

**6th-8th Grade Mathematics 2023-2024**  
**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

	<b>Area</b>	
Parallelogram	$A = bh$	
Triangle	$A = \frac{1}{2}bh$	
Trapezoid	$A = \frac{1}{2}h(b_1 + b_2)$	
Circle	$A = \pi r^2$	
Regular Polygon	$A = \frac{1}{2}aP$	

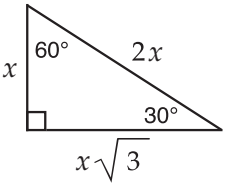
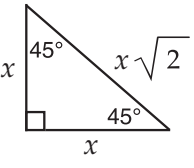
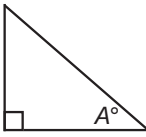
<b>KEY</b>	
$b$ = base	$A$ = area
$h$ = height	$B$ = area of base
$w$ = width	$C$ = circumference
$d$ = diameter	$V$ = volume
$r$ = radius	$P$ = perimeter
$\ell$ = slant height	of base
$a$ = apothem	S.A. = surface area
Use 3.14 or $\frac{22}{7}$ for $\pi$ .	

<b>Circumference</b> $C = \pi d$ or $C = 2\pi r$
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	<b>Volume/Capacity</b>	<b>Total Surface Area</b>
	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 $V = Bh$	$S.A. = 2\pi r h + 2\pi r^2$ or $S.A. = 2\pi r h + 2B$
	Right Square Pyramid $V = \frac{1}{3}Bh$	$S.A. = \frac{1}{2}P\ell + B$
	Right Circular Cone $V = \frac{1}{3}\pi r^2 h$ or $V = \frac{1}{3}Bh$	$S.A. = \frac{1}{2}(2\pi r)\ell + B$
	Sphere $V = \frac{4}{3}\pi r^3$	$S.A. = 4\pi r^2$

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

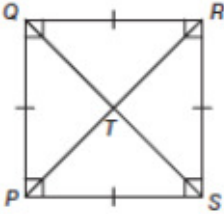
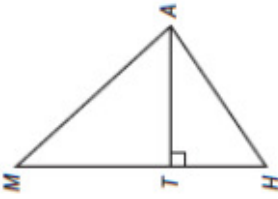
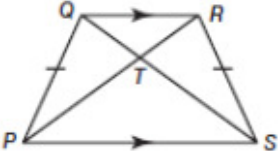
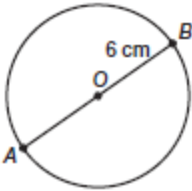
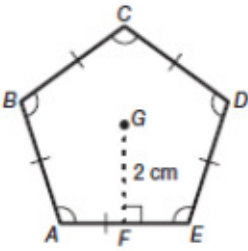
# Algebra 1 End-of-Course and Geometry End-of-Course Assessments Reference Sheet

<p style="text-align: center;"><b>Slope formula</b></p> $m = \frac{y_2 - y_1}{x_2 - x_1}$ <p>where <math>m</math> = slope and <math>(x_1, y_1)</math> and <math>(x_2, y_2)</math> are points on the line</p>	<p style="text-align: center;"><b>Distance between two points</b></p> <p><math>P_1(x_1, y_1)</math> and <math>P_2(x_2, y_2)</math></p> $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
<p style="text-align: center;"><b>Slope-intercept form of a linear equation</b></p> $y = mx + b$ <p>where <math>m</math> = slope and <math>b</math> = <math>y</math>-intercept</p>	<p style="text-align: center;"><b>Midpoint between two points</b></p> <p><math>P_1(x_1, y_1)</math> and <math>P_2(x_2, y_2)</math></p> $\left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$
<p style="text-align: center;"><b>Point-slope form of a linear equation</b></p> $y - y_1 = m(x - x_1)$ <p>where <math>m</math> = slope and <math>(x_1, y_1)</math> is a point on the line</p>	<p style="text-align: center;"><b>Quadratic formula</b></p> $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ <p>where <math>a</math>, <math>b</math>, and <math>c</math> are coefficients in an equation of the form <math>ax^2 + bx + c = 0</math></p>
<p style="text-align: center;"><b>Special Right Triangles</b></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>30-60-90 triangle: legs <math>x</math> and <math>x\sqrt{3}</math>, hypotenuse <math>2x</math>.</p> </div> <div style="text-align: center;">  <p>45-45-90 triangle: legs <math>x</math> and <math>x</math>, hypotenuse <math>x\sqrt{2}</math>.</p> </div> </div>	<p style="text-align: center;"><b>Trigonometric Ratios</b></p> <div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <math display="block">\sin A^\circ = \frac{\text{opposite}}{\text{hypotenuse}}</math> <math display="block">\cos A^\circ = \frac{\text{adjacent}}{\text{hypotenuse}}</math> <math display="block">\tan A^\circ = \frac{\text{opposite}}{\text{adjacent}}</math> </div> </div>

