

Algebra 2 SUMMER PACKET for rising Algebra 2 Students**Evaluate each expression.**

1) $5(5 + 3) - (4 - 3)$

2) $4 \times 6 + 3 - 5^2$

3) $8 \div (3 + 1) + 5 \times 5$

4) $(3 \times 5 - 4 - 1) \times 6$

Distributive Property -- Combine Like Terms

5) $8(8p - 5) + 3(-4p - 3)$

6) $2(m + 1) - (5m + 8)$

7) $2(2 - 4m) + 7(-10m - 6)$

8) $-5(10x + 8) - 9(8x + 3)$

Solve each equation.

9) $136 = -8(4 - 7n)$

10) $84 = -6(n - 6)$

$$11) 5(1 + 3x) = -115$$

$$12) -86 = -8x - 7(8 + x)$$

$$13) 8(2 - 5n) - 4(2 + 5n) = 8$$

$$14) -32 = -8(8x - 1) - 8(3x - 6)$$

$$15) -49 = 2(1 + 3x) + 3(3 - 6x)$$

$$16) 2(8 - b) - 6(5 + 6b) = -52$$

Solve each Absolute Value equation. Remember: Two equations necessary.

$$17) |-8k + 5| = 59$$

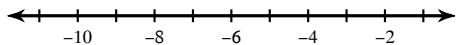
$$18) |-7 + 4a| = 23$$

$$19) -1 + 2|a - 10| = 7$$

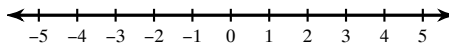
$$20) 2 + 7|x + 9| = 79$$

INEQUALITIES. Solve each inequality and graph its solution. Show work below number line.

21) $22 < -2v - 8 - 4v$

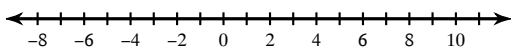


22) $14 \leq 2r + 5r$

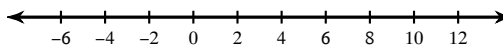


Solve each compound inequality and graph its solution. Show work beneath number line.

23) $-1 + 3x > -22$ and $6x + 8 \leq 56$

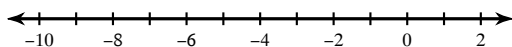


24) $9 + 3a \geq -9$ and $10 + 6a \leq 70$

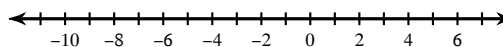


Solve each compound inequality and graph its solution. Show work beneath number line.

25) $4 - 4n \leq 16$ or $4 + 6n < -26$

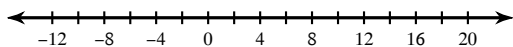


26) $-5 - n > 1$ or $n + 7 > 11$

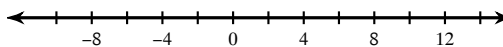


INEQUALITIES. Solve each inequality and graph its solution. Show work under number line.

27) $|n - 4| - 6 > 8$



28) $|r - 1| - 6 < 4$



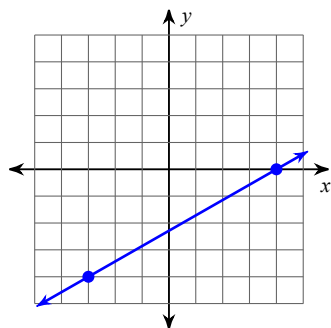
PROPORTION. Solve each proportion. Do not use decimals.

29) $\frac{5}{3} = \frac{a + 4}{a - 8}$

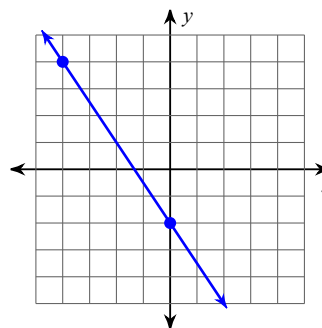
30) $\frac{2}{x + 4} = \frac{9}{x - 8}$

SLOPE. Find the slope of each line. Rise over Run.

