

Algebra 2
Summer Assignment 2010

Instructions:

- Complete all assigned problems.
- Show your work in an organized manner. (NOT ON THIS ANSWER SHEET)
- Clearly identify the answer(s) to each problem on this answer sheet.

Recommendations:

- Do a few problems each day, or at least a section each week.
- Work with a partner (be sure to show each person's work).
- Use a pencil.

I. Expressions and Formulas

Find the value of each expression.

[1]: $14 + (6 \div 2)$ ----- solution	[2]: $11 - (3 + 2)^2$ ----- solution	[3]: $2 + (4 - 2)^3 - 6$ ----- solution
[4]: $9(3^2 + 6)$ ----- solution	[5]: $(5 + 2)^2 - 5^2$ ----- solution	[6]: $5^2 + \frac{1}{4} + 18 \div 2$ ----- solution
[7]: $\frac{16+2^3 \div 4}{1-2^2}$ ----- solution	[8]: $(7 - 3)^2 + 6^2$ ----- solution	[9]: $20 \div 2^2 + 6$ ----- solution
[10]: $12 + 6 \div 3 - 2(4)$ ----- solution	[11]: $14 \div (8 - 20 \div 2)$ ----- solution	[12]: $6(7) + 4 \div 4 - 5$ ----- solution
[13]: $8(4^2 \div 8 - 32)$ ----- solution	[14]: $\frac{6+4 \div 2}{4 \div 6 - 1}$ ----- solution	[15]: $\frac{6+9 \div 3+15}{8-2}$ ----- solution

➤ Evaluate each expression if $a = 8.2$, $b = -3$, $c = 4$, and $d = \frac{-1}{2}$.

[16]: $\frac{ab}{a}$ solution	[17]: $5(6c - 8b + 10d)$ solution	[18]: $\frac{c^2-1}{b-d}$ solution
[19]: $ac - bd$ solution	[20]: $(b - c)^2 + 4a$ solution	[21]: $\frac{a}{d} + 6b - 5c$ solution
[22]: $3\left(\frac{c}{d}\right) - b$ solution	[23]: $cd + \frac{b}{a}$ solution	[24]: $d(a + c)$ solution
[25]: $a + b \div c$ solution	[26]: $b - c + 4 \div d$ solution	[27]: $\frac{a}{b+c} - d$ solution

II. Equations, Inequalities, & Applications

➤ Circle the letter of the correct answer.

[28]: Evaluate $ -2b $ if $b = 8$ A. -16 B. 6 C. 10 D. 16
[29]: Simplify $2(x + 3) + 5(2x - 1)$ A. $12x + 1$ B. $12x + 11$ C. $12x + 2$ D. $9x + 1$
[30]: Select the algebraic expression that represents the verbal expression: "the product of nine and a number" A. $\frac{9}{n}$ B. $9n$ C. $9 - n$ D. $9 + n$
[31]: Solve. $\frac{1}{2}y = 8$ A. $y = 16$ B. $y = 4$ C. $y = \frac{1}{4}$ D. $y = 10$
[32]: Solve. $4(2x - 9) = 3x + 4$ A. $x = -32$ B. $x = \frac{-32}{5}$ C. $x = \frac{40}{3}$ D. $x = 8$
[33]: Solve. $ x - 5 = 4$ A. $x = \{9\}$ B. $x = \{1\}$ C. $x = \{9,1\}$ D. $x = \emptyset$
[34]: Solve. $4 x + 3 = 20$ A. $x = \{2\}$ B. $x = \{-8\}$ C. $x = \{2, -8\}$ D. $x = \emptyset$

[35]: Which equation could be used to solve the following problem?

"The sum of 4 times a number and 7 is 31. Find the number:"

- A. $4(n + 7) = 31$ B. $4n = 7 + 31$ C. $4n - 7 = 31$ D. $4n + 7 = 31$

[36]: Amar is five years older than his sister. The sum of their ages is 39. Find Amar's age.

