Scholarship Algebra 2 Summer Assignment Name_____

YOU SHOULD NOT USE A CALCULATOR ON THIS ASSIGNMENT UNLESS THE DIRECTIONS SPECIFICALLY STATE IT IS PERMITTED.

Evaluate each expression. Leave answers as reduced improper fractions or integers. No decimals or mixed numbers.

1) $3\frac{1}{2} + \left(-\frac{3}{2}\right)$

2) $\frac{11}{8} + \left(-2\frac{1}{3}\right)$

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

4) $\frac{7}{5} - 2\frac{5}{6}$

5) $(3-1)^2$

6) $4(2+3)$

7) $5 \times 5 - 5$

8) $(17+7) \div 6$

9) $3\frac{2}{3} \div \left(1\frac{5}{6} + 2\frac{1}{3}\right)$

10) $3\frac{4}{5} - \frac{1}{4} \times 1\frac{3}{4}$

11) $3\frac{1}{3} \div 2\frac{1}{6} + 1\frac{1}{2}$

Evaluate each using the values given.

12) $z^2 - (7 + |y|)$; use $y = 3$, and $z = -6$

13) $|h - j| - (-5 + h)$; use $h = 7$, and $j = 7$

14) $-7 - \left(x + y + |x|\right)$; use $x = -\frac{1}{2}$, and $y = -3\frac{2}{7}$

Find each product.

15) $\left(2\frac{6}{7}\right)\left(-\frac{1}{4}\right)$

16) $(-2)\left(\frac{17}{14}\right)$

17) $\left(2\frac{2}{17}\right)\left(-\frac{7}{15}\right)$

18) $\left(\frac{4}{9}\right)\left(-\frac{3}{10}\right)$

Find each quotient.

19) $\dfrac{-\frac{16}{11}}{-7}$

20) $\dfrac{\frac{1}{3}}{-\frac{9}{11}}$

21) $\dfrac{-\frac{17}{14}}{-1}$

Simplify each expression.

22) $(4x^3 + 13 - 14x^2) - (12x^3 + 10 + 6x^2)$

23) $(-3m^4 + 5m^2 - 8m) + (2m^2 - 4m^4 + 5m)$

Find each product.

24) $(3v + 5)(v + 7)$

25) $(-5v - 8)(7v - 7)$

26) $(3r - 6)(-6r - 8)$

27) $(-8p^2 - 4p + 7)(3p^2 + p - 7)$

Solve each equation.

28) $-11(x+4) = -6(1+5x)$

29) $5 - 4(-5x+6) = 2(10x+9)$

30) $-4(-3+4v) = -4(v+12)$

31) $|v-10| = 14$

32) $|n+3| = 6$

Solve each proportion.

33) $\frac{8}{n-4} = \frac{7}{n-5}$

34) $\frac{5}{11} = \frac{k+7}{k+1}$

35) $\frac{p+1}{p+10} = \frac{2}{4}$

36) $\frac{4}{5} = \frac{a-7}{a+9}$

Solve each formula for the given variable.

37) C=2πr, for r

38) F= ma, for a

39) S = v/r, for r

40) A= P+Prt, for t

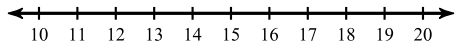
41) A= P+Prt, for P

42) P=2(L+W), for W

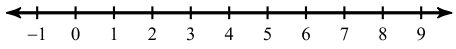
43) a = (v-u)/t, for t

Solve each inequality and graph its solution.

44) $-5(2n+1) - 9n < -6(3n+3)$



45) $11b + 7(9b+2) \le -8(1-12b)$



Simplify. Your answer should contain only positive exponents.

46) $3rr^3$

47) $2x^3 \cdot 2x^3$

48) $(-2nm^{-2})^2 \cdot (-m^2)^5$

49) $(-2x^3y^2)^{-3} \cdot (-xy^{-2})^{-1}$

50) $-\frac{yx^0 \cdot -2y}{(-2y^3)^3}$

51) $\left(-\frac{b \cdot -a^3b^3}{a^{-2}b^4}\right)^{-2}$

Simplify.