31)



32)



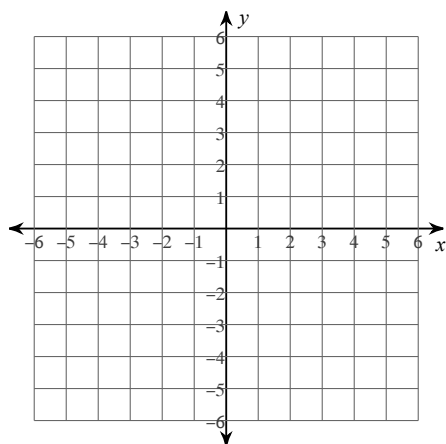
SLOPE. Find the slope of the line through each pair of points.

33) $(9, -14), (-1, 5)$

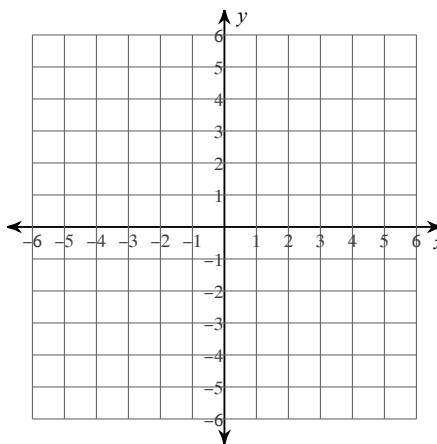
34) $(6, 2), (16, -1)$

GRAPHING. Graph each line. Slope Intercept Format.

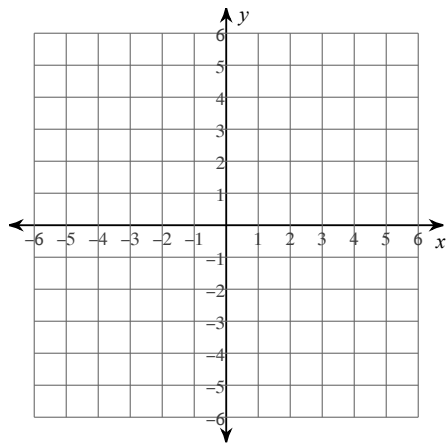
35) $y = \frac{7}{3}x - 2$



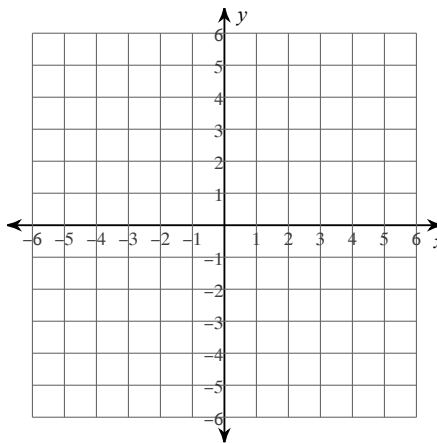
36) $y = 3x + 3$



37) $y = x - 4$

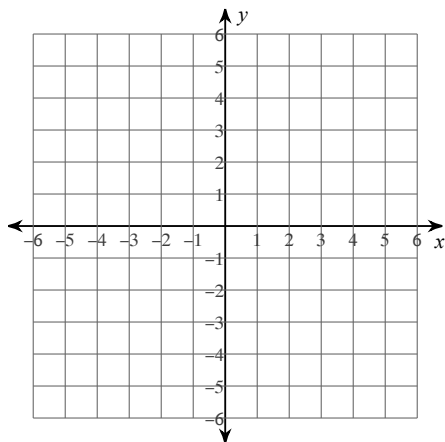


38) $x = -1$

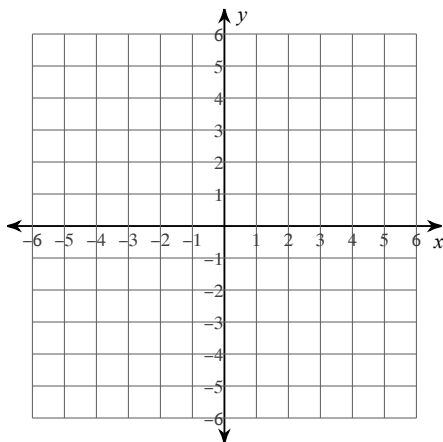


STANDARD FORM. $Ax+By=C$. Graph each equation using a table with x and y intercepts.