- A. 17 B. 22 C. 34 D. 29

[37]: Solve. $-8w + 4 \geq 12$

- A. $\{w|w \leq -1\}$ B. $\{w|w \geq -1\}$ C. $\{w|w \leq -2\}$ D. $\{w|w \geq -2\}$

[38]: Solve. $2x - 1 \leq 5$ or $7 - x < 1$

- A. $\{x|3 \leq x < 6\}$ B. $\{x|x \leq 3 \text{ or } x > 6\}$ C. $\{x|x < 6\}$ D. \emptyset

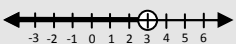
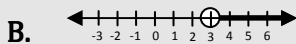
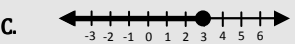
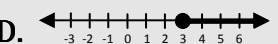
[39]: Solve. $-3 \leq 2y + 1 \leq 9$

- A. $\{y|\frac{-3}{2} \leq y < 4\}$ B. all real numbers C. $\{y|-2 \leq y \leq \frac{9}{2}\}$ D. \emptyset

[40]: Solve. $|m + 8| > 3$

- A. $\{m|-11 < m < -5\}$ B. $\{m|m < -5 \text{ or } m > 5\}$ C. $\{m|m < -11 \text{ or } m > -5\}$ D. \emptyset

[41]: Identify the graph of the solution set of $9 > 3 + 2x$.

- A.  B.  C.  D. 

III. Functions, Equations, & Graphing

➤ Find each value if $f(x) = 10x + 3x^2$ and $g(x) = 5x^2 - 8x$.

[42]: $f(-3)$

answer

[43]: $f(4)$

answer

[44]: $f(a)$

answer

[45]: $g(-3)$

answer

[46]: $g(1)$

answer

[47]: $g(n)$

answer

➤ State whether each equation or function is linear. If no, explain your reasoning.

[48]: $f(x) = \frac{1}{x+3}$

answer/reason

[49]: $y - 3x = 10$

answer/reason

[50]: $f(x) = 100x - 37$

answer/reason

[51]: $xy - 60 = 0$

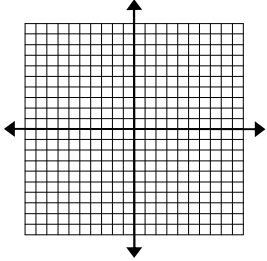
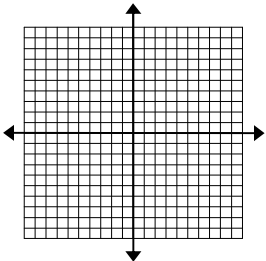
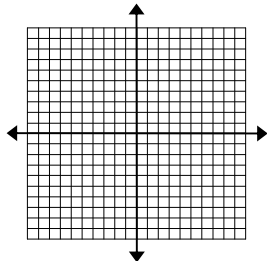
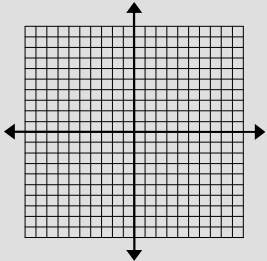
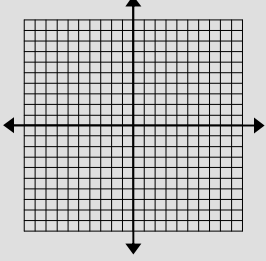
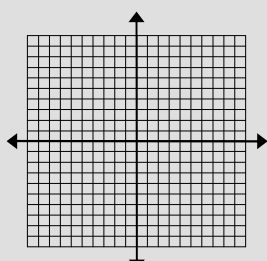
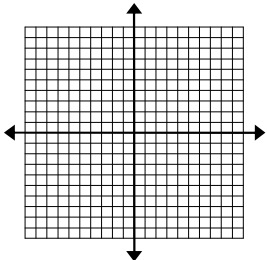
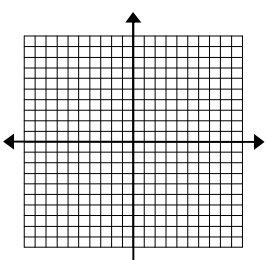
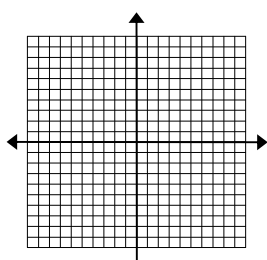
answer/reason

➤ Write the Equation in *standard form*. Identify A, B, C, slope, x -intercept, and y -intercept.

