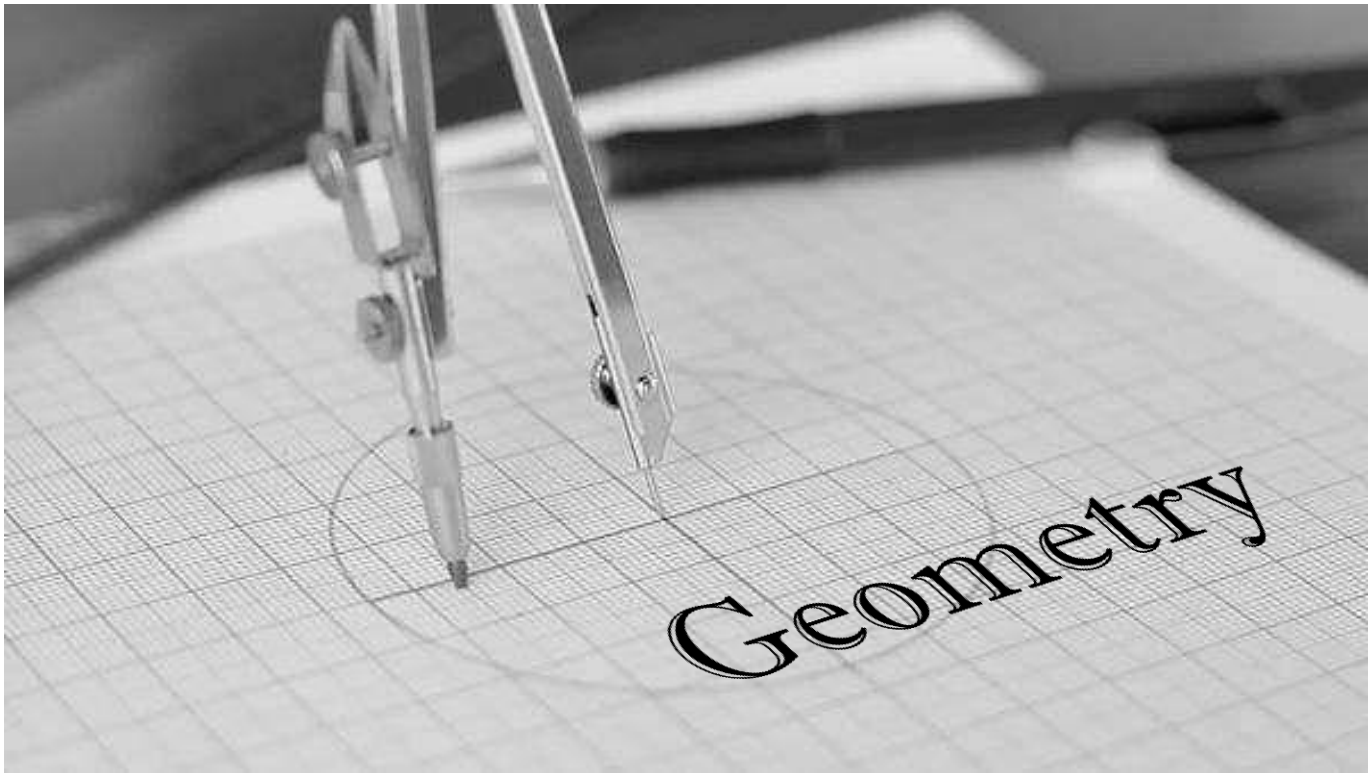
Summer Math Packet



Entering 11th Grade

Student's Name_____

Students & Parents,

Enclosed you will find the summer math practice packet. The purpose of the summer math practice packet is to provide students with the opportunity to stay engaged in mathematics over the summer and reinforce the necessary skills for the upcoming school year. If you have any questions or concerns, please feel free to contact me at adavid@colemancarroll.org.