39) $x - y = -2$

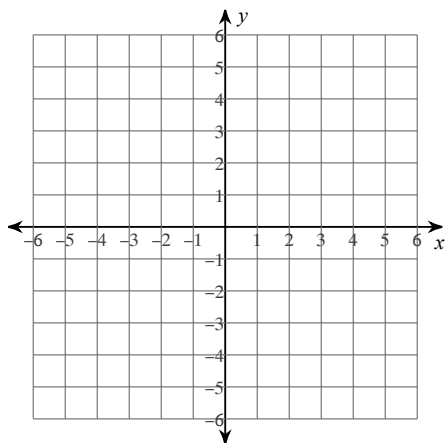


40) $6x - y = 1$

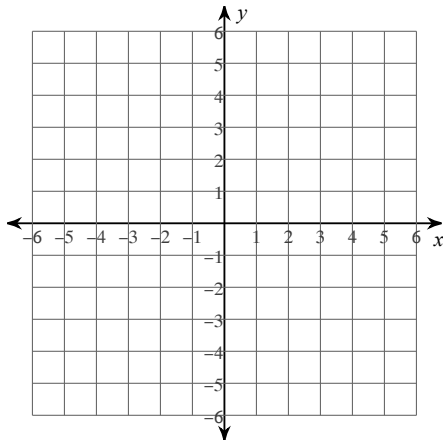


INEQUALITIES. Sketch the graph of each linear inequality.

41) $y \leq -\frac{3}{5}x + 1$

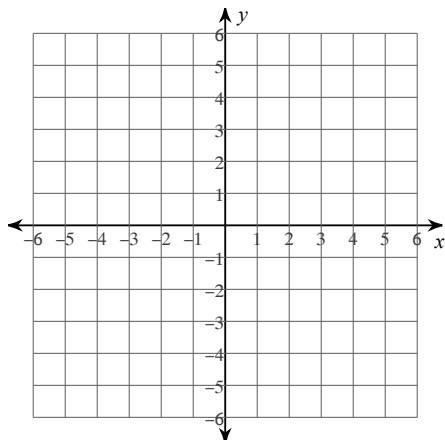


42) $y > -3x - 1$

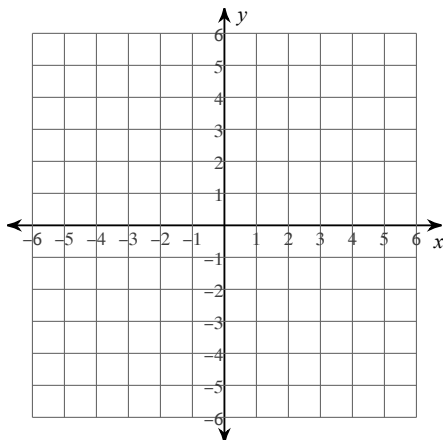


ABSOLUTE VALUE. Graph each equation.

43) $y = |x - 4| - 3$



44) $y = |x + 3| + 4$



ELIMINATION. Solve each system by elimination.

$$\begin{aligned} 45) \quad & -5x - 4y = -20 \\ & 9x + 4y = 20 \end{aligned}$$

$$\begin{aligned} 46) \quad & x - 5y = 30 \\ & 10x - 5y = -15 \end{aligned}$$

$$\begin{aligned} 47) \quad & 7x + y = 14 \\ & -14x + 6y = 28 \end{aligned}$$

$$\begin{aligned} 48) \quad & -8x + 7y = 6 \\ & 9x - 6y = 12 \end{aligned}$$

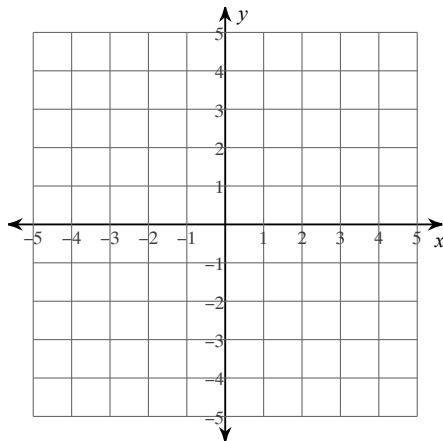
SUBSTITUTION. Solve each system by substitution.