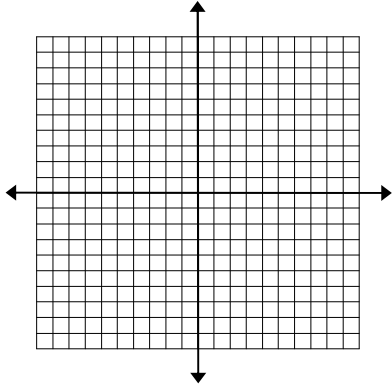
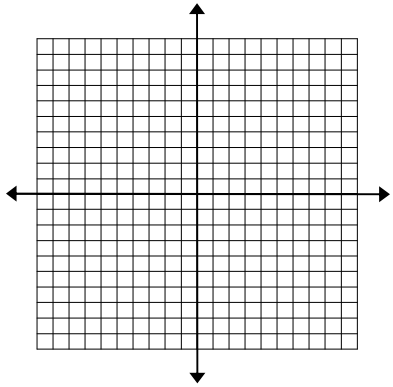
[52]: $\frac{5}{2}x - 9 = 8y$				[53]: $\frac{2x-1}{7} = 8y$			
Standard Form:	A:	B:	C:	Standard Form:	A:	B:	C:
Slope:	x -intercept:	y -intercept:		Slope:	x -intercept:	y -intercept:	

[54]: $y = 2x - 6$				[55]: $(y - 2) = \frac{2}{3}(x - 1)$			
Standard Form:	A:	B:	C:	Standard Form:	A:	B:	C:
Slope:	x -intercept:	y -intercept:		Slope:	x -intercept:	y -intercept:	

➤ Label the axes and then graph each equation or inequality.

<p>[56]: $y - 3x = 2$</p> 	<p>[57]: $x \geq 2 - \frac{1}{2}y$</p> 	<p>[58]: $y = -2x + 2$</p> 
<p>[59]: $3y = 2x - 9$</p> 	<p>[60]: $x > 2y - 4$</p> 	<p>[61]: $y \leq x + 1$</p> 
<p>[62]: $f(x) = 4x - 1$</p> 	<p>[63]: $f(x) > \frac{2}{3}x$</p> 	<p>[64]: $f(x) = x + 1 - 2$</p> 

➤ Estimate the solution to each system of equations by graphing.

<p>[65]: $3x - 2y = 6$ $2x + y = 4$</p> 	<p>[66]: $3x - y = 1$ $3y = 9x + 6$</p> 
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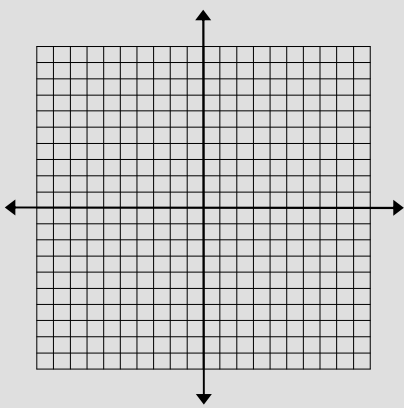
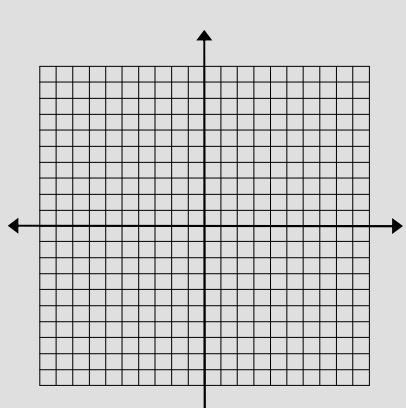
➤ Solve each system of equations by using substitution.

