Name _____

Geometry Packet (OPTIONAL)

This packet is completely optional. Your 9th grade teacher will not check for completion. This is for you to use for review and prepare for Geometry!

Order of Operations: *Simplify each expression*

1) $5^2 - (12 \div 2 \times 3) \div 9 + 15$

2) $\dfrac{(18-9)^0 + 15}{3 \cdot 12 - 6 \cdot 4}$

3) $4[3^3 - 5(8 - 6)] \div 2 + 11$

Solving Linear Equations: *Solve the following equations.*

4. $8(t + 7) = 32$

5. $\frac{1}{4}(p + 2) = 12$

6. $6(w - 5) - 3w = 12$

7. $15.7y - 13.7y = -26$

8. $-5(1 - 5x) + 5(-8x - 2) = -4x - 8x$

9. $24a - 22 = -4(1 - 6a)$

10. $8(3n+1) = 4(6n-2)$

11. $c(2c + 4) + 2(7 - c^2) = 40$

12. $8s + 18 = 6(2s + 3) - 4s$

13. $\frac{x}{2} + \frac{1}{7} = \frac{2}{3}$

14. $\frac{x+2}{6} = \frac{4}{3}$

15. $\frac{x+6}{8} = \frac{x-2}{4}$

Factoring Trinomials and Binomials: *Factor each trinomial or binomial, if possible.*

16. $x^2 + 5x + 4$

17. $x^2 - x - 6$

18. $x^2 + 4x - 12$

19. $x^2 - 1$

20. $7x^2 - 19x - 36$

21. $4x^2 - 9$

22. $7x^2 - 14x - 2$ 22. $2x^2 - 5x - 3$ 23. $2x^3 - 22x^2 - 24x$

Solving Quadratic Equations: *Solve the following equations using any method. Leave your answer as a simplified radical, if necessary.*

24. $5x^2 = 20$ 25. $x^2 + 2x = 15$ 26. $2(x + 3)^2 = 54$

27. $x^2 = 225$ 28. $14x^2 + x - 3 = 0$ 29. $\frac{4}{x^2} = \frac{1}{9}$

30. $3x^2 - 4 = 8x$ 31. $x^8 = 1$ 32. $2x^2 + 4x = 2$

Systems of Equations: *Solve each system using the most appropriate method.*

33. $x = 5$
$2x + 3y = 1$

34. $y = 2x + 1$
$4x - y = 5$

35. $4x + 2y = 11$
$3x - 2y = 3$

Working With Radicals: *Simplify the following radicals.*

36. $\sqrt{45} - \sqrt{20}$

37. $9\sqrt{75} + 2\sqrt{50}$

38. $4\sqrt{27} - \sqrt{18}$

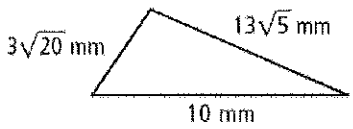
39. $\frac{\sqrt{56}}{\sqrt{3}}$

40. $2\sqrt{3} \cdot 6\sqrt{6} \cdot \sqrt{18}$

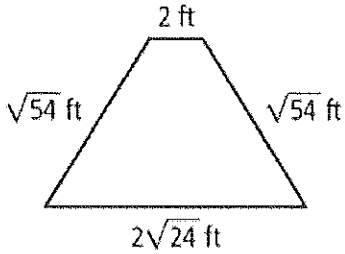
41. $(8\sqrt{3})^2$

42. $(2 - 3\sqrt{3})(2 + 3\sqrt{3})$

43. Find the perimeter:



44. Find the perimeter.



Expanding: *Expand each binomial using multiplication*

45. $(3p + 2q)(p - 6q)$ 46. $(3j + 1)^2$ 47. $(6z + 7)(6z - 7)$

Simplifying: *Simplify each fraction. Answers should only contain positive exponents*

48. $\frac{12x^2}{20x^3}$ 50) $\frac{20x-8}{12x+16}$ 51) $\frac{a^3c^3}{2ac^4}$ 52) $\frac{56m^3n}{32mn}$

53) $(-c^5h^6)^4$ 54) $\frac{(2xy^{-3})^2}{9x^3y^{-3}}$ 55) $\frac{4^{17}}{4^{14}}$ 56) $\left(\frac{-4t^6}{t^3r^8}\right)^3$

Slope: *Determine the slope for each.*

56) (5, 1) & (2, 7) 57) (3, -9) & (2, -9) 58) (-1, 7) & (1, 5)

59) (2, 2) & (6, 8) 60) $2x - 3y = 4$ 61) $3x - 4y = 10$

Writing Linear Equations *Use the given information to write each equation.*

62) A line that contains the points (-1, 2) & (5, 6)