$$\begin{aligned} 49) \quad & y = 5x + 11 \\ & y = -7x - 13 \end{aligned}$$

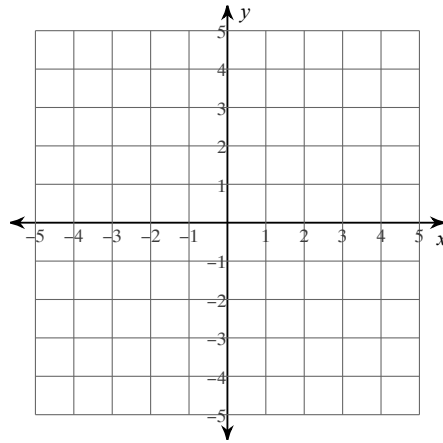
$$\begin{aligned} 50) \quad & y = x + 4 \\ & -5x - 3y = 20 \end{aligned}$$

GRAPHING. Solve each system by graphing.

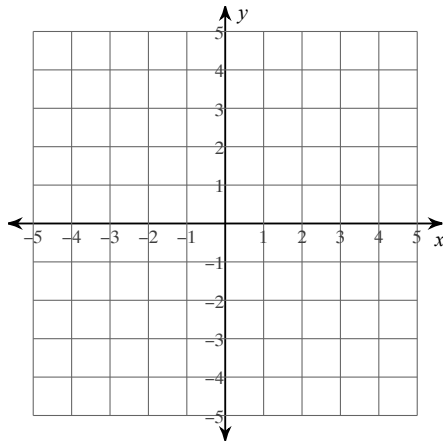
51) $y = 4x + 2$
 $y = -2x - 4$



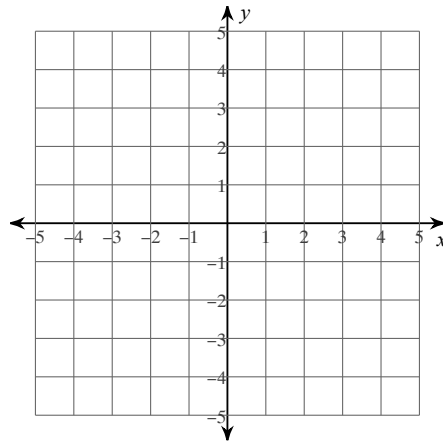
52) $x = -4$
 $y = \frac{7}{4}x + 3$



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



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



EXPONENTS. Simplify. Use properties of exponents. Your answer should contain only positive exponents.

55) $-ba^4 \cdot 2a^2b^4$

56) $-2x^2y^3 \cdot -3y^2$

$$57) (u^3v^{-4})^{-3}$$

$$58) (3x^3y^2)^{-3}$$

$$59) -\frac{4yx^4}{2y^3 \cdot -x^0y^2}$$

$$60) \frac{-3u^4v^4}{-v \cdot 2u^2}$$

Simplify each expression by combining like terms.

$$61) (6 + 6r^3 + 2r^4) - (r^3 - r^4 + 3)$$

$$62) (1 + 7n^3 - 8n) + (1 - 7n^3 + 7n)$$

FOIL. Find each product.

$$63) (4p + 1)(4p - 1)$$

$$64) (8x + 3)(6x - 2)$$

$$65) (7x + 4)(x + 4)$$

$$66) (5n + 6)(5n + 4)$$

GREATEST COMMON FACTOR. Factor the common factor out of each expression.

67) $-16x - 20x^2 - 10x^3$

68) $40x^3 + 35x^2 - 15x$

69) $-64p^6 - 24p^7 + 32p^{12}$

70) $28x^4 - 16x^2 + 32x$

FACTOR. Factor each completely. Look for Greatest Common Factor first.

71) $v^2 + v - 56$

72) $p^2 - 14p + 45$

73) $p^2 - 3p - 40$

74) $m^2 - 13m + 36$

75) $2v^2 + 24v + 64$

76) $6r^2 - 90r + 300$

$$77) 5b^2 - 15b - 90$$

$$78) 3v^2 + 33v + 84$$

FACTOR. Factor each completely. Watch for perfect square; Difference of two squares.

$$79) 9x^2 - 12x + 4$$

$$80) 9n^2 - 4$$

$$81) 9x^2 - 1$$

$$82) 16x^2 - 40x + 25$$

RADICALS. Simplify. Use Division By Primes

$$83) \sqrt{245}$$

$$84) \sqrt{128}$$

85) $\sqrt{384}$

86) $\sqrt{320}$

87) $5\sqrt{288}$

88) $-8\sqrt{150}$

89) $7\sqrt{64}$

90) $4\sqrt{32}$

RADICAL EQUATIONS. Solve each equations. Isolate radical. Square both sides.