<p>[67]: $3x + 7y = 19$ $x + y = 5$</p>	<p>[68]: $x + 3y = 12$ $5x + y = 4$</p>	<p>[69]: $y = 3x + 13$ $3x + 5y = 11$</p>
answer	answer	answer

➤ Solve each system of equations by using elimination.

<p>[70]: $3x - 2y = 4$ $2x + 3y = 7$</p>	<p>[71]: $4x - y = 10$ $5x + 2y = 6$</p>	<p>[72]: $2x - 5y = -11$ $x - y = -1$</p>
answer	answer	answer

➤ Solve each system of inequalities by graphing.

<p>[73]: $4x - 3y < 9$ $2x + y \geq 5$</p> 	<p>[74]: $y \leq \frac{3}{2}x - 2$ $2y \geq x - 4$</p> 
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➤ Solve the following problem using methods for solving systems.

<p>[75]: <i>The area of a parking lot is 600 square meters. A car requires 6 square meters and a bus requires 30 square meters of space. The lot can handle a maximum of 60 vehicles. If a care costs \$3 and a bus costs \$8 to park in the lot, determine the number of each vehicle to maximize the amount collected.</i></p>
answer

IV. Polynomials

➤ Find each product.

[76]: $2x(3x^2 - 5)$	[77]: $7a(6 - 2a - a^2)$	[78]: $-5y^3(y^2 + 2y - 3)$
product	product	product

[79]: $(x - 2)(x + 7)$	[80]: $(5 - 4x)(3 - 2x)$	[81]: $(2x - 1)(3x + 5)$
product	product	product

[82]: $(x + 2)(x^2 - 2x + 3)$	[83]: $(4x + 3)(x + 8)$	[84]: $(7x - 2)(2x - 7)$
product	product	product

[85]: $2(a - 6)(2a + 7)$	[86]: $(3x^2 - 8)(x^2 + 5)$	[87]: $(3x + 5)(3x - 5)$
product	product	product

[88]: $(x + 1)(2x^2 - 3x + 1)$	[89]: $(2n^2 - 3)(n^2 + 5n - 1)$	[90]: $(3n^2 + 2n - 2)(n^2 - 2n + 1)$
product	product	product

➤ Simplify.

[91]: $(g + 5) + (2g + 7)$	[92]: $(5d + 5) - (d + 1)$
answer	answer

[93]: $(-2f^2 - 3f - 5) + (-2f^2 - 3f + 8)$	[94]: $(4x^2 - 6x + 2) - (-x^2 + 3x + 5)$
answer	answer

[95]: $(2x^2 - 3xy) - (3x^2 - 6xy - 4y^2)$	[96]: $(x - 4) - (6 + 3x^2 - 4x)$
answer	answer

[97]: $8w(hk^2 + 10h^3m^4 - 6k^5w^3)$	[98]: $(3x^2 + 1) + (8x^2 - 8)$
answer	answer

[99]: $(5m^2 - 2mp - 6p^2) - (-3m^2 + 5mp + p^2)$	[100]: $-9w^4y^2(-3wy^7 + 2w^3y^4 - 8w^{10})$
answer	answer

➤ Factor completely. If a polynomial is not factorable, write prime. (*hint: only 4 are prime*)

[101]: $x^2 + 4x + 4$	[102]: $x^2 - 5x - 50$	[103]: $x^2 + 12x + 20$
answer	answer	answer
[104]: $x^3 + 6x^2 - 91x$	[105]: $n^2 + 14np + 40p^2$	[106]: $x^2 - 100$
answer	answer	answer
[107]: $5x^3 + 10x^2 + 5x$	[108]: $m^2 - 169$	[109]: $m^2 + 11m - 12$
answer	answer	answer
[110]: $9x^4 + 12x^2 - 18x$	[111]: $y^2 + 2xy - 35x^2$	[112]: $x^2 + 25$
answer	answer	answer
[113]: $7x^2 - 14x$	[114]: $19x^3 - 38x^2$	[115]: $21x^3 - 18x^2y + 24xy^2$
answer	answer	answer
[116]: $8j^3k - 4jk^3 - 7$	[117]: $a^2 - 7a - 18$	[118]: $2ak - 6a + k - 3$
answer	answer	answer
[119]: $x^2 + 8x + 7$	[120]: $x^2 - 8x - 10$	[121]: $m^2 + 7m - 18$
answer	answer	answer
[122]: $2x^2 - 3x - 5$	[123]: $4a^2 + 4a - 15$	[124]: $4p^2 + 4p - 24$
answer	answer	answer
[125]: $3y^2 + 21y + 36$	[126]: $x^2 - 256$	[127]: $4m^2 - 64$
answer	answer	answer
[128]: $x^2 - 12x + 36$	[129]: $9a^2 + 25$	[130]: $p^2 + 18p + 81$
answer	answer	answer

