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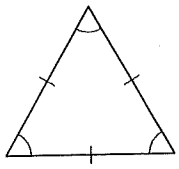
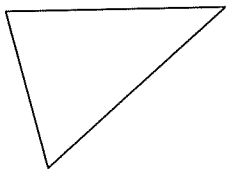
Summer Review Packet

Classify each triangle by its angles and sides. Equal sides and equal angles, if any, are indicated in each diagram.

153)



154)



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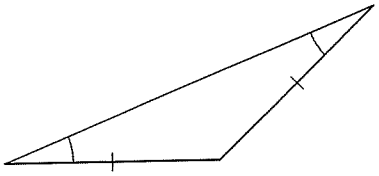

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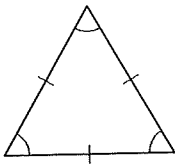
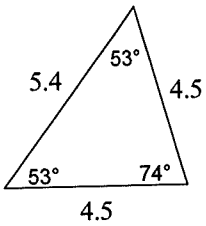
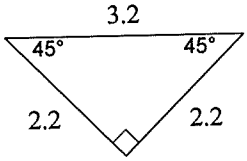


Classify each triangle by its angles and sides.

157)



158)



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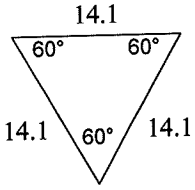
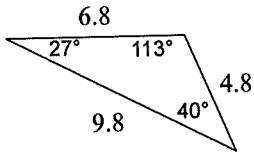


160)



Find the distance between each pair of points. Round your answer to the nearest tenth, if necessary.

161) $(2, 3)$, $(8, 2)$

162) $(-7, -2)$, $(-2, 7)$

163) $(5, -5)$, $(-6, 2)$

164) $(-7, -7)$, $(1, 1)$

165) $(7, -7)$, $(1, 4)$

166) $(-7, -1)$, $(-6, -7)$

Find the midpoint of the line segment with the given endpoints.

167) $(7, 3)$, $(6, 0)$

168) $(-4, 5)$, $(0, 4)$

169) $(8, 4)$, $(0, -5)$

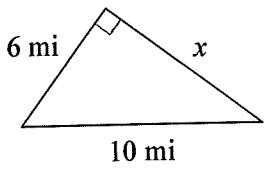
170) $(9, 9)$, $(-2, 7)$

171) $(-7, 2)$, $(-7, -5)$

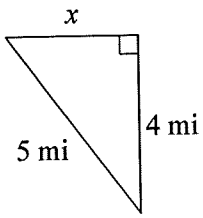
172) $(-1, 1)$, $(-7, 0)$

Find the missing side of each triangle. Round your answers to the nearest tenth if necessary.

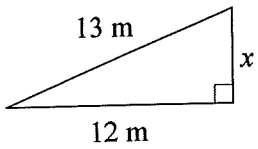
173)



174)



175)



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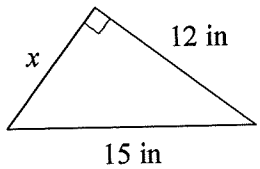
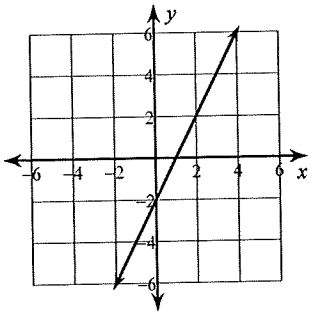


