

**6TH-8TH GRADE MATHEMATICS 2025-
2026 DR. ROLANDO ESPINOSA K-8 CENTER**

SUMMER PACKET

For ENTERING GEOMETRY HONORS



This project will be due the first week of school and it will be graded. These are the concepts are expected to know coming into the Geometry Honors. Make sure that you show all your work for each question. You should complete the entire packet **without** the use of a **calculator**. No credit will be given to any question(s) you answer without showing work. **Please use pencil only** and remember:

NO WORK = NO CREDIT

NAME: _____

TEACHER/PERIOD: _____

Algebra 1 End-of-Course and Geometry End-of-Course Assessments Reference Sheet

Area		KEY
Parallelogram	$A = bh$	b = base h = height w = width d = diameter r = radius ℓ = slant height a = apothem
Triangle	$A = \frac{1}{2}bh$	A = area B = area of base C = circumference V = volume P = perimeter of base $S.A.$ = surface area
Trapezoid	$A = \frac{1}{2}h(b_1 + b_2)$	
Circle	$A = \pi r^2$	Use 3.14 or $\frac{22}{7}$ for π .
Regular Polygon	$A = \frac{1}{2}aP$	Circumference $C = \pi d$ or $C = 2\pi r$

Volume/Capacity		Total Surface Area
	Rectangular Prism $V = bwh$ or $V = Bh$	$S.A. = 2bh + 2bw + 2hw$ or $S.A. = Ph + 2B$
	Right Circular Cylinder $V = \pi r^2 h$ or $V =$	$S.A. = 2\pi rh + 2\pi r^2$ or $S.A. = 2\pi rh + 2B$
	Right Square Pyramid $V = \frac{1}{3}$	$S.A. = \frac{1}{2}$
	$V = \frac{1}{3}\pi r^2 h$ or $V = \frac{1}{3}$	$S.A. = \frac{1}{2}(2\pi r) + B$
	Sphere $V =$	

Sum of the measures of the interior angles of a polygon	$= 180(n - 2)$
Measure of an interior angle of a regular polygon	$= \frac{180(n - 2)}{n}$
where:	
n represents the number of sides	

Algebra 1 End-of-Course and Geometry End-of-Course Assessments Reference Sheet

Slope formula

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

where m = slope and (x_1, y_1) and (x_2, y_2) are points on the line

Slope-intercept form of a linear equation

$$y = mx + b$$

where m = slope and b = y -Intercept

Point-slope form of a linear equation

$$y - y_1 = m(x - x_1)$$

where m = slope and (x_1, y_1) is a point on a line.

Distance between two points

$$P_1(x_1, y_1) \text{ and } P_2(x_2, y_2)$$

$$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Midpoint between two points

$$P_1(x_1, y_1) \text{ and } P_2(x_2, y_2)$$

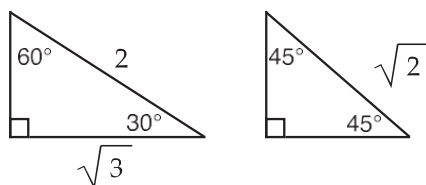
$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

Quadratic formula

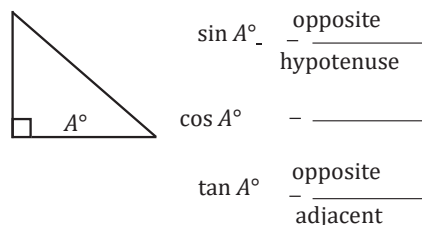
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

where a , b , and c are coefficients in an equation of the form $ax^2 + bx + c = 0$

Special Right Triangles



Trigonometric Ratios



Conversions

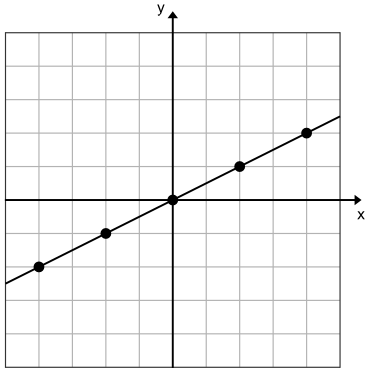
1 yard = 3 feet
1 mile = 1,760 yards = 5,280 feet
1 acre = 43,560 square feet
1 hour = 60 minutes
1 minute = 60 seconds