[131]: $x^4 - 1$	[132]: $15x^2y - 10xy^2$	[133]: $3wx^2 - 9w^3x + 6w^2x^2$
answer	answer	answer

[134]: $3x^3y^2 - 2x^2y + 5xy$	[135]: $2n^3p - n^2p + 5np^2 + np^3$	[136]: $x^2 - xy + 2x - 2y$
answer	answer	answer

[137]: $y^2 + 20y + 96$	[138]: $4mn + 2m + 6n + 3$	[139]: $6n^2 - 11n - 2$
answer	answer	answer

➤ Simplify. State all restrictions.

[140]: $\frac{10c+6}{2}$	[141]: $\frac{12x+20}{4}$
answer	answer
restriction(s)	restriction(s)

[142]: $\frac{15y^3+6y^2+3y}{3y}$	[143]: $\frac{12x^2-4x-8}{4x}$
answer	answer
restriction(s)	restriction(s)

[144]: $(15q^6 + 5q^2)(5q^4)^{-1}$	[145]: $(4f^5 - 6f^4 + 12f^3 - 8f^2)(4f^2)^{-1}$
answer	answer
restriction(s)	restriction(s)

[146]: $(6m^2n - 9mn^2) \div 3mn$	[147]: $\frac{n^2+7n+10}{n+5}$
answer	answer
restriction(s)	restriction(s)

[148]: $(x^2 + 4x + 3) \div (x + 1)$	[149]: $(2n^2 + 13n + 15)(n + 5)^{-1}$
answer	answer
restriction(s)	restriction(s)

[150]: $(4g^2 - 9) \div (2g + 3)$	[151]: $\frac{2n^2-5n-4}{n-3}$
answer	answer
restriction(s)	restriction(s)

[152]: $\frac{15n^{10}-5n^8+40n^2}{5n^4}$	[153]: $\frac{2h^4-h^3+h^2+h-3}{h^2-1}$
answer	restriction(s)

[154]: $\frac{4p^4-17p^2+14p-3}{2p-3}$	[155]: $\frac{2r^3+5r^2-2r-15}{2r-3}$
answer	restriction(s)

➤ Solve.

[156]: $x^2 - 6x + 8 = 0$	[157]: $x^2 = 5 - x$	[158]: $5x^2 + 13x = 6$
solution(s)	solution(s)	solution(s)

[159]: $7 = 2x^2 + x$	[160]: $2x(x - 3)(x + 5) = 0$	[161]: $3x(3x - 2) = 8$
solution(s)	solution(s)	solution(s)

➤ Simplify. State all restrictions.

[162]: $\frac{\frac{x^3y^2z}{a^2b^2}}{\frac{a^3x^2y}{b^2}}$	[163]: $\frac{\frac{x^2-1}{3x+2}}{\frac{x+1}{3x^2-x-2}}$
answer	restriction(s)

[164]: $\frac{\frac{x^2-100}{x^2}}{\frac{3x^2-31x+10}{2x}}$	[165]: $\frac{2x^2+9x+9}{x+1} \div \frac{10x^2+19x+6}{5x^2+7x+2}$
answer	restriction(s)