52) $\sqrt{75}$

53) $\sqrt{180}$

54) $\sqrt{320}$

55) $\sqrt{100}$

56) $\frac{\sqrt{15}}{\sqrt{125}}$

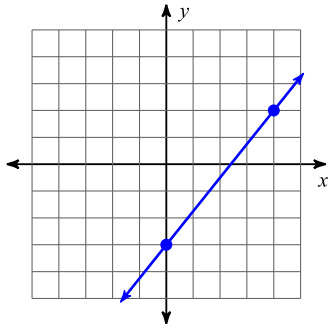
57) $\frac{4\sqrt{10}}{3\sqrt{18}}$

58) $\frac{\sqrt{4}}{5\sqrt{16}}$

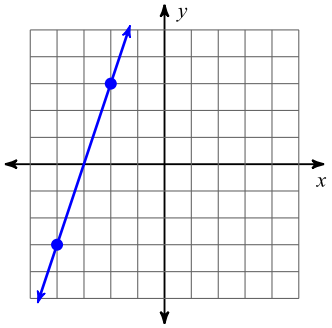
59) $\frac{\sqrt{3}}{4\sqrt{9}}$

Find the slope of each line.

60)



61)



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

62) $(18, -3), (13, 3)$

63) $(6, -8), (-15, 14)$

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

64) $-7x + 3 = y$

65) $12 = 4y + 7x$

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

66) $4 + x = 0$

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

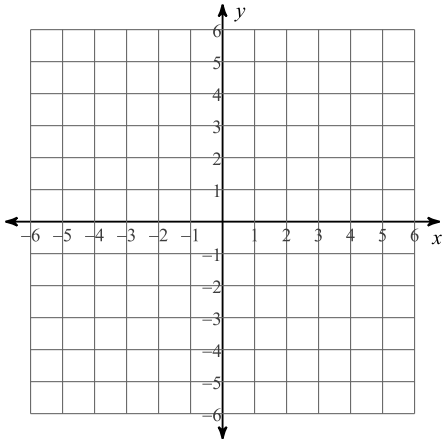
Find the value of x or y so that the line through the points has the given slope.

68) $(-5, -3)$ and $(x, 4)$; slope: $\frac{7}{3}$

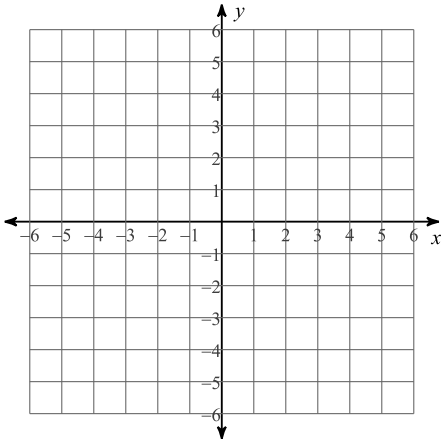
69) $(3, 1)$ and $(-5, y)$; slope: $\frac{1}{4}$

Sketch the graph of each line.