Algebra I Topics

Equations
Variables and Expressions
Solving Equations
Solving for a Variable
Rates, Ratios, and proportions

Functions
Graphing Relationships
Relations and Functions
Writing Functions
Graphing Functions
Scatter Plots and Trend Lines
Arithmetic Sequences

Linear Functions
Identifying Linear Functions
Using Intercepts
Rate of Change and Slope
The Slope Formula
Direct Variation
Slope-Intercept Form
Point-Slope Form
Slopes of Parallel and Perpendicular Lines
Transforming Linear Functions

Systems of Equations
Solving Systems by Graphing
Solving Systems by Substitution
Solving Systems by Elimination
Solving Special Systems

Polynomials
Special Products of Binomials
Multiplying Polynomials
Adding and Subtracting Polynomials

Factoring Polynomials
Factors and Greatest Common Factors
Factoring by GCF
Factoring $x^2 + bx + c$
Factoring Special Products

Quadratic Functions and Equations
Solving Quadratic Equations by Factoring
Solving Quad Equations by Using Square Roots
The Quadratic Formula
Completing the Square

Geometry Topics

Angles
Angle Relationships
Triangle Angle Sum

Plane Figures
Area
Perimeter/Circumference
Similarity
Pythagorean Theorem

Solid Figures
Volume
Similarity

Solve each equation.

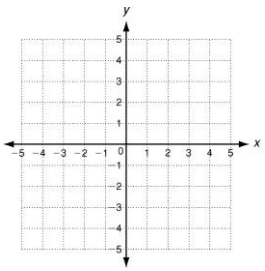
1. $-x-9=x+3$	2. $7r-4+2r=12+7r$
3. $-5-4(n+3)=-19-3n$	4. $-3(3-k)=3(k+3)$

Solve for the indicated variable.

5. $d=rt$ for r	6. $ax+by+c=0$ for y
7. $A=\frac{e+f}{2}$ for e	8. $3k+7n=p$ for k

Use intercepts to graph the line described by the equation.

9. $4x+3y=-12$



Find the slope of the line.

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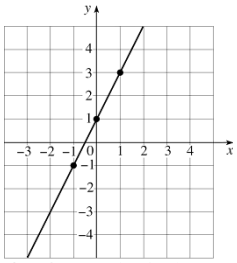

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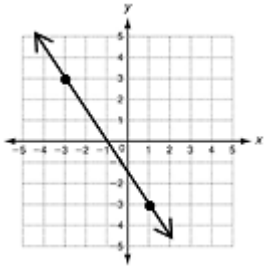

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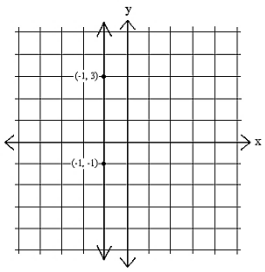

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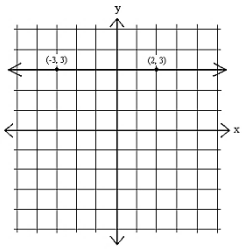


Find the slope of the line that contains each pair of points.

14. $(3,10)$ and $(2,5)$

15. $(12,-2)$ and $(0,6)$

Find the slope of the line described by each equation.

16. $5x+4y=40$

17. $7x+42=2y$

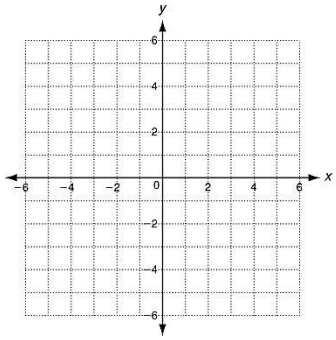
Write the equation that describes each line in slope-intercept form.

18. slope = 8; y-intercept = -6

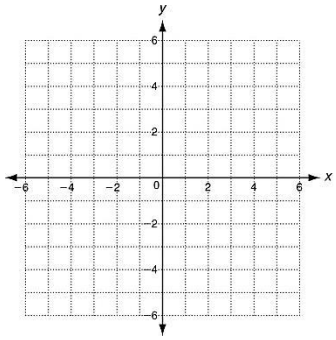
19. slope = $-\frac{1}{2}$, $(8,-1)$ is on the line

Write each equation in slope-intercept form. Then graph the line described by the equation.

