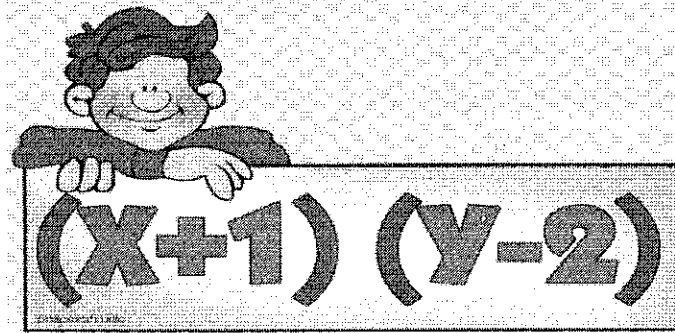


Algebra 1

Summer Math Packet



Congratulations on completing Algebra 1! This summer math packet will help you maintain the Algebra skills that you learned this school year.

Take your time and don't try to complete the entire packet at one time. Just like you did all school year, show your work for each problem and attach additional pages of work as necessary. If you need help with any of the concepts, there are a variety of online math resources such as the Khan Academy. But most of all...

Enjoy Your Summer!

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.

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

$$40) kk^2$$

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

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

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

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

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

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

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

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

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

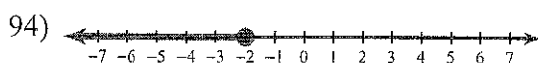
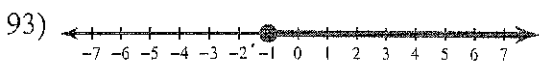
89) $4r^2 = 24 - 10r$

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

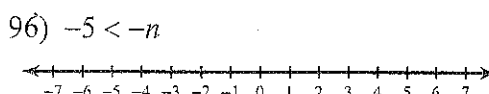
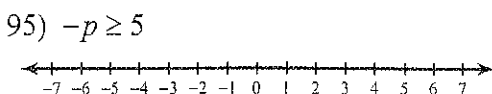
91) $-2n^2 + 2n + 53 = -7$

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

Write an inequality for each graph.

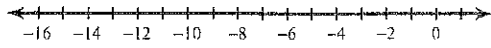


Draw a graph for each inequality.

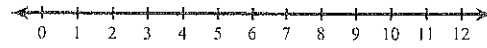


Solve each compound inequality and graph its solution.

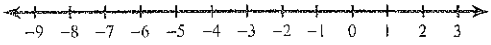
97) $2a - 12 > -20$ or $5 - 2a \geq 29$



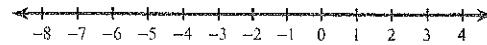
98) $11 \leq 4 + 7n \leq 67$



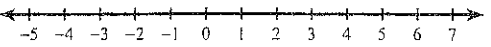
99) $5x \geq -10$ or $3x \leq -18$



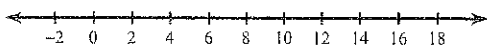
100) $-1 < 3 + r \leq 4$



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

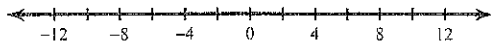


102) $-17x - 3 \leq 13 - x$ and $8 - 2x > -8 - x$

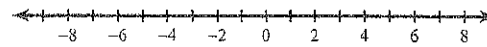


Solve each inequality and graph its solution.

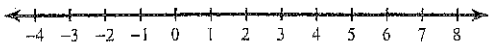
103) $\left| \frac{n}{3} \right| > 3$



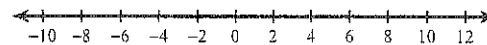
104) $|3x| \geq 15$



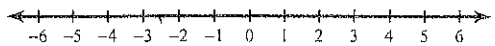
105) $|4k - 5| < 5$



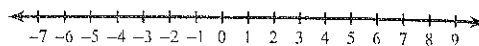
106) $|9 - 6p| < 57$



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



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



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.

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

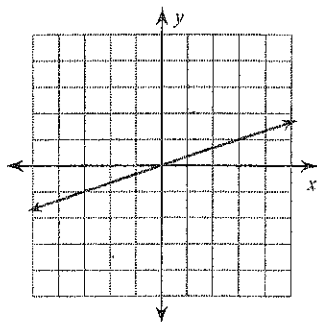
$$130) -\sqrt{576m^5p^3q}$$

Find the slope of each line.

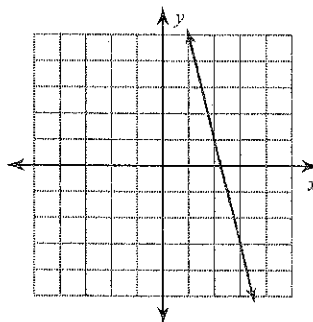
$$131) y = \frac{5}{4}x + 5$$

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

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.