Point-Slope Form: _____

Slope-Intercept Form: _____

Standard Form: _____

63) a line passing through (-2, -4), parallel to $2x + 4y = 3$

Point-Slope Form: _____

Slope-Intercept Form: _____

Standard Form: _____

64) a line passing through (-2, -4), perpendicular to $x - 3y = 4$

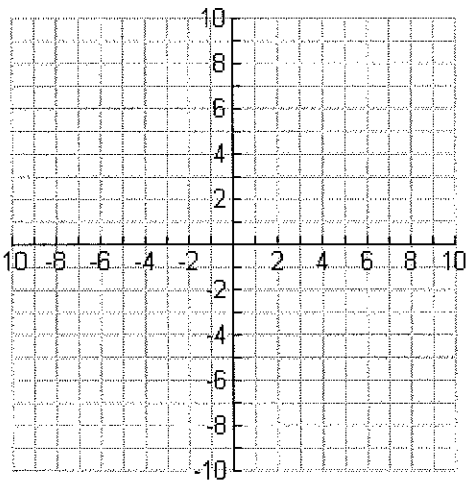
Point-Slope Form: _____

Slope-Intercept Form: _____

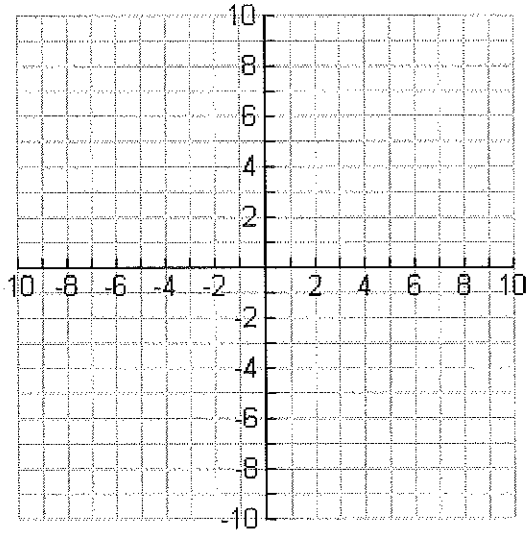
Standard Form: _____

Graphing *Graph each relation*

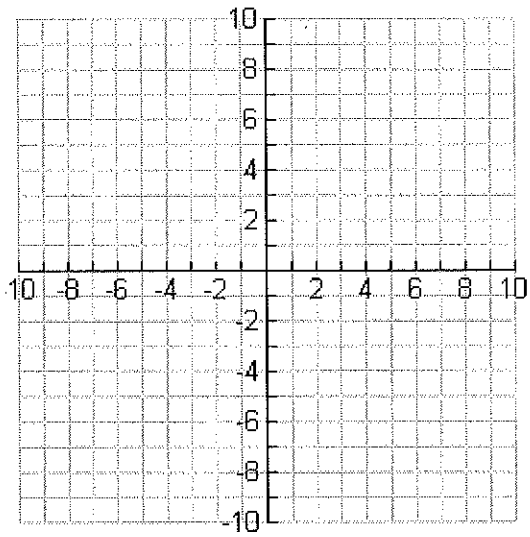
65) A line that passes through the point (2, 3) that's parallel to $y = 2x + 4$.



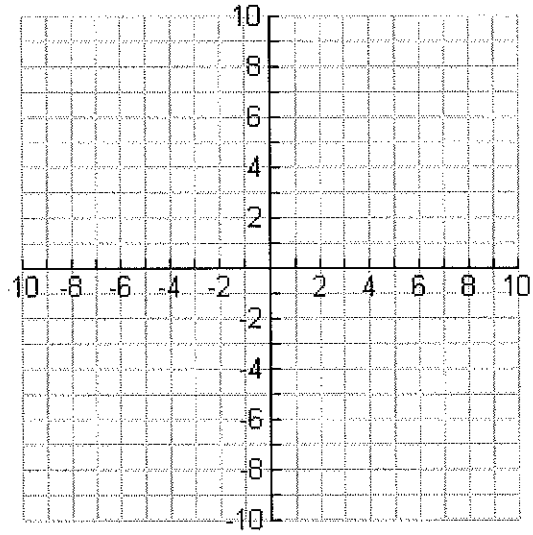
64) A line perpendicular to $2x - 3y = 8$, with the same y intercept as $x - y = 5$



65) $y = (x - 2)^2 + 2$

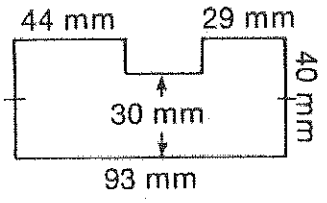


66) $y = x^2 + 4x - 8$

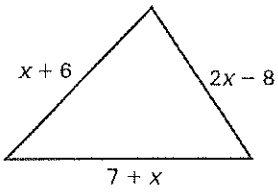


Miscellaneous Problems

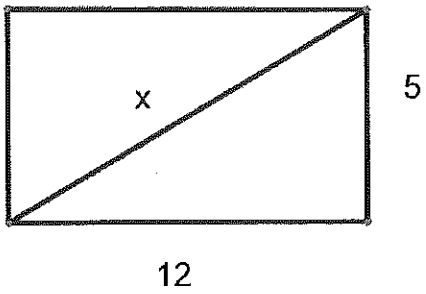
67. Find the perimeter:



68. The perimeter of the triangle is 73. Solve for x.



69. Find the length of the diagonal of the rectangle.



70. Brandon's back yard is in the shape of a rectangle. The length is 50 feet and the width is 30 feet. What is the perimeter? What is the area? If you put up a fence and each section is 8 feet long, how many sections would you need?

71. Tim is putting in a circular garden in front of his house. He needs to put a low fence around it. He also needs to get mulch. If the circle has a diameter of 12 feet, how much fencing would he need? The mulch comes in rolls of 10 feet. How many rolls will he need to lay down much over the entire garden?