20. $y + x = 3$



21. $5x - 2y = 10$



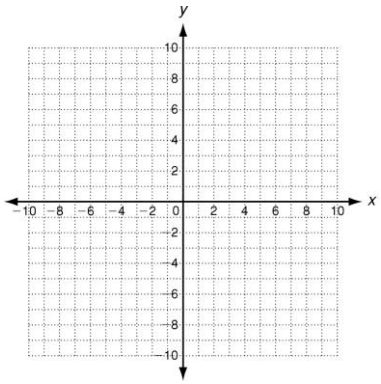
Write an equation in point-slope form for the line with the given slope that contains the given point.

22. slope = 4; (5, 6)

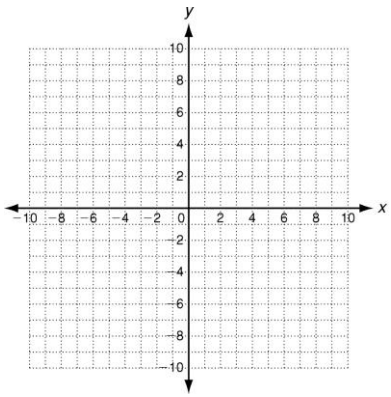
23. slope = –3; (7, –2)

Graph the line described by each equation.

24. $y - 3 = \frac{2}{3}(x + 1)$

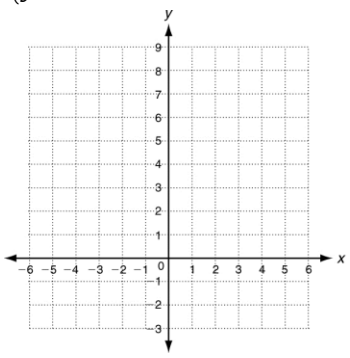


25. $y + 4 = -3(x - 4)$

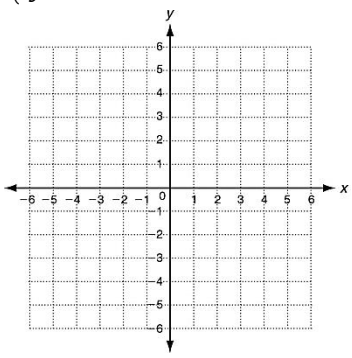


Solve each system by graphing.

26. $\begin{cases} y = 2x + 3 \\ y = -x + 9 \end{cases}$ Solution: _____



27. $\begin{cases} y = -3x + 4 \\ y = 2x + 4 \end{cases}$ Solution: _____



Solve each system by substitution.

28. $\begin{cases} y = 3x + 4 \\ y = 4x + 5 \end{cases}$	29. $\begin{cases} -2x + 2y = 4 \\ 4x + 3y = -15 \end{cases}$

Solve each system by elimination.

30. $\begin{cases} x + 6y = -8 \\ 7x + 2y = 24 \end{cases}$	31. $\begin{cases} 9x + 6y = 12 \\ -18x - 8y = -4 \end{cases}$

Evaluate each expression for the given value(s) of the variable(s).

32. $(3t)^{-3}$ for $t = 2$	33. $4x^{-2}y^{0}$ for $x = 7$ and $y = -4$

Add or subtract.

34. $12x^2 + 11y^2 - 5x^2$	35. $\left(-8k^2 + 5\right) - \left(3k^2 + 7k - 6\right)$

Multiply.

36. $-4x\left(x^2-5x+7\right)$	37. $\left(y-7\right)\left(y-4\right)$
38. $\left(x-4\right)^2$	39. $\left(5x+2\right)^2$

Factor each polynomial. (GCF)

40. $12c^3-5c$	41. $6x^2-18x+6$

Factor each polynomial.

42. $x^2+11x+28$	43. x^2-8x+7
44. $x^2-2x-24$	45. $x^2+4x-21$
46. $1-9x^2$	47. $64x^2-1$

Use the Zero Product Property to solve each equation. Check your answer.

48. $(x-4)(x-3)=0$	49. $x(x+13)=0$

Solve each quadratic equation by factoring. Check your answer.

50. $x^2+2x-15=0$	51. $x^2-5x-6=0$

Solve using square roots. Check your answer.