[166]: $\frac{x+2}{x^2-6x+8} \cdot \frac{x^2-16}{x^2+x-2}$	[167]: $\frac{x^2-x-2}{x^3+6x^2-x-30} \cdot \frac{x+3}{x+1}$
answer	restriction(s)

$$[168]: \frac{3}{x} + \frac{5}{y}$$

answer

restriction(s)

$$[169]: \frac{-7xy}{3x} + \frac{4y^2}{2y}$$

answer

restriction(s)

$$[170]: \frac{2}{x-3} - \frac{1}{x-1}$$

answer

restriction(s)

$$[171]: \frac{4a}{3bc} - \frac{15b}{5ac}$$

answer

restriction(s)

$$[172]: \frac{3x+3}{x^2+2x+1} + \frac{x-1}{x^2-1}$$

answer

restriction(s)

$$[173]: \frac{4}{4x^2-4x+1} - \frac{5x}{20x^2-5}$$

answer

restriction(s)

$$[174]: \frac{2c-7}{3} + 4$$

answer

restriction(s)

$$[175]: \frac{n}{n-3} + \frac{2n+2}{n^2-2n-3}$$

answer

restriction(s)

$$[176]: \frac{3}{w-3} - \frac{2}{w^2-9}$$

answer

restriction(s)

$$[177]: \frac{2x+1}{x-5} - \frac{4}{x^2-3x-10}$$

answer

restriction(s)

$$[178]: \frac{12}{5y^2} - \frac{2}{5yz}$$

answer

restriction(s)

$$[179]: \frac{1}{n} + \frac{n-1}{n^2-2n-3} - 3$$

answer

restriction(s)

V. Radicals

➤ Simplify.

[180]: $\sqrt{196}$	[181]: $\sqrt{90} \cdot \sqrt{7}$	[182]: $\sqrt{16} \cdot \sqrt{32}$
answer	answer	answer

[183]: $2\sqrt{32} \cdot 4\sqrt{98}$	[184]: $3\sqrt{5} + 6\sqrt{5}$	[185]: $\frac{\sqrt{480}}{\sqrt{24}}$
answer	answer	answer

[186]: $\sqrt{7}(\sqrt{12} - 2\sqrt{3})$	[187]: $(2 + 3\sqrt{6})(3 + \sqrt{6})$	[188]: $(\sqrt{6} + 5\sqrt{3})(\sqrt{3} + 2)$
answer	answer	answer

[189]: $\frac{3\sqrt{5}}{\sqrt{10}}$	[190]: $\frac{6}{\sqrt{3} + \sqrt{2}}$	[191]: $\frac{6}{\sqrt{10} - \sqrt{2}}$
answer	answer	answer

[192]: $\sqrt{x^2}$	[193]: $\sqrt{4x^4y^3}$	[194]: $\sqrt{32m^4} \cdot \sqrt{5m^7}$
answer	answer	answer

[195]: $\sqrt[4]{n^9}$	[196]: $3x \cdot \sqrt[4]{16x^{10}}$	[197]: $2 \cdot \sqrt[5]{mx^4} \cdot \sqrt[5]{m^{11}x^7}$
answer	answer	answer

➤ Let $f(x) = \sqrt{2x - 5}$. Evaluate and simplify.

[198]: $f(3) = ?$	[199]: $f(-2) = ?$	[200]: $f(16) = ?$
answer	answer	answer

➤ Let $h(x) = 2x \cdot \sqrt{3x + 2}$. Evaluate and simplify.

[201]: $h(10) = ?$	[202]: $h(-18) = ?$	[203]: $h(6) = ?$
answer	answer	answer

➤ Solve.

[204]: $\sqrt{x} = 5$ solution(s)	[205]: $\sqrt{x+1} = 3$ solution(s)	[206]: $3 \cdot \sqrt{x+4} + 5 = 20$ solution(s)
[207]: $2\sqrt{x} - 4\sqrt{x} + 10 = 4$ solution(s)	[208]: $\sqrt{3x-3} = 6$ solution(s)	[209]: $5 + 4\sqrt{2x-3} = 25$ solution(s)
[210]: $2\sqrt{x-2} + 9\sqrt{x-2} = 33$ solution(s)	[211]: $3\sqrt{x-4} - 6 = 2\sqrt{x-4} + 3$ solution(s)	[212]: $3 \cdot \sqrt{x+10} - 2 = 52$ solution(s)