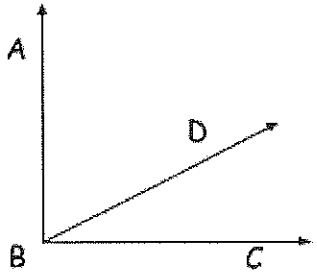
72. Suzie is having a party. She needs to buy ice cream. She knows that each person needs 2 scoops. The ice cream package is in the shape of a rectangular prism. The length is 12 inches, the height is 5 inches, and the width is 8 inches. What is the volume? If each scoop is around 12 cubic inches, how many scoops can I get out of a package?

73. Courtney is making 72 cookies. She will make rectangles and cut them into triangles. Each rectangle will be 2 inches by 4 inches. What is the area of each cookie? If she wants to put icing on them, how many cans will she need if each can will cover 48 square inches?

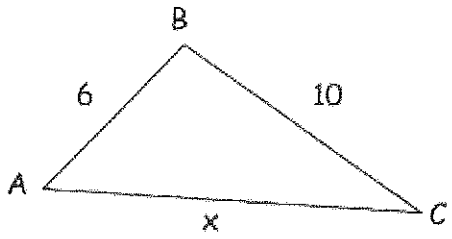
74. Terry is selling plants from her garden. Buy 3/$4.50 and get one free. Mrs. Greenthumb wants 20 plants; how much will she pay? How many plants would you get for $27?

75. Explain the difference between similar and congruent.

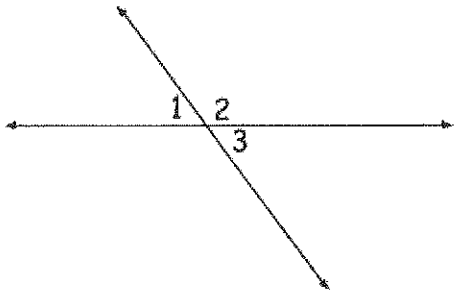
76. Given: $\angle ABC$ is a right angle and $m\angle ABD = 67°$. Find: $m\angle DBC$



77. AC must be smaller than what number? Why?

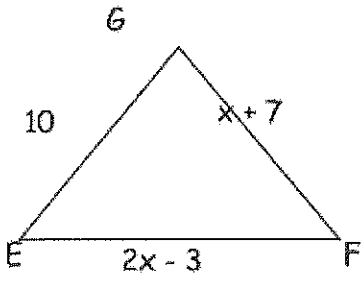


78. Given: $m\angle 1 = 2x + 40$, $m\angle 2 = 4x + 80$, and $m\angle 3 = x + 2y$. Find: $m\angle 1$, $m\angle 2$, and $m\angle 3$

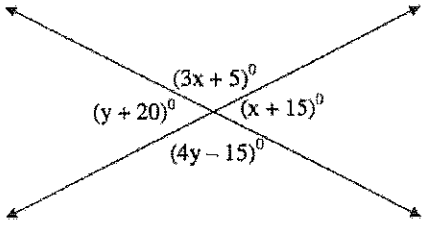


79. The larger of two supplementary angles exceeds 7 times the smaller by 4°. Find the measure of the larger angle.

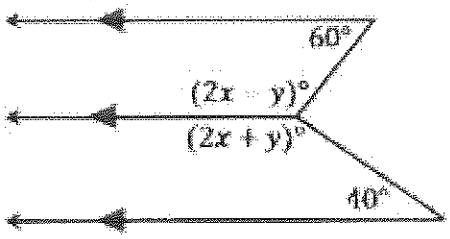
80. If the perimeter of ΔEFG is 32, is ΔEFG scalene, isosceles, or equilateral?



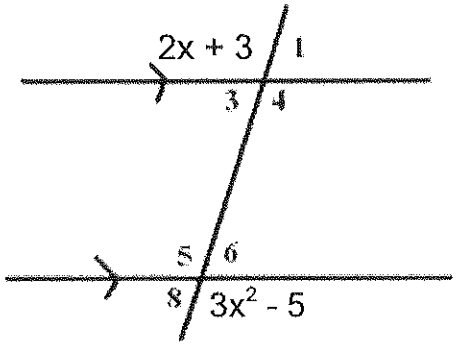
81. Solve for x and y



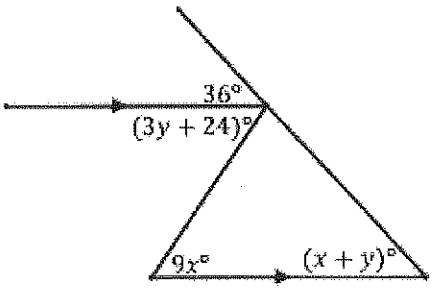
82. Solve for x and y



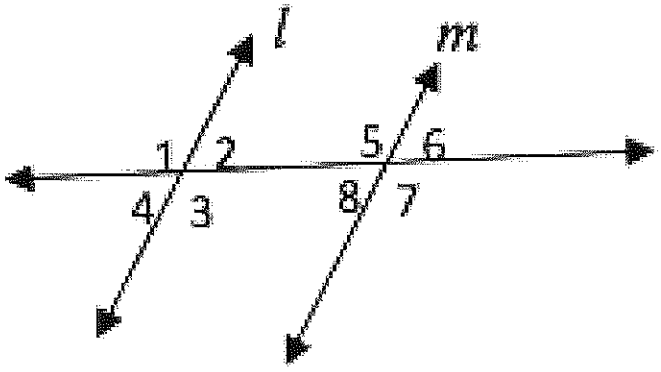
83. Find the value of angle 8.