52. $x^2=64$	53. $x^2=900$
54. $9x^2+20=189$	55. $0=49x^2-16$

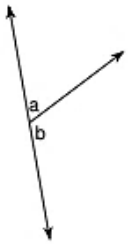
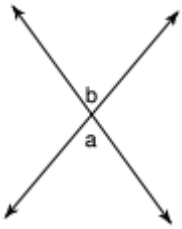
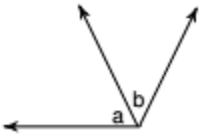
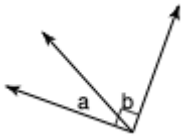
Solve by completing the square.

56. $x^2+10x=-21$	57. $-x^2+6x-3=0$

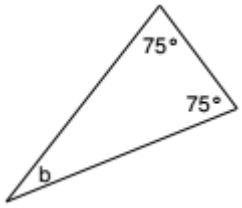
Solve using the Quadratic Formula.

58. $x^2+7x-6=0$	59. $2x^2-x-11=0$

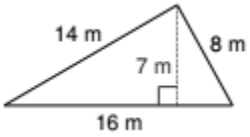
Name the relationship(s): complementary, supplementary, vertical, or adjacent.

60. 	61. 
62. 	63. 

Find the measure of angle *b*.

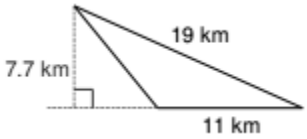
64. 	65. 

Find the perimeter of each figure.

66. 	67. 

Find the area of each figure.

68.



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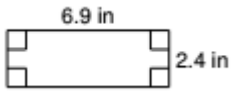

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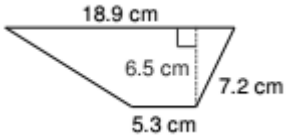
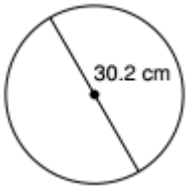


Find the area and circumference of each circle.

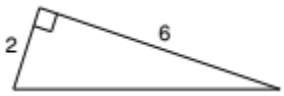
72.

73.



Use the Pythagorean Theorem to find the missing length.

74.



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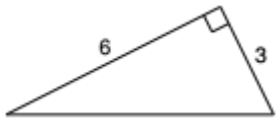
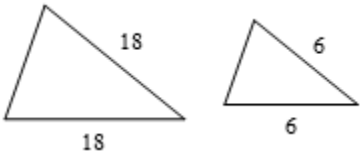


The polygons in each pair are similar. Find the scale factor of the smaller figure to the larger figure.

76.



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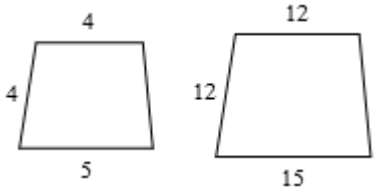
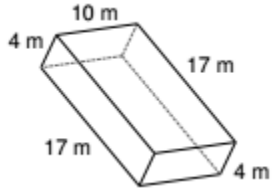


Find the volume of each figure – see formulas below.

78.



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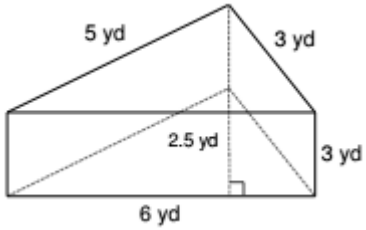

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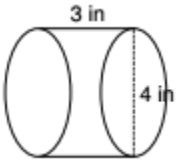

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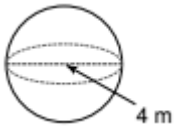

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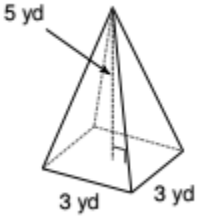

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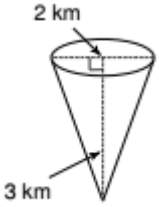

Volume Formulas		
Prism	**Pyramid**	**Cylinder**
$V = Bh$	$V = \frac{1}{3}Bh$	$V = \pi r^2 h$
Cube	**Cone**	**Sphere**
$V = s^3$	$V = \frac{1}{3}\pi r^2 h$	$V = \frac{4}{3}\pi r^3$