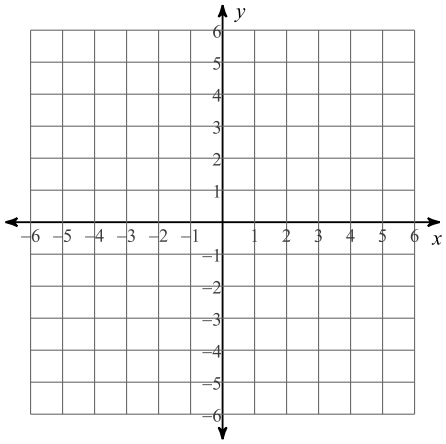
70) $5x + 3y = 15$



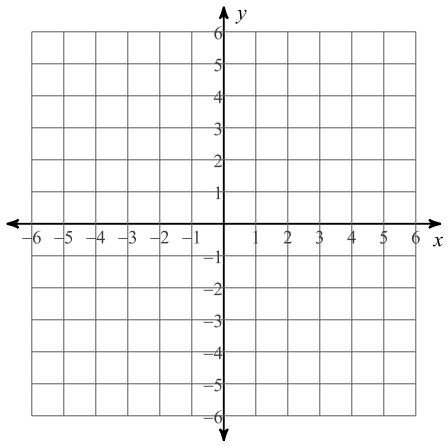
71) $3x + 4y = 20$



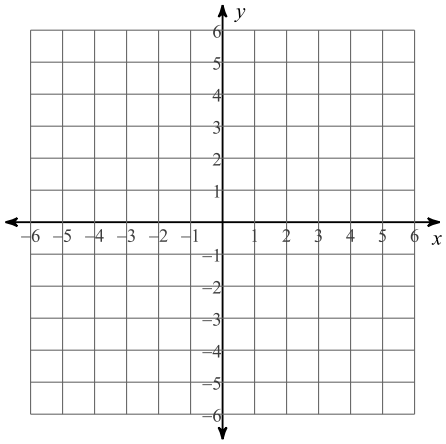
72) $x = -2$



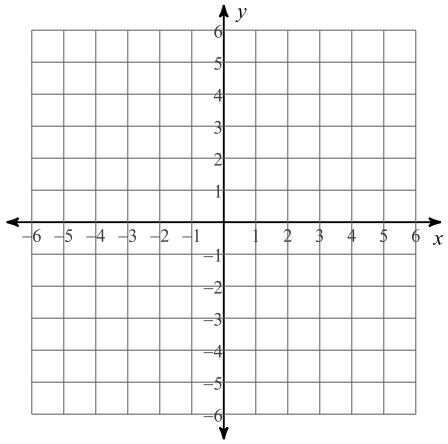
73) $y = \frac{4}{5}x + 4$



74) $0 = -45 + 9x + 15y$

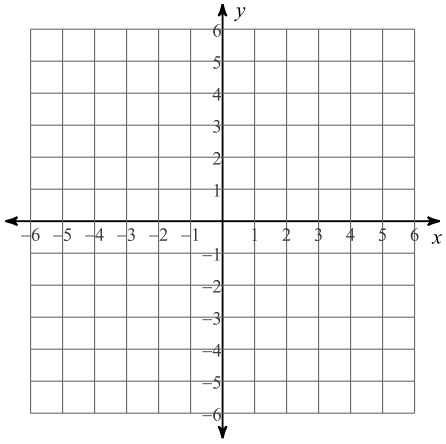


75) $-2x = -6 - 2y$

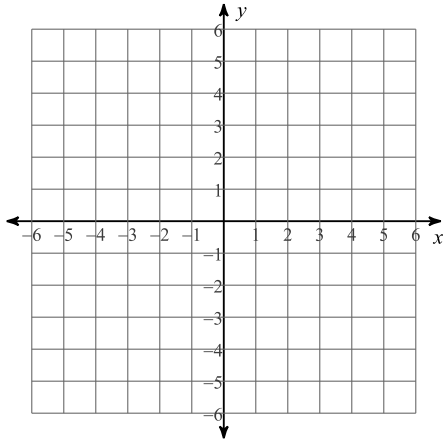


Sketch the graph of each linear inequality.

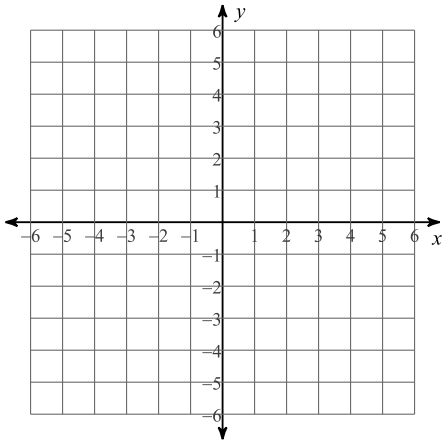
76) $3x - y \geq -5$



77) $3x + 2y \leq 8$

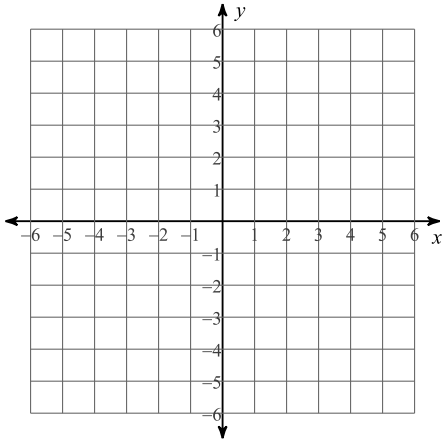


78) $x + 2y < 4$

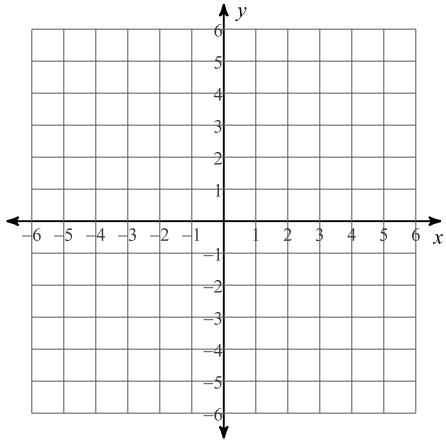


Graph each equation.