Answers to Summer Review Packet

1) 1
2) 20
3) 15
4) 13
5) 24
6) 7
7) -24
8) 27
9) 6
10) 1
11) $n-6$
12) $x-9$
13) n^2
14) $12+n$
15) $7+10$
16) $\frac{24}{n}+7$
17) $2n-15$
18) $13-3n$
19) $7x$
20) $2+n$
21) $-5+16m$
22) $-27+7m$
23) $-4+35k$
24) $10n-47$
25) $17n+18$
26) $-17+4v$
27) $-57r-35$
28) $-53p+132$
29) $-2+22x$
30) $-81+57m$
31) $31+14n$
32) $37-19r$
33) $\{16\}$
34) $\{-19\}$
35) $\{-3\}$
36) $\{10\}$
37) $\{-10\}$
38) $\{7\}$
39) $\{-4\}$
40) $\{0\}$
41) $\{3\}$
42) $\{-2\}$
43) $\{-1\}$
44) $\{-2\}$
45) $\{0\}$
46) No solution.
47) { All real numbers. }
48) $\{-3\}$
49) $\{6\}$
50) $\{2\}$
51) $\{3\}$
52) $\{1\}$
53) $\{-1\}$
54) $\{5\}$
55) $\{1.25\}$
56) $\{4.5\}$
57) $\{2.57\}$
58) $\{12.5\}$
59) $\{16\}$
60) $\{-13.33\}$
61) $\{-6.67\}$
62) $\{0.33\}$
63) $\{-2\}$
64) $\{7\}$
65) $\{-7.5\}$
66) $\{19\}$
67) $\{18\}$
68) $\{-8\}$
69) $-\frac{2}{21}$
70) $\frac{32}{9}$
71) -11
72) $\frac{1}{7}$
73) $\frac{7}{20}$
74) $\frac{9}{29}$
75) 20
76) $-\frac{15}{17}$

77)



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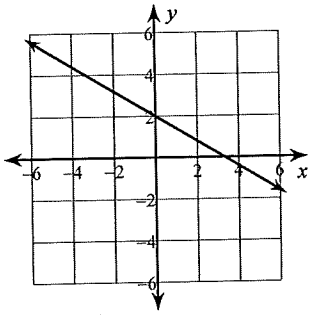

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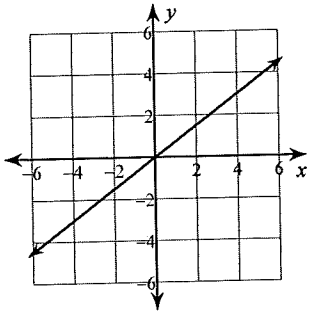

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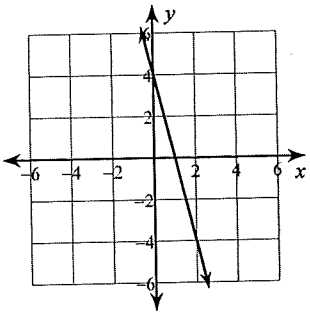
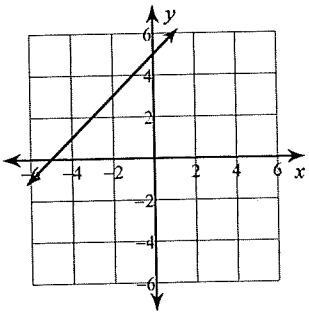
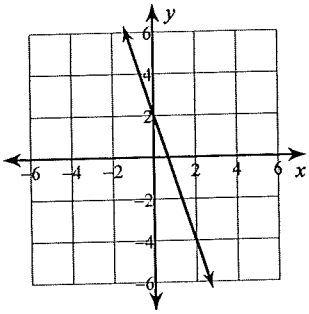


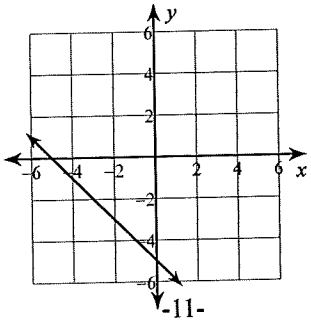
81)



82)



83)



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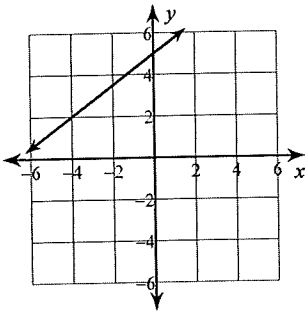