84. Solve for x and y



85. Given that m<3 = x^2 + 112, m<8 = 16x + 131, $l \| m$, find the measure of <4.



Name _____

Geometry Packet (OPTIONAL)

This packet is completely optional. Your 9th grade teacher will not check for completion. This is for you to use for review and prepare for Geometry!

Order of Operations: *Simplify each expression*

1) $5^2-(12\div 2\times 3)\div 9+15$

$25-(6\times 3)\div 9+15$

$25-(18)\div 9+15$

$25-2+15$

$23+15$

38

2) $\dfrac{(18-9)^0+15}{3\cdot 12-6\cdot 4}$

$\dfrac{1+15}{36-24}$

$\dfrac{16}{12}$

$\dfrac{4}{3}$

3) $4[3^3-5(8-6)]\div 2+11$

$4[27-5(2)]\div 2+11$

$4[27-10]\div 2+11$

$4[17]\div 2+11$

$68\div 2+11$

$34+11$

45

Solving Linear Equations: *Solve the following equations.*

4. $8(t+7)=32$

$\dfrac{8}{8}\quad\dfrac{8}{8}$

$t+7=4$

$-7\quad -7$

$t=-3$

5. $\frac{1}{4}(p+2)=12\cdot 4$

$p+2=48$

$-2\quad -2$

$p=46$

6. $6(w-5)-3w=12$

$6w-30-3w=12$

$3w-30=12$

$+30\quad +30$

$\dfrac{3w}{3}=\dfrac{42}{3}$

$w=14$

7. $15.7y-13.7y=-26$

$\dfrac{2y}{2}=\dfrac{-26}{2}$

$y=-13$

8. $-5(1-5x)+5(-8x-2)=-4x-8x$

$-5+25x-40x-10=-12x$

$-15-15x=-12x$

$+15x\quad +15x$

$\dfrac{-15}{3}=\dfrac{3x}{3}$

$-5=x$

9. $24a-22=-4(1-6a)$

$24a-22=-4+24a$

$-24a\quad -24a$

$-22=-4$

no solution

10. $8(3n+1)=4(6n-2)$

$24n+8=24n-8$

$-24n\quad -24n$

$8=-8$

no solution

11. $c(2c+4)+2(7-c^2)=40$

$2c^2+4c+14-2c^2=40$

$-14\quad\quad -14$

$\dfrac{4c}{4}=\dfrac{26}{4}$

$c=\dfrac{13}{2}$

12. $8s+18=6(2s+3)-4s$

$8s+18=12s+18-4s$

$8s+18=8s+18$

infinite solutions

13. $\left[\frac{x}{2}+\frac{1}{7}=\frac{2}{3}\right]\cdot 42$

$21x+6=28$

$-6\quad -6$

$\dfrac{21x}{21}=\dfrac{22}{21}$

$x=\dfrac{22}{21}$

14. $\frac{x+2}{6}=\frac{4}{3}$

$3x+6=24$

$-6\quad -6$

$\dfrac{3x}{3}=\dfrac{18}{3}$

$x=6$

15. $\frac{x+6}{8}=\frac{x-2}{4}$

$8x-16=4x+24$

$-4x\quad -4x$

$4x-16=24$

$+16\quad +16$

$\dfrac{4x}{4}=\dfrac{40}{4}$

$x=10$

Factoring Trinomials and Binomials: *Factor each trinomial or binomial, if possible.*

16. x^2+5x+4 (4, 1, 5)

$(x+4)(x+1)$

17. x^2-x-6 (−3, 2, −1)

$(x-3)(x+2)$

18. $x^2+4x-12$ (−12, 6, 2, 4)

$(x+6)(x-2)$

19. x^2-1 DOTS!!

$(x+1)(x-1)$

20. $7x^2-19x-36$ (−252, −28, 9, −19)

$7x^2-28x+9x-36$

$7x(x-4)+9(x-4)$

$(7x+9)(x-4)$

21. $4x^2-9$ DOTS!!

$(2x+3)(2x-3)$

22. $7x^2-14x-2$ (−14, −14)

prime

*cannot be factored

22. $2x^2-5x-3$ (−6, 1, 5)

$2x^2-6x+x-3$

$2x(x-3)+1(x-3)$

$(2x+1)(x-3)$

23. $2x^3-22x^2-24x$ (−12, 1, −11)

$2x(x^2-11x-12)$

$2x(x-12)(x+1)$

Solving Quadratic Equations: *Solve the following equations using any method. Leave your answer as a simplified radical, if necessary.*

24. $5x^2=20$

$\dfrac{5x^2}{5}=\dfrac{20}{5}$

$\sqrt{x^2}=\sqrt{4}$

$x=\pm 2$

25. $x^2+2x=15$ (−15, 2, −3)

$-15\quad -15$

$x^2+2x-15=0$

$(x+5)(x-3)=0$

$x=-5$

$x=3$

26. $\dfrac{2(x+3)^2}{2}=\dfrac{54}{2}$ ($\sqrt{27}$, $\sqrt{9}\sqrt{3}$, $3\sqrt{3}$)

$\sqrt{(x+3)^2}=\sqrt{27}$

$x+3=\pm 3\sqrt{3}$

$-3\quad -3$

$x=-3\pm 3\sqrt{3}$

27. $\sqrt{x^2}=\sqrt{225}$

$x=\pm 15$

28. $14x^2+x-3=0$ (−42, 7, −6, 1)