91) $7 = \sqrt{13b - 3}$

92) $\sqrt{-10 - b} = 0$

$$93) 0 = \sqrt{18 - 2r}$$

$$94) 2 = \sqrt{3k - 14}$$

$$95) \sqrt{x - 5} + 5 = 15$$

$$96) \sqrt{v} - 10 = 0$$

$$97) -8 + \sqrt{n} = -4$$

$$98) \sqrt{v - 4} - 5 = 0$$

RADICAL EQUATIONS. Solve each equation. Square both sides!

$$99) \sqrt{2x - 5} = \sqrt{4 - x}$$

$$100) \sqrt{k + 4} = \sqrt{3k - 4}$$

Answers to Algebra 2 SUMMER PACKET for rising Algebra 2 Students (ID: 1)

1) 39

2) 2

3) 27

4) 60

5) $52p - 49$

6) $-3m - 6$

7) $-38 - 78m$

8) $-122x - 67$

9) $\{3\}$

10) $\{-8\}$

11) $\{-8\}$

12) $\{2\}$

13) $\{0\}$

14) $\{1\}$

15) $\{5\}$

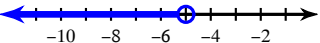
16) $\{1\}$

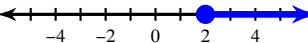
17) $\left\{-\frac{27}{4}, 8\right\}$

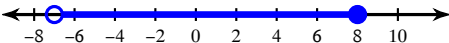
18) $\left\{\frac{15}{2}, -4\right\}$

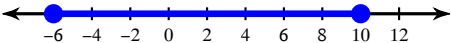
19) $\{14, 6\}$

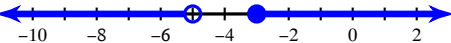
20) $\{2, -20\}$

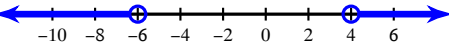
21) $v < -5$: 

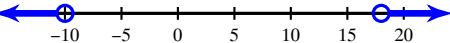
22) $r \geq 2$: 

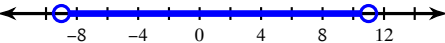
23) $-7 < x \leq 8$: 

24) $-6 \leq a \leq 10$: 

25) $n \geq -3$ or $n < -5$: 

26) $n < -6$ or $n > 4$: 

27) $n > 18$ or $n < -10$: 

28) $-9 < r < 11$: 