79) $y = -\left|x - 1\right|$



80) $y = \left|x + 1\right|$



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

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

82) through: $(-4, 3)$, slope $= -\frac{5}{2}$

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

83) through: $(5, 5)$ and $(0, -2)$

84) through: $(-1, 4)$ and $(0, 5)$

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

85) through: $(5, 0)$, parallel to $y = \frac{2}{5}x + 4$

86) through: $(3, -1)$, parallel to $y = \frac{3}{2}x - 3$

87) through: $(-4, -1)$, perp. to $y = 6x - 2$

88) through: $(-3, 5)$, perp. to $y = \frac{3}{8}x$

Solve each system by graphing.

89) $y = -6x + 3$
$y = x - 4$

90) $y = \frac{1}{4}x - 1$
$y = \frac{5}{4}x + 3$

Solve each system by substitution.

91) $-2x + 2y = -20$
$x + 6y = -18$

92) $x + 8y = 22$
$2x + 5y = 22$

93) $-2x - 3y = -23$
$4x + 6y = 46$

94) $-5x + 3y = 14$
$3x + 7y = 18$

Solve each system by elimination.

95) $-x + 5y = 27$
$-3x - y = 17$

96) $-10x + 8y = -14$
$20x - 16y = 28$

97) $7x + 2y = 0$
$4x + 5y = 0$

98) $8x + 7y = -13$
$-10x - 8y = 14$

Set up a system of equations to solve.

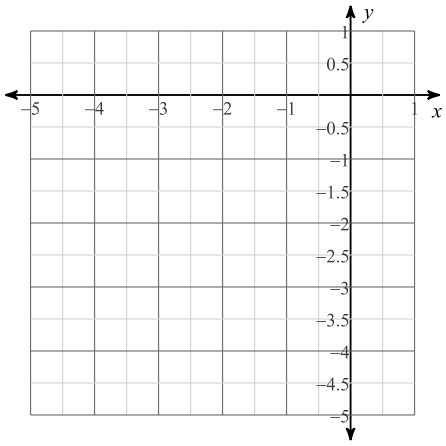
99) Daniel's school is selling tickets to a spring musical. On the first day of ticket sales the school sold 1 senior citizen ticket and 12 child tickets for a total of $106. The school took in $224 on the second day by selling 12 senior citizen tickets and 13 child tickets. Find the price of a senior citizen ticket and the price of a child ticket.

100) Sumalee's school is selling tickets to a fall musical. On the first day of ticket sales the school sold 14 senior citizen tickets and 6 child tickets for a total of $86. The school took in $64 on the second day by selling 1 senior citizen ticket and 12 child tickets. Find the price of a senior citizen ticket and the price of a child ticket.

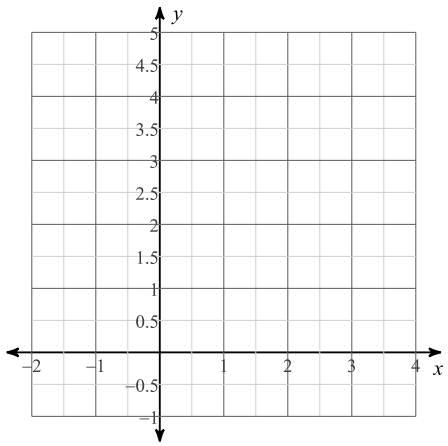
101) The senior classes at High School A and High School B planned separate trips to the local amusement park. The senior class at High School A rented and filled 12 vans and 12 buses with 552 students. High School B rented and filled 4 vans and 6 buses with 242 students. Each van and each bus carried the same number of students. How many students can a van carry? How many students can a bus carry?

Sketch the graph of each function.