$14x^2+7x-6x-3=0$

$7x(2x+1)-3(2x+1)=0$

$(7x-3)(2x+1)=0$

$x=\dfrac{3}{7}\quad x=-\dfrac{1}{2}$

29. $\dfrac{4}{x^2}=\dfrac{1}{9}$

$\sqrt{x^2}=\sqrt{36}$

$x=\pm 6$

30. $3x^2-4=8x$ (−12, −8)

$-8x\quad -8x$

$3x^2-8x-4=0$

$\dfrac{8\pm\sqrt{(-8)^2-4(3)(-4)}}{2(3)}$ ($\sqrt{112}$, $\sqrt{16}\sqrt{7}$, $4\sqrt{7}$)

$\dfrac{8\pm\sqrt{64+143}}{6}$

$\dfrac{8\pm\sqrt{112}}{6}=\dfrac{4}{6}\dfrac{8\pm 4\sqrt{7}}{2}$

$\dfrac{36}{4\pm 2\sqrt{7}}$

31. $\sqrt[3]{x^8}=\sqrt[3]{1}$

$x^8-1=0$

$(x^4+1)(x^4-1)=0$

$(x^4+1)(x^2+1)(x^2-1)=0$

$(x^4+1)(x^2+1)(x+1)(x-1)=0$

$x=1\quad x=-1$

32. $2x^2+4x=2$ (−1, 2)

$-2\quad -2$

$2x^2+4x-2=0$

$2(x^2+2x-1)=0$

$\dfrac{-2\pm\sqrt{2^2-4(1)(-1)}}{2(1)}$

$\dfrac{-2\pm\sqrt{4+4}}{2}$ ($\sqrt{8}$, $\sqrt{4}\sqrt{2}$, $2\sqrt{2}$)

$\dfrac{-2\pm\sqrt{8}}{2}$

$\dfrac{-2}{2}\pm\dfrac{2\sqrt{2}}{2}=1\pm\sqrt{2}$

Systems of Equations: *Solve each system using the most appropriate method.*

33. $x=5$

$2x+3y=1$

$2(5)+3y=1$

$10+3y=1$

$-10\quad -10$

$\dfrac{3y}{3}=\dfrac{-9}{3}$

$y=-3$

$(5,-3)$

34. $y=2x+1$

$4x-y=5$

$4x-(2x+1)=5$

$4x-2x-1=5$

$2x-1=5$

$+1\quad +1$

$\dfrac{2x}{2}=\dfrac{6}{2}$

$x=3$

$y=2(3)+1$

$y=6+1$

$y=7$

$(3,7)$

35. $4x+2y=11$

$+(3x-2y=3)$

$\dfrac{7x}{7}=\dfrac{14}{7}$

$x=2$

$4(2)+2y=11$

$8+2y=11$

$-8\quad -8$

$\dfrac{2y}{2}=\dfrac{3}{2}$

$y=\dfrac{3}{2}$

$(2,\frac{3}{2})$

Working With Radicals: *Simplify the following radicals.*

36. $\sqrt{45}-\sqrt{20}$

$\sqrt{9}\sqrt{5}\quad\sqrt{4}\sqrt{5}$

$3\sqrt{5}-2\sqrt{5}$

$\sqrt{5}$

37. $9\sqrt{75}+2\sqrt{50}$

$\sqrt{25}\sqrt{3}\quad\sqrt{25}\sqrt{2}$

$9\cdot 5\sqrt{3}+2\cdot 5\sqrt{2}$

$45\sqrt{3}+10\sqrt{2}$

38. $4\sqrt{27}-\sqrt{18}$

$\sqrt{9}\sqrt{3}\quad\sqrt{9}\sqrt{2}$

$4\cdot 3\sqrt{3}\quad 3\sqrt{2}$

$12\sqrt{3}-3\sqrt{2}$

39. $\frac{\sqrt{56}}{\sqrt{3}}\cdot\frac{\sqrt{14}}{\sqrt{14}}$

$\dfrac{2\sqrt{14}\cdot\sqrt{3}}{\sqrt{3}\quad\sqrt{3}}$

$\dfrac{2\sqrt{42}}{3}$

40. $2\sqrt{3}\cdot 6\sqrt{6}\cdot\sqrt{18}$

$12\sqrt{324}$

$12\cdot 18$

216

41. $(8\sqrt{3})^2$

$(8\sqrt{3})(8\sqrt{3})$

$64\cdot 3$

192

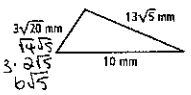
42. $(2-3\sqrt{3})(2+3\sqrt{3})$

$4+6\sqrt{3}-6\sqrt{3}-9\cdot 3$

$4-27$

-23

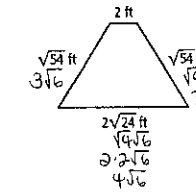
43. Find the perimeter:



$P=6\sqrt{5}+13\sqrt{5}+10$

$P=10+19\sqrt{5}$ mm

44. Find the perimeter.



$P=2+3\sqrt{6}+3\sqrt{6}+4$

$P=2+10\sqrt{6}$ ft

Expanding: *Expand each binomial using multiplication*

45. $(3p + 2q)(p - 6q)$

$3p^2 - 18pq + 2pq - 12q^2$

$\boxed{3p^2 - 16pq - 12q^2}$

46. $(3j + 1)^2$

$(3j+1)(3j+1)$

$9j^2 + 3j + 3j + 1$

$\boxed{9j^2 + 6j + 1}$

47. $(6z + 7)(6z - 7)$ DOTS!!