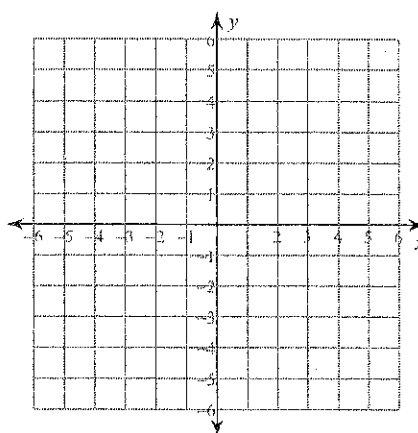
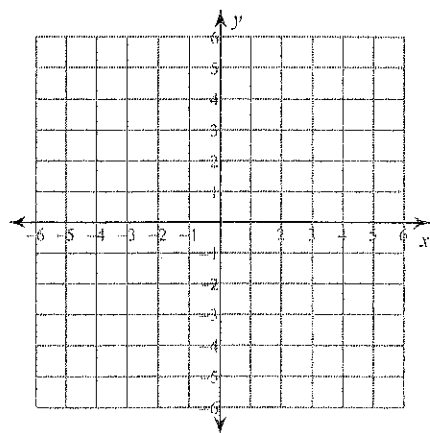
137) $(17, 2), (-3, -4)$

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

Sketch the graph of each line.

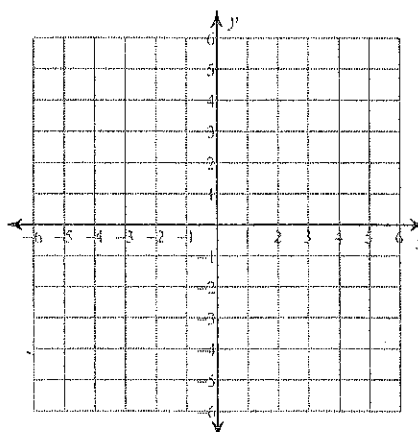
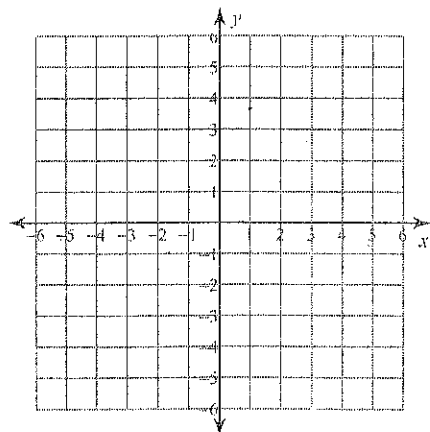
139) $y = x - 3$

140) $y = 4x - 2$

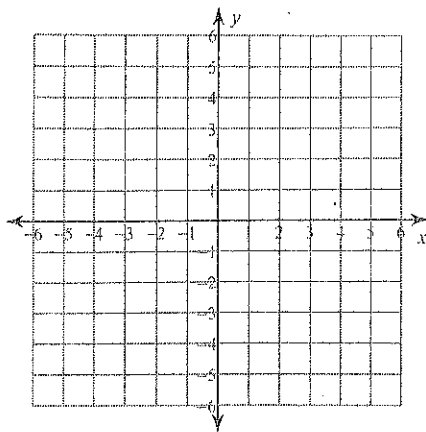


141) $y + 6x = 3$

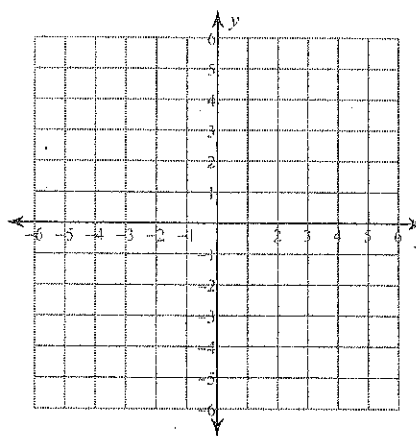
142) $0 = -8x - 15 + 3y$



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

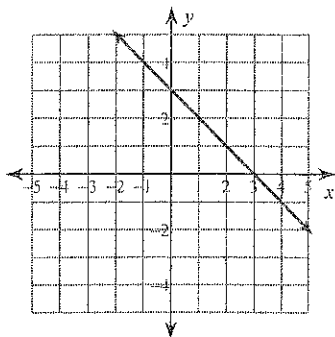


144) $3x + 4y = -4$



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.