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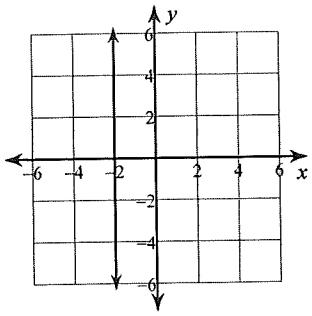

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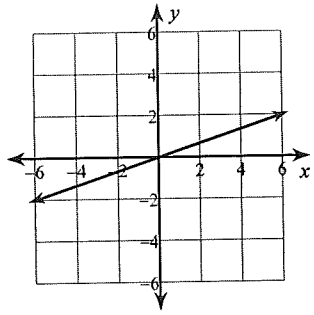
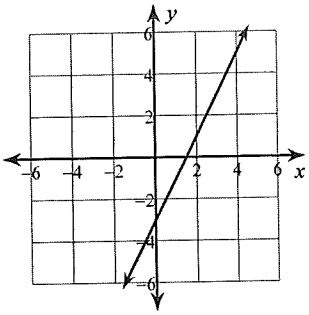
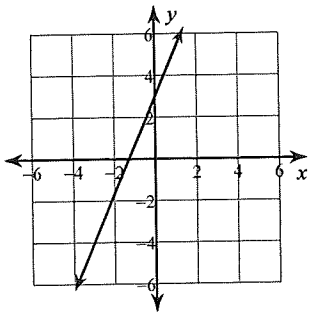


87)



88)



89) $y = \frac{4}{3}x - 8$

90) $y = \frac{8}{7}x - 4$

91) $y = -\frac{3}{4}x + 6$

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

93) $y = 4x - 4$

94) $y = -\frac{1}{2}x + 7$

95) $y = \frac{1}{4}x + 8$

96) $y = x - 4$

97) $y = 5$

98) $y = \frac{3}{2}x + \frac{19}{2}$

99) $y = 2x + 1$

100) $y = \frac{1}{2}x + 3$

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

102) $y = \frac{10}{3}x - 5$

103) $y = 9x + 23$

104) $y = -2x + 5$

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

106) $y = -1$

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

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

109) $y = -x + 5$

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

111) $y = \frac{9}{5}x + 4$

112) $y = -3x - 1$

113) $y = 10x - 5$

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

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

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

117) $y = -3x - 2$

118) $y = 4x - 4$

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

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

121) $y = \frac{1}{2}x + 3$

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

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

124) $y = \frac{9}{5}x + 5$

125) $-4x^2 + 7x + 10$

126) $7n^2 + 9n + 3$

127) $6x^2 + 5x - 8$

128) $-b^2 + 6b - 10$

129) $9n^2 + 6n - 2$

130) $-3n^2 + n - 1$

131) $6v - 10$

132) $6v^2 + 14v$

133) $12r - 36$

134) $16x^2 + 10x$

135) $6x^2 + 36x$

136) $4x - 12$

137) $8b^2 - 30b - 8$

138) $49x^2 - 28x - 32$

139) $21m^2 + 29m + 10$

140) $56x^2 - 57x + 7$

141) $18x^2 + 12x - 16$

142) $49x^2 - 9$

143) $7\sqrt{5}$

144) $4\sqrt{3}$

145) $3\sqrt{2}$

146) $3\sqrt{7}$

147) $7\sqrt{3}$

148) $6\sqrt{2}$

149) $6\sqrt{7}$

150) $3\sqrt{5}$

151) $4\sqrt{2}$

152) 12

Answers to Summer Review Packet

153) equilateral
154) acute scalene
155) obtuse isosceles
156) equilateral
157) acute isosceles
158) right isosceles
159) equilateral
160) obtuse scalene
161) 6.1
162) 10.3
163) 13
164) 11.3
165) 12.5
166) 6.1
167) $(6.5, 1.5)$
168) $(-2, 4.5)$
169) $(4, -0.5)$
170) $(3.5, 8)$
171) $(-7, -1.5)$
172) $(-4, 0.5)$
173) 8 mi
174) 3 mi
175) 5 m
176) 9 in