$36z^2 - 42z + 42z - 49$

$\boxed{36z^2 - 49}$

Simplifying: *Simplify each fraction. Answers should only contain positive exponents*

48. $\frac{12y^3}{20x^5}$

$\boxed{\frac{3}{5x}}$

50) $\frac{20x-8}{12x+16}$

$\frac{4(5x-2)}{4(3x+4)}$

$\boxed{\frac{5x-2}{3x+4}}$

51) $\frac{a^3c^3}{2ac^4}$

$\boxed{\frac{a^2}{2c}}$

52) $\frac{56m^3n}{32mn}$

$\boxed{\frac{7m^2}{4}}$

53) $(-c^5h^6)^4$

$\boxed{c^{20}h^{24}}$

54) $\frac{(2xy^{-3})^2}{9x^3y^{-3}}$

$\frac{4x^2y^{-6}}{9x^3y^{-3}}$ $2-3=-1$ $-6-(-3)=-3$

$\boxed{\frac{4}{9xy^3}}$

55) $\frac{4^{17}}{4^{14}}$

4^3

$\boxed{64}$

56) $\left(\frac{-4t^3}{r^8}\right)^3$

$\boxed{\frac{-64t^9}{r^{24}}}$

Slope: *Determine the slope for each.*

56) (5, 1) & (2, 7)

$\frac{7-1}{2-5} = \frac{6}{-3} = (-2)$

57) (3, -9) & (2, -9)

$\frac{-9+9}{2-3} = \frac{0}{1} = (0)$

58) (-1, 7) & (1, 5)

$\frac{5-7}{1+1} = \frac{-2}{2} = (-1)$

59) (2, 2) & (6, 8)

$\frac{8-2}{6-2} = \frac{6}{4} = \left(\frac{3}{2}\right)$

60) $2x - 3y = 4$

$-2x \quad -2x$

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

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

$\left(\frac{2}{3}\right)$

61) $3x - 4y = 10$

$-3x \quad -3x$

$\frac{-4y}{-4} = \frac{-3x+10}{-4}$

$y = \frac{3}{4}x - \frac{5}{2}$

$\left(\frac{3}{4}\right)$

5

64) A line perpendicular to $2x - 3y = 8$, with the same y intercept as $x - y = 5$

$-2x \quad -2x$

$\frac{-3y}{-3} = \frac{-2x+8}{-3}$

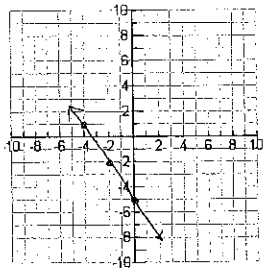
$y = \frac{2}{3}x - \frac{8}{3}$

$0 - y = 5$

$y = -5$

$m = -\frac{3}{2}$

$b = -5$ $\quad y = -\frac{3}{2}x - 5$



65) $y = (x-2)^2 + 2$

Vertex: $(2, 2)$

$x^2 - 4x + 4 + 2$

$x^2 - 4x + 6$

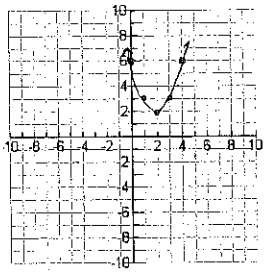
y int = 6

$y = (1-2)^2 + 2$

$(-1)^2 + 2$ $\quad (1, 3)$

$1 + 2$

3



66) $y = x^2 + 4x - 8$

y int = -8

$\frac{-4}{2(1)} = \frac{-4}{2} = -2$ $\quad (-2, -12) =$ vertex

$y = (-2)^2 + 4(-2) - 8$

$y = 4 - 8 - 8$

$y = -4 - 8$

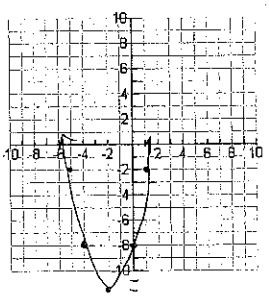
$y = -12$

$y = 1^2 + 4(1) - 8$

$1 + 4 - 8$

$6 - 8$ $\quad (1, -2)$

$y = -2$



Writing Linear Equations *Use the given information to write each equation.*

62) A line that contains the points (-1, 2) & (5, 6)

$\frac{6-2}{5-(-1)} = \frac{4}{6} = \frac{2}{3}$

$y - 2 = \frac{2}{3}x + \frac{2}{3}$

$+2 \quad +2\frac{6}{3}$

$y = \frac{2}{3}x + \frac{8}{3}$

$-\frac{2}{3}x \quad -\frac{2}{3}x$

$\left[-\frac{2}{3}x + y = \frac{8}{3}\right] \cdot -3$

$2x - 3y = -8$

Point-Slope Form: $y - 2 = \frac{2}{3}(x+1)$

Slope-Intercept Form: $y = \frac{2}{3}x + \frac{8}{3}$

Standard Form: $2x - 3y = -8$

63) a line passing through (-2, -4), parallel to $2x + 4y = 3$

$-2x \quad -2x$

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

$y = -\frac{1}{2}x + \frac{3}{4}$ $\quad m = -\frac{1}{2}$ $\quad \| m = -\frac{1}{2}$