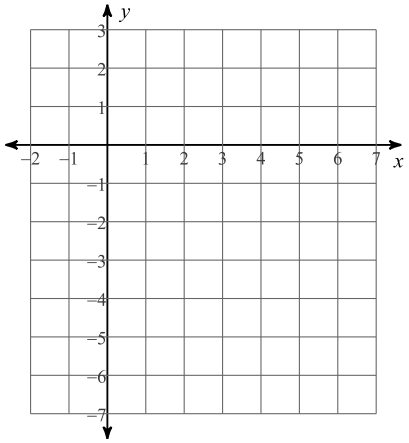
102) $y = \frac{1}{2}x^2 + 2x - 1$



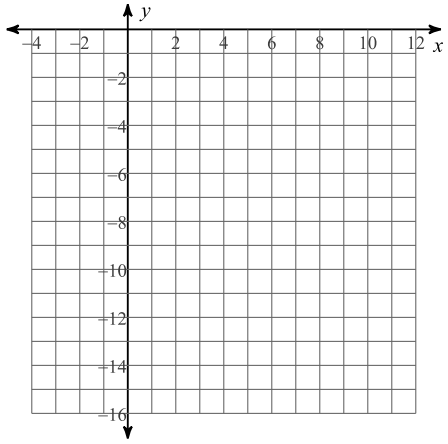
103) $y = -x^2 + 4x$



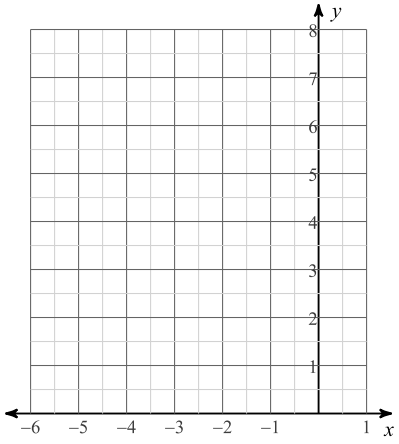
104) $y = -2x^2 + 16x - 30$



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



106) $y = (x + 4)^2 + 3$



Factor the common factor out of each expression.

107) $-100x^4y^6 + 20x^3y^3 + 70x^2y^3$

108) $80 - 40u^5 + 24uv^3$

109) $27u^5v^2 - 12u^5 + 15u^4$

Factor each completely.

110) $2k^2 + 5k - 42$

111) $7b^2 + 26b + 15$

112) $14r^2 + 96r - 128$

113) $15m^2 + 84m + 45$

114) $3n^2 + 10n$

115) $3x^2 - 11x - 42$

Find the value of c that completes the square.

116) $r^2 - 11r + c$

117) $x^2 + \frac{3}{5}x + c$

118) $n^2 - 32n + c$

119) $x^2 + 26x + c$

Solve each equation by factoring.

120) $x^2 - 30 = -x$

121) $n^2 - n = 0$

122) $x^2 = 36$

123) $5x^2 + 160 = 60x$

124) $8x^2 - 8x = 16$

125) $b^2 - 12 = -b$

126) $7k^2 - 54k + 16 = 4k$

Solve each equation with the quadratic formula.

127) $n^2 - 5n - 6 = 0$

128) $2p^2 - p - 1 = 0$

129) $v^2 - 1 = 0$

130) $2p^2 - 3 = 5$

131) $-2n^2 = n - 21$

132) $2x^2 - x - 14 = -4$

Solve each equation by completing the square.

133) $x^2 - 8x + 3 = -9$

134) $x^2 - 16x + 41 = -9$

135) $n^2 + 16n + 33 = 5$

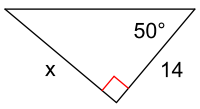
136) $m^2 + 10m - 16 = -6$

137) $x^2 - 2x - 42 = 6$

138) $m^2 - 14m + 30 = 6$

Find the missing side. You may use a calculator. Round to the nearest tenth.

139)



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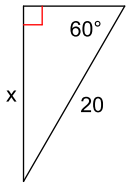

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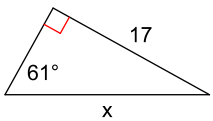

Find the measure of the indicated angle to the nearest degree. You may use a calculator.

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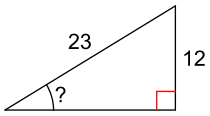

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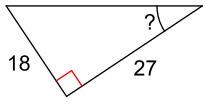

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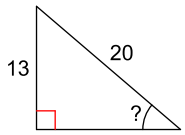

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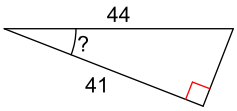

Use special right triangles ratios to find the missing side lengths. DO NOT USE A CALCULATOR.

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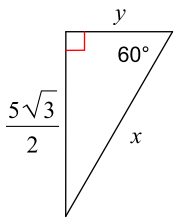

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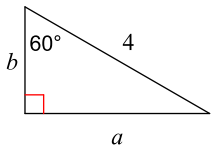

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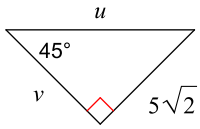

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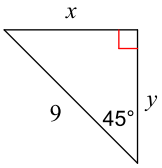

Find the area of each triangle. You may use a calculator. Round intermediate values to the nearest tenth. Use the rounded values to calculate the next value. Round your final answer to the nearest tenth.

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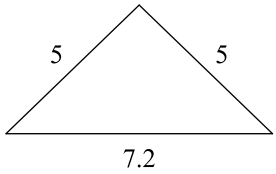

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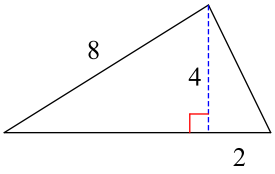

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