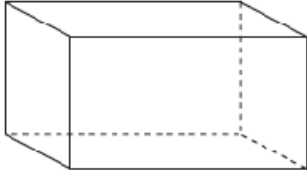
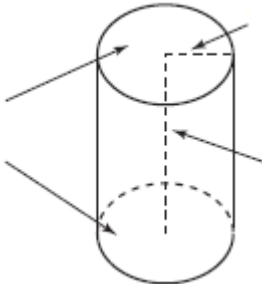
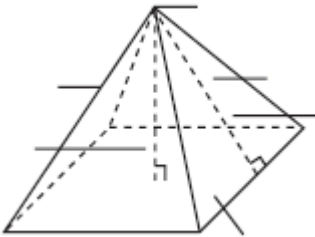
<b>Conversions</b>	
<ul style="list-style-type: none"> <li>1 yard = 3 feet</li> <li>1 mile = 1,760 yards = 5,280 feet</li> <li>1 acre = 43,560 square feet</li> <li>1 hour = 60 minutes</li> <li>1 minute = 60 seconds</li> </ul>	<ul style="list-style-type: none"> <li>1 cup = 8 fluid ounces</li> <li>1 pint = 2 cups</li> <li>1 quart = 2 pints</li> <li>1 gallon = 4 quarts</li> <li>1 pound = 16 ounces</li> <li>1 ton = 2,000 pounds</li> </ul>
<ul style="list-style-type: none"> <li>1 meter = 100 centimeters = 1000 millimeters</li> <li>1 kilometer = 1000 meters</li> <li>1 liter = 1000 milliliters = 1000 cubic centimeters</li> <li>1 gram = 1000 milligrams</li> <li>1 kilogram = 1000 grams</li> </ul>	

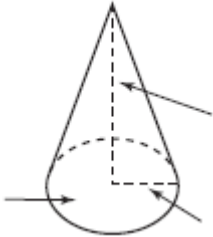
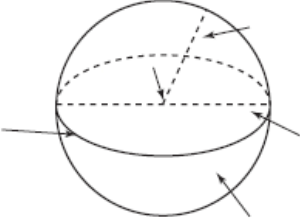
## Vocabulary

Label each illustration and state what each variable on each formula stand for:

Name	Label each part	Formula breakdown:
		$A = \frac{1}{2}bh$  b- h-
		$A = \frac{1}{2}bh$  b- h-
		$A = \frac{1}{2}h(b_1 + b_2)$  h- b <sub>1</sub> - b <sub>2</sub> -
		$A = \pi^2 r$
		$A = \frac{1}{2}aP$  a- P-

Label each illustration and state what each variable on each formula stand for:

Name	Label each part	Formula breakdown:
		<p>Formula breakdown:</p> $V = bwh$ <p>b- w- h-</p> $SA = Ph + 2B$ <p>p- h- B-</p>
		$V = Bh$ <p>B- h-</p> $SA = 2\pi rh + 2B$ <p><math>\pi</math>- r- h- B-</p> <p>What formula is used to calculate the area of the Base?</p>
		$V = \frac{1}{3}Bh$ <p>B- h-</p> $SA = \frac{1}{2}Pl + B$ <p>p- l- B</p>

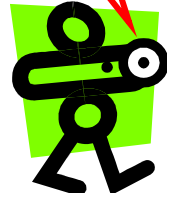
Name	Label each part	Formula breakdown:
		<p>Formula breakdown:</p> $V = \frac{1}{3}\pi r^2 h$ <p><math>\pi</math>- <math>r^2</math>-</p> $SA = \frac{1}{2}(2\pi r)l + B$ <p><math>\pi</math>- <math>r</math>- <math>l</math>- <math>B</math>-</p>
		$V = \frac{4}{3}\pi r^3$ <p><math>\pi</math>- <math>r^3</math>-</p> $SA = 4\pi r^2$ <p><math>\pi</math>- <math>r^2</math>-</p>

Perform the indicated operation. Show all your work and DO NOT USE DECIMALS.

1)  $6^{5/6} \div 6^{1/11} =$  \_\_\_\_\_

11)  $5^{5/12} \div 1^{6/7} =$  \_\_\_\_\_

Show your work!



2)  $2^{7/9} \div 2^{1/2} =$  \_\_\_\_\_

12)  $8^{1/3} \div 3^{1/8} =$  \_\_\_\_\_

3)  $3^{2/4} \div 2^{5/10} =$  \_\_\_\_\_

13)  $6^{1/9} \div 2^{1/5} =$  \_\_\_\_\_

4)  $4^{1/5} \div 9^{1/3} =$  \_\_\_\_\_

14)  $5^{1/6} \div 1^{1/4} =$  \_\_\_\_\_

5)  $8^{9/10} \div 6^{6/11} =$  \_\_\_\_\_

15)  $4^{1/8} \div 2^{2/12} =$  \_\_\_\_\_

6)  $7^{1/7} \div 5^{1/2} =$  \_\_\_\_\_

16)  $3^{1/4} \div 9^{2/6} =$  \_\_\_\_\_

7)  $8^{3/12} \div 8^{1/2} =$  \_\_\_\_\_

17)  $3^{1/11} \div 4^{1/8} =$  \_\_\_\_\_

8)  $1^{8/9} \div 7^{5/7} =$  \_\_\_\_\_

18)  $5^{7/10} \div 4^{3/5} =$  \_\_\_\_\_

9)  $9^{1/2} \div 3^{1/3} =$  \_\_\_\_\_

19)  $9^{2/9} \div 9^{3/8} =$  \_\_\_\_\_

10)  $4^{1/3} \div 5^{1/7} =$  \_\_\_\_\_

20)  $3^{1/6} \div 8^{6/11} =$  \_\_\_\_\_

Simplify the radicals. State your answer in radical form. DO NOT USE DECIMALS.