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

$-4 \quad -4$

$y = -\frac{1}{2}x - 5$

$+\frac{1}{2}x \quad +\frac{1}{2}x$

$\left(\frac{1}{2}x + y = -5\right) \cdot 2$

$x + 2y = -10$

Point-Slope Form: $y + 4 = -\frac{1}{2}(x+2)$

Slope-Intercept Form: $y = -\frac{1}{2}x - 5$

Standard Form: $x + 2y = -10$

64) a line passing through (-2, -4), perpendicular to $x - 3y = 4$

$-x \quad -x$

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

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

$y + 4 = -3x - 6$

$-4 \quad -4$

$y = -3x + 10$

$+3x \quad +3x$

$3x + y = 10$

Point-Slope Form: $y + 4 = -3(x+2)$

Slope-Intercept Form: $y = -3x + 10$

Standard Form: $3x + y = 10$

Graphing *Graph each relation*

65) A line that passes through the point (2, 3) that's parallel to $y = 2x + 4$.

$m = 2$

$\| m = 2$

$y = mx + b$

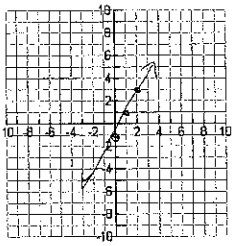
$3 = 2(2) + b$

$3 = 4 + b$

$-4 \quad -4$

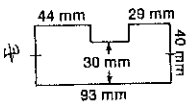
$-1 = b$

$y = 2x - 1$



Miscellaneous Problems

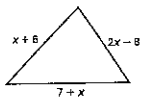
67. Find the perimeter:



$40 + 40 + 93 + 93$

$\boxed{266\text{ mm}}$

68. The perimeter of the triangle is 73. Solve for x.



$x + 6 + 2x - 8 + 7 + x = 73$

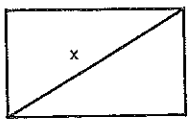
$4x - 2 = 73$

$+2 \quad +2$

$\frac{4x}{4} = \frac{75}{4}$

$\boxed{x = \frac{75}{4}}$

69. Find the length of the diagonal of the rectangle.



$5^2 + 12^2 = x^2$

$25 + 144 = x^2$

$\sqrt{169} = \sqrt{x^2}$

$\boxed{x = 13}$

70. Brandon's back yard is in the shape of a rectangle. The length is 50 feet and the width is 30 feet. What is the perimeter? What is the area? If you put up a fence and each section is 8 feet long, how many sections would you need?

$P = 2(30 + 50)$

$P = 2(80)$

$\boxed{P = 160\text{ ft}}$

$A = (30)(50)$

$\boxed{A = 1500\text{ ft}^2}$

$\frac{160}{8} = \boxed{20\text{ sections}}$

71. Tim is putting in a circular garden in front of his house. He needs to put a low fence around it. He also needs to get mulch. If the circle has a diameter of 12 feet, how much fencing would he need? The mulch comes in rolls of 10 feet. How many rolls will he need to lay down much over the entire garden?

12.

$C = \pi d$

$C = (3.14)(12)$

$C = 37.68$

$\boxed{37.68\text{ ft of fence}}$

$A = \pi r^2$

$A = (3.14)(6)^2$

$A = 113.04$

$\frac{113.04}{10} = 11.304$

$\boxed{12\text{ rolls}}$

72. Suzie is having a party. She needs to buy ice cream. She knows that each person needs 2 scoops. The ice cream package is in the shape of a rectangular prism. The length is 12 inches, the height is 5 inches, and the width is 8 inches. What is the volume? If each scoop is around 12 cubic inches, how many scoops can I get out of a package?

$V = 12 \cdot 5 \cdot 8$ $V_{scoop} = 12$ $\frac{480}{12} =$ **40 scoops**

$V = 480 in^3$

box

73. Courtney is making 72 cookies. She will make rectangles and cut them into triangles. Each rectangle will be 2 inches by 4 inches. What is the area of each cookie? If she wants to put icing on them, how many cans will she need if each can will cover 48 square inches?

$4 \cdot 2 = 8 in^2$ $\frac{288}{48} =$ **6 cans**

$A_{cookie} = \frac{1}{2}(4)(2)$

$= 4 in^2/cookie \times 72 cookies = 288 in^2$

74. Terry is selling plants from her garden. Buy 3/$4.50 and get one free. Mrs. Greenthumb wants 20 plants; how much will she pay? How many plants would you get for $27?

4 plants for $4.50 $\frac{27}{4.50} = 6$ $6 \cdot 4 =$ **24 plants for $27**

$\frac{20}{4} = 5$ $5 \cdot \$4.50$

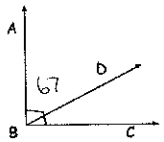
$22.50 for 20 plants

75. Explain the difference between similar and congruent.

Similar - same shape but different size

Congruent - equivalent shapes / angles / sides

76. Given: $\angle ABC$ is a right angle and $m\angle ABD = 67°$. Find: $m\angle DBC$

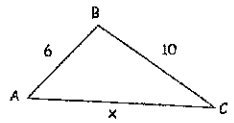


$\angle DBC + 67 = 90$

$-67 \quad -67$

$m\angle DBC = 23°$

77.. AC must be smaller than what number? Why?