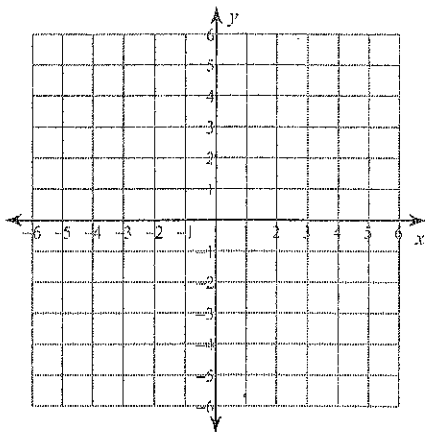
151) through: $(-3, -2)$ and $(1, -1)$

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

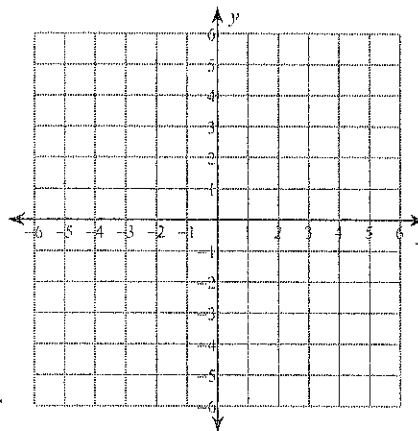
152) through: $(-4, 5)$, parallel to $y = -\frac{7}{4}x + 1$

Sketch the graph of each linear inequality.

153) $y > x - 4$



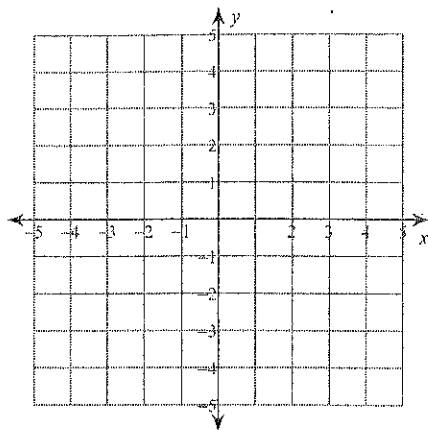
154) $y \leq -\frac{1}{3}x - 3$



Solve each system by graphing.

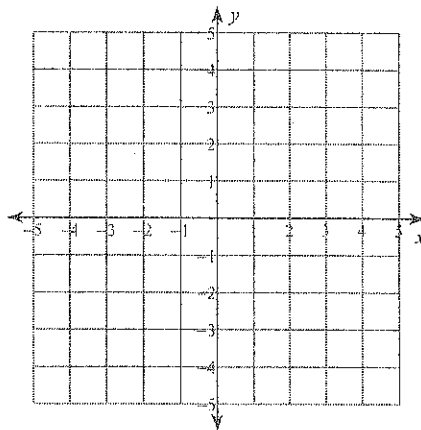
$$155) y = \frac{1}{3}x + 4$$

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



$$156) y = -x + 1$$

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



Solve each system by substitution.

$$157) x + 5y = 20$$

$$-3x - 5y = -20$$

$$158) 7x + y = 7$$

$$-7x - 8y = -7$$

Solve each system by elimination.

$$159) 5x + y = -13$$

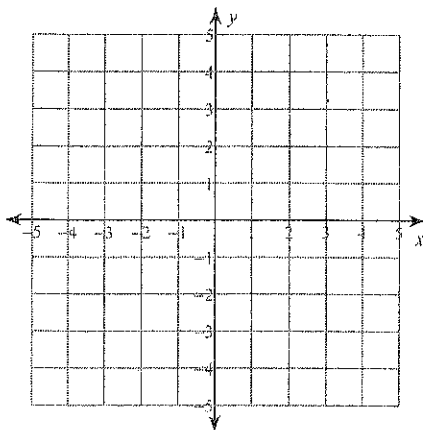
$$x + 2y = 1$$

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

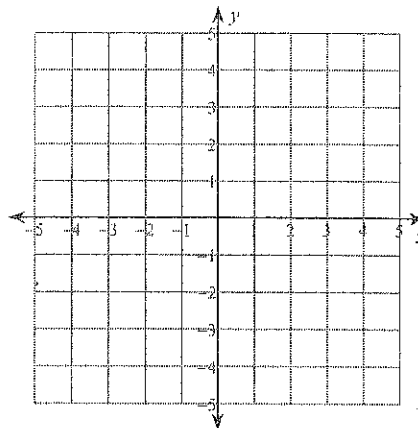
$$-x + 18y = 5$$

Sketch the solution to each system of inequalities.

$$161) \begin{aligned} y &< -5x + 3 \\ y &> x - 3 \end{aligned}$$



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



Evaluate each function.

$$163) g(x) = 4x - 1; \text{ Find } g(-6)$$

$$164) h(a) = 2a - 1; \text{ Find } h(2)$$

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

$$166) p(t) = -3|t + 1|; \text{ Find } p(2)$$

$$167) g(n) = 3n + 1; \text{ Find } g(-n)$$

$$168) h(n) = 2n + 2; \text{ Find } h(-1 - n)$$

Perform the indicated operation.

$$169) \begin{aligned} g(x) &= x + 5 \\ f(x) &= -x + 1 \\ \text{Find } g(-10) + f(-10) \end{aligned}$$

$$170) \begin{aligned} f(x) &= 3x + 5 \\ g(x) &= -x^3 - 3x^2 - x \\ \text{Find } f(-5) + g(-5) \end{aligned}$$

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.

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

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

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

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

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

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