29) $\{26\}$

30) $\left\{-\frac{52}{7}\right\}$

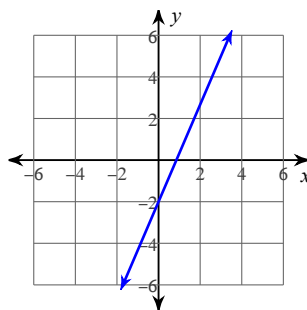
31) $\frac{4}{7}$

32) $-\frac{3}{2}$

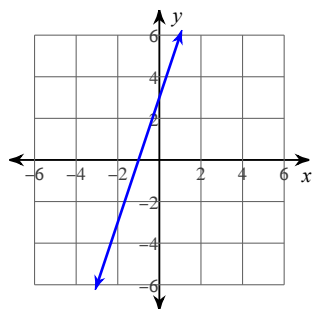
33) $-\frac{19}{10}$

34) $-\frac{3}{10}$

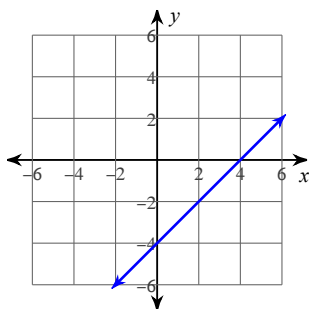
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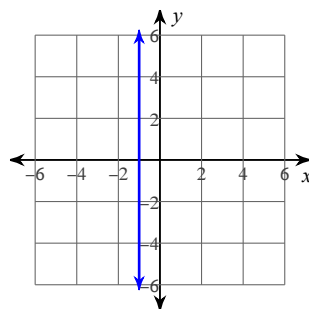
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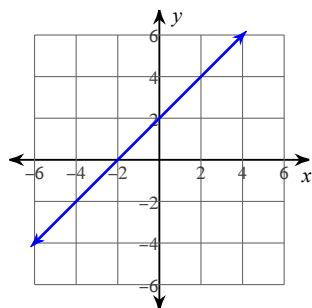
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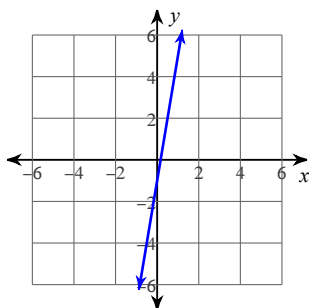
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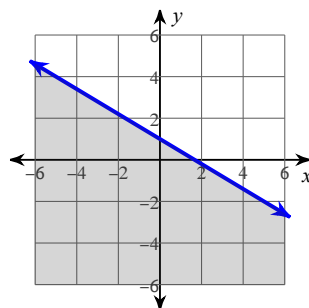
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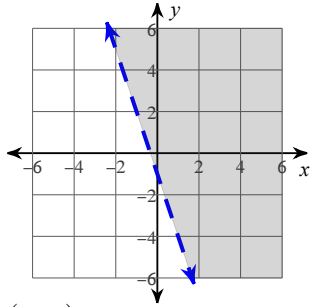
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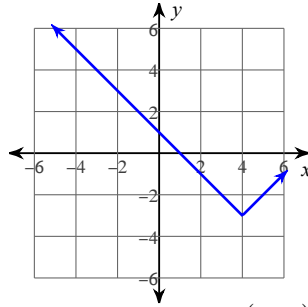
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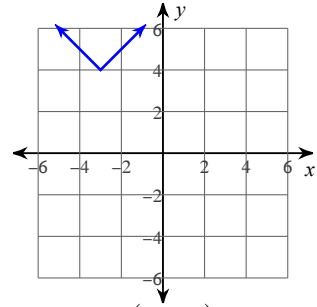
42)



43)



44)



45) $(0, 5)$

49) $(-2, 1)$

53) $(3, 2)$

57) $\frac{v^{12}}{u^9}$

61) $3r^4 + 5r^3 + 3$

65) $7x^2 + 32x + 16$

68) $5x(8x^2 + 7x - 3)$

71) $(v + 8)(v - 7)$

75) $2(v + 8)(v + 4)$

79) $(3x - 2)^2$

83) $7\sqrt{5}$

87) $60\sqrt{2}$

91) $\{4\}$

95) $\{105\}$

99) $\{3\}$

46) $(-5, -7)$

50) $(-4, 0)$

54) $(1, 4)$

58) $\frac{1}{27x^9y^6}$

62) $-n + 2$

66) $25n^2 + 50n + 24$

69) $8p^6(-8 - 3p + 4p^6)$

72) $(p - 9)(p - 5)$

76) $6(r - 10)(r - 5)$

80) $(3n + 2)(3n - 2)$

84) $8\sqrt{2}$

88) $-40\sqrt{6}$

92) $\{-10\}$

96) $\{100\}$

100) $\{4\}$

47) $(1, 7)$

51) $(-1, -2)$

55) $-2b^5a^6$

59) $\frac{2x^4}{y^4}$

63) $16p^2 - 1$

67) $-2x(8 + 10x + 5x^2)$

70) $4x(7x^3 - 4x + 8)$

73) $(p + 5)(p - 8)$

77) $5(b - 6)(b + 3)$

81) $(3x + 1)(3x - 1)$

85) $8\sqrt{6}$

89) 56

93) $\{9\}$

97) $\{16\}$

48) $(8, 10)$

52) $(-4, -4)$

56) $6x^2y^5$

60) $\frac{3u^2v^3}{2}$

64) $48x^2 + 2x - 6$

74) $(m - 9)(m - 4)$

78) $3(v + 4)(v + 7)$

82) $(4x - 5)^2$

86) $8\sqrt{5}$

90) $16\sqrt{2}$

94) $\{6\}$

98) $\{29\}$