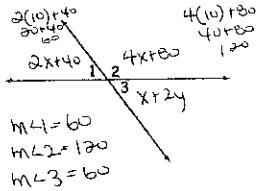


Sum of $6 + 10$

$6 + 10 = 16$

Smaller than 16

78. Given: $m\angle 1 = 2x + 40$, $m\angle 2 = 4x + 80$, and $m\angle 3 = x + 2y$. Find: $m\angle 1$, $m\angle 2$, and $m\angle 3$



$2x + 40 + 4x + 80 = 180$

$6x + 120 = 180$

$-120 \quad -120$

$\frac{6x}{6} = \frac{60}{6}$

$x = 10$

$\angle 1 + \angle 3$ are vertical so $\angle 1 \cong \angle 3$

$m\angle 1 = 60$

$m\angle 2 = 120$

$m\angle 3 = 60$

79. The larger of two supplementary angles exceeds 7 times the smaller by 4°. Find the measure of the larger angle.

Let $x =$ 1st angle (larger)

Let $180 - x =$ Supplementary angle

$x = 7(180 - x) + 4$

$x = 1260 - 7x + 4$

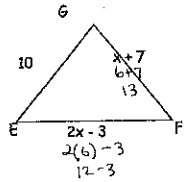
$+7x \quad +7x$

$\frac{8x}{8} = \frac{1264}{8}$

$x = 158$

158°

80. If the perimeter of ΔEFG is 32, is ΔEFG scalene, isosceles, or equilateral?



$10 + x + 7 + 2x - 3 = 32$

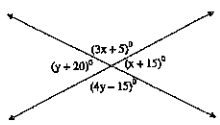
$3x + 14 = 32$

$-14 \quad -14$

$\frac{3x}{3} = \frac{18}{3}$ $x = 6$

Scalene

81. Solve for x and y



$3x + 5 + x + 15 = 180$

$4x + 20 = 180$

$-20 \quad -20$

$\frac{4x}{4} = \frac{160}{4}$

$x = 40$

$y + 20 + 4y - 15 = 180$

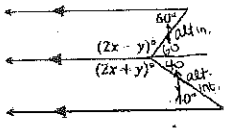
$5y + 5 = 180$

$-5 \quad -5$

$\frac{5y}{5} = \frac{175}{5}$

$y = 35$

82. Solve for x and y



$2x - y + 60 = 180$

$2x - y = 120$

$2x + y + 40 = 180$

$-40 \quad -40$

$2x + y = 140$

$2x - y = 120$

$+(2x + y = 140)$

$\frac{4x}{4} = \frac{260}{4}$

$x = 65$

$y = 10$

$2(65) + y + 40 = 180$

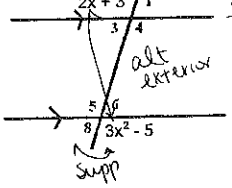
$130 + y + 40 = 180$

$y + 170 = 180$

$-170 \quad -170$

$y = 10$

83. Find the value of angle 8.



$2x + 3 = 3x^2 - 5$

$-2x - 3 \quad -2x - 3$

$0 = 3x^2 - 2x - 8$

$0 = 3x^2 - 6x + 4x - 8$

$0 = 3x(x - 2) + 4(x - 2)$

$0 = (3x + 4)(x - 2)$

$x = -\frac{4}{3}, x = 2$

$2(2) + 3$ $3(2)^2 - 5$ $2(-\frac{4}{3}) + 3$

$4 + 3$ $3 \cdot 4 - 5$ $\frac{1}{3}$

7 $12 - 5$ $3(-\frac{4}{3})^2 - 5$

$7 \checkmark$ $3(\frac{16}{9}) - 5$

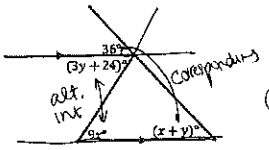
$\frac{16}{3} - \frac{15}{3} = \frac{1}{3}$

$180 - 7$ $180 - \frac{1}{3}$

173 $179\frac{2}{3}$

$m\angle 8 = 173$ or $m\angle 8 = 179\frac{2}{3}$

84. Solve for x and y



$3y + 24 = 9x$

$-3y \quad -3y$

$24 = 9x - 3y$

$(36 = x + y) \cdot 3$

$108 = 3x + 3y$

$24 = 9x - 3y$

$+(108 = 3x + 3y)$

$\frac{132}{12} = \frac{12x}{12}$

$11 + y = 36$

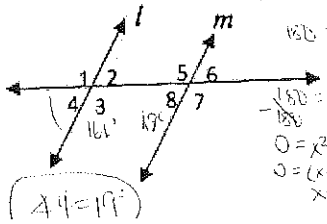
$-11 \quad -11$

$y = 25$

$x = 11$

$y = 25$

85. Given that $m\angle 3 = x^2 + 112$, $m\angle 8 = 16x + 131$, $l \parallel m$, find the measure of $\angle 4$.



$180 = x^2 + 112 + 16x + 131$

$-180 \quad -180$

$0 = x^2 + 16x + 63$

$0 = (x + 7)(x + 9)$

$x = -7, x = -9$

$43 \quad 16(-7) + 131$

$-112 \quad +112$

$43 = 19$

$143 \quad (-9)^2 + 112$

$81 + 112 = 193$

$161 \quad 16(-9) + 131$

$-144 + 131 = -13$

$44 = 19$