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts
1 pound = 16 ounces
1 ton = 2,000 pounds

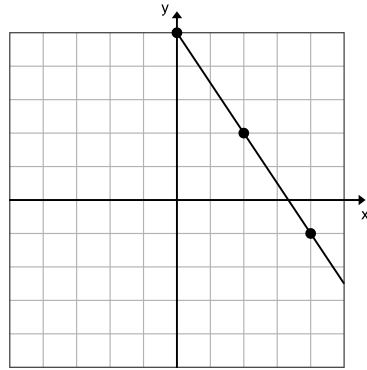
1 meter = 100 centimeters = 1,000 millimeters
1 kilometer = 1,000 meters
1 liter = 1,000 milliliters = 1,000 cubic centimeters
1 gram = 1,000 milligrams
1 kilogram = 1,000 grams

Find the slope of each line:

1.



2.



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

4. $y = -4$

5. $y = x + 2$

6. $x = -4$

Find the slope of the line through each pair of points:

7. $(-10, 18); (-10, 19)$

8. $(3, 8); (-3, -7)$

9. $(-2, 19); (14, -19)$

10. $(-6, -17); (-3, -8)$

Find the slope of a line parallel to each given line:

11. $y = \frac{3}{4}x$

12. $y = 1$

Find the slope of a line perpendicular to each given line:

13. $y = \frac{2}{5}x - 2$

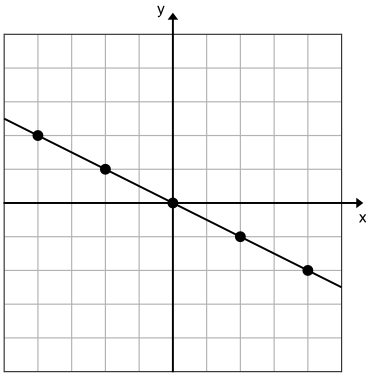
14. $y = -2x - 1$

15. $x = -3$

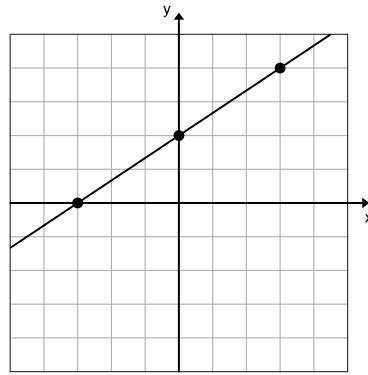
16. $y = -x + 2$

Write the slope-intercept form of the equation of the line:

17.



18.



19. $\text{slope} = 0, y - \text{intercept} = -4$

20. $\text{slope} = 2, y - \text{intercept} = -5$

21. through: $(-4, -2)$ and $(4, -4)$

22. through: $(1, -3)$ and $(0, 4)$

Write the point-slope form of the equation of the line:

23. through: $(4, 4)$, $\text{slope} = \text{undefined}$

24. through: $(-5, 2)$, $\text{slope} = 0$

25. through: $(1, 3)$, $\text{slope} = 4$

26. through: $(-5, -2)$, parallel to $y = -3$

27. through: $(3, 5)$, perpendicular to $y = -3x + 5$

28. through: $(-1, 2)$, parallel to $-6x + 5$

Find the distance between each pair of points:

29. $(-2, -2)$, $(-4, -1)$

30. $(-1, 7)$, $(1, 1)$

Simplify each expression:

35. $-10x + 3x$

36. $4x - 8x$

37. $-8(-6x + 1)$

38. $-8x(6x - 4)$

39. $3x - 5(1 - x)$

40. $-5(2 + x) - 3(5x + 8)$

41. $(5x + 3)(2x + 3)$

42. $(x + 5)^2$

Solve each equation:

43. $-8 - x = -6$

44. $-9x = -27$

45. $-33 + x = -4(x + 7)$

46. $\frac{x}{5} + 9 = -12$

Solve each proportion:

47. $\frac{4}{3} = \frac{2}{x}$

48. $\frac{6}{3} = \frac{x}{5}$

49. $\frac{x+2}{6} = \frac{x}{7}$

50. $\frac{x+2}{6} = \frac{24}{x+2}$

Topic 1: Solving Equations

Solve the following equations that have variables on both sides:

1. $6r + 7 = 13 + 7r$

5. $5 + 2x = 2x + 6$

2. $-7x - 3x + 2 = -8x - 8$

6. $-8n + 4(1+5n) = -6n - 14$

3. $-14 + 6b + 7 - 2b = 1 + 5b$

7. $4n - 40 = 7(-2n + 2)$

4. $n - 3n = 14 - 4n$

8. $-31 - 4x = -5 - 5(1 + 5x)$

Solve the following equations with fractions:

$$1. \quad \frac{3}{4}t = \frac{2}{3}$$

$$2. \quad y - \frac{2}{5} = -\frac{1}{3}$$

$$3. \quad \frac{2}{3} = -\frac{3}{5}t$$

$$4. \quad \frac{1}{4} + \frac{1}{2}t = 4$$

$$5. \quad \frac{3}{4}x = \frac{1}{2}$$

$$6. \quad \frac{1}{4}x + x = -3 + \frac{1}{2}x$$

$$7. \quad \frac{-5}{6}x = \frac{3}{4}$$

$$8. \quad \frac{1}{3} + 2m = m - \frac{3}{2}$$

$$9. \quad 2y - \frac{3}{5} = \frac{1}{2}$$

$$10. \quad m + \frac{2}{3} = \frac{1}{4}m - 1$$

Solve the following multi-step equations:

1. $6(3m + 5) = 66$

2. $3p - 4 = 31$

3. $3(4y - 8) = 12$

4. $x - 2(x + 10) = 12$

5. $-5(x - 3) = -25$

6. $-15 = 5(3q - 10) - 5q$

7. $42 = 3(2 - 3h)$

8. $-3 = -3(2t - 1)$

9. $-10 = 5(2w - 4)$

10. $11.3 - 7.2f = -3.82$

Topic 2: Factoring Polynomials

Factor the polynomials below completely:

1. $x^2 + 5x + 6$

2. $x^2 - 2x - 3$

3. $x^2 - 5x$

4. $x^2 - 4$

5. $2x^2 - 18x - 72$

6. $x^2 - 12x - 28$

7. $4x^2 - 20x + 25$

8. $24x^2 - 6$

9. $2x^2 - x - 3$

10. $8x^2 - 10x - 3$

8. $2x^2 - 11x + 21$

12. $6x^2 + 26x + 24$

Topic 3: Solving Quadratics

Solve the following quadratics by factoring:

1. $x^2 - 11x + 19 = -5$

2. $n^2 + 7n + 15 = 5$

3. $n^2 + 3n - 12 = 6$

4. $9x^2 - 24x + 16 = 0$

5. $7r^2 - 14r = -7$

6. $2x^2 - 3x - 2 = 0$

Solve the following quadratic equations using the Quadratic Formula:

1. $6x^2 + 11x - 35 = 0$

2. $f^2 + 9f + 4 = 0$

3. $m^2 - 3m - 1 = 0$

4. $3x^2 + 8x + 2 = 0$

5. $4t^2 - 9t + 1 = 0$

6. $3w^2 + 8w + 3 = 0$

Topic 4: Solving Systems of Equations

Solve the following Systems of Equations Using Substitution:

1. $2x - 9y = 14$
 $x - 7 = -6y$

2. $-5x + 2y = 9$
 $y - 7x = 0$

3. $3x + 4y = -23$
 $x - 3y = 1$

4. $x + 3y = 25$
 $4x + 5y = 9$

5. $-5x + y = -2$
 $-3x + 6y = -12$

6. $-7x - 2y = -13$
 $x - 2y = 11$

Solve the following Systems of Equations by Elimination:

1. $-5x + 8y = 0$
 $-7x - 8y = -96$

2. $-7y - 4x = 1$
 $7y - 2x = 53$

3. $x - 2y = 14$
 $x + 3y = 9$

4. $8y - 9x = -3$
 $5y - 8x = 10$

5. $-5y + 6x = 40$
 $3y - 8x = -46$

6. $-9y + 4x - 11 = 0$
 $-3y + 10x + 31 = 0$

Topic 5: Simplifying & Multiplying Radicals

Simplify the following radicals:

1. $\sqrt{60}$

2. $-\sqrt{128}$

3. $5\sqrt{320}$

4. $2\sqrt{45}$

5. $\frac{20\sqrt{50}}{4\sqrt{2}}$

6. $\frac{\sqrt{21}}{7\sqrt{2}}$

Multiply and then simplify the following radicals:

1. $\sqrt{5} \cdot \sqrt{45}$

2. $(\sqrt{5})^2$

3. $\sqrt{6} \cdot \sqrt{30}$

4. $4(\sqrt{10})^2$

5. $\sqrt{6} \cdot \sqrt{2}$

6. $\sqrt{25} \cdot \sqrt{25}$

Topic 6: Finding Area, Surface Area and Volume

AREA

Triangle	$A = \frac{1}{2}bh$
Rectangle or Parallelogram	$A = bh$
Trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$

SURFACE AREA

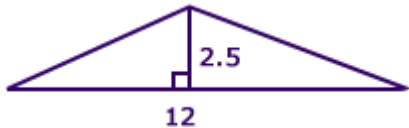
	Lateral	Total
Prism	$S = Ph$	$S = Ph + 2B$
Pyramid	$S = \frac{1}{2}Pl$	$S = \frac{1}{2}Pl + B$
Cylinder	$S = 2\pi rh$	$S = 2\pi rh + 2\pi r^2$

VOLUME

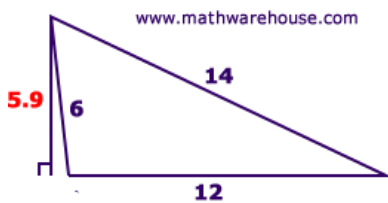
Prism or Cylinder	$V = Bh$
Pyramid or Cone	$V = \frac{1}{3}Bh$

In this section, be sure to write each formula, show the values you substitute in, and then write your answer with proper units of measure.

- Find the area of the triangle.

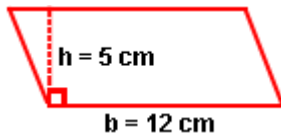


- Find the area of the triangle.

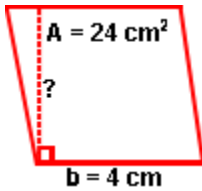


- The perimeter of a rectangle is 20 centimeters. The length is 6 centimeters. What is the area of the rectangle? Be sure to draw and label a diagram.

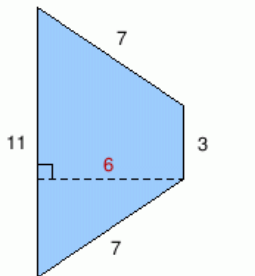
4. Find the area of the parallelogram.



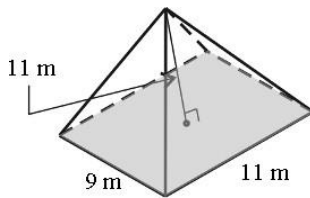
5. Find the height of the parallelogram.



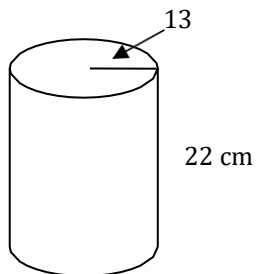
6. Find the area of the trapezoid.



7. Find the volume of the pyramid. The base is rectangular.



8. A cylinder has a radius of 13 cm and a height of 22 cm. Find the surface area and volume.



9. Find the surface area and volume of the triangular prism below.