1)  $5\sqrt{20} + 4\sqrt{125} =$

2)  $22\sqrt{2} / \sqrt{11} =$

3)  $34\sqrt{27} - 5\sqrt{192} =$

4)  $2\sqrt{32} * 2\sqrt{8} =$

5)  $2\sqrt{12} * 4\sqrt{12} =$

6)  $28\sqrt{27} - 4\sqrt{48} =$

7)  $4\sqrt{18} + 5\sqrt{50} =$

8)  $3\sqrt{50} * 2\sqrt{32} =$

9)  $5\sqrt{75} =$

10)  $5\sqrt{27} * 4\sqrt{75} =$

11)  $2\sqrt{12} =$

12)  $2\sqrt{75} =$

13)  $3\sqrt{432} * 2\sqrt{27} =$

14)  $4\sqrt{72} + 3\sqrt{18} =$

15)  $4\sqrt{48} + 4\sqrt{75} =$

16)  $4\sqrt{48} * 5\sqrt{27} =$

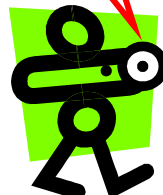
17)  $4\sqrt{12} + 2\sqrt{75} =$

18)  $4\sqrt{32} * 3\sqrt{8} =$

19)  $4\sqrt{108} * 5\sqrt{27} =$

20)  $4\sqrt{192} + 4\sqrt{12} =$

Show your work!



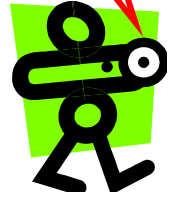


**Solve for x on the equations below. SHOW ALL YOUR WORK.**

Show your  
work!

1)  $-2x - 2 = 9x + 75$

2)  $-3x + 2 = -7x - 26$



3)  $-4x + 8 = 8x - 64$

4)  $18x - 7 = 11x - 56$

5)  $-13x + 3 = -5x - 85$

6)  $-9x + 12 = -11x + 14$

7)  $-20x - 11 = -9x + 99$

18)  $-11x + 11 = -4x - 45$

9)  $-x - 9 = -7x - 45$

10)  $3x + 7 = 9x + 1$

11)  $-12x + 3 = -5x - 60$

12)  $15x - 7 = 10x + 38$

13)  $-7x + 3 = -5x + 5$

14)  $5x - 2 = 3x$

15)  $-6x + 9 = 5x + 75$

16)  $3x - 7 = -3x - 49$

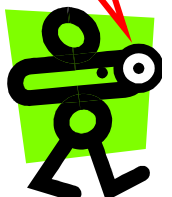
17)  $-7x + 4 = -4x - 20$

18)  $-x + 2 = -10x - 70$

19)  $-x - 9 = -3x - 31$

20)  $-15x + 10 = -7x + 74$

Show your  
work!



Solve for the indicated variable in the parenthesis.

1)  $P = IRT$  ( $T$ )

2)  $A = 2(L + W)$  ( $W$ )

3)  $y = 5x - 6$  ( $x$ )

4)  $2x - 3y = 8$  ( $y$ )

5)  $\frac{x+y}{3} = 5$  ( $x$ )

6)  $y = mx + b$  ( $b$ )

7)  $ax + by = c$  ( $y$ )

8)  $A = \frac{1}{2}h(b + c)$  ( $b$ )

9)  $V = LWH$  ( $L$ )

10)  $A = 4\pi r^2$  ( $r^2$ )

11)  $V = \pi r^2 h$  ( $h$ )

12)  $7x - y = 14$  ( $x$ )

13)  $A = \frac{x+y}{2}$  ( $y$ )

14)  $R = \frac{E}{I}$  ( $I$ )

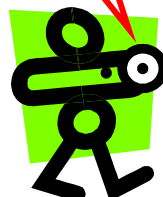
15)  $x = \frac{yz}{6}$  ( $z$ )

16)  $A = \frac{r}{2L}$  ( $L$ )

17)  $A = \frac{a+b+c}{3}$  ( $b$ )

18)  $12x - 4y = 20$  ( $y$ )

Show your work!



## Vocabulary

These are the mathematical terms all students entering Geometry should know. More will be learned throughout the course.

Instructions: Use the Mathematics Glossary for Algebra 1 EOC and Geometry EOC to define each vocabulary term; provide an illustration.

Term	Definition	Illustration
1. Acute Angle		
2. Altitude		
3. Angle		
4. Bisector		
5. Circle		
6. Complementary Angles		
7. Congruent Angles		

Term	Definition	Illustration
8. Congruent Segments		
9. Congruent Triangles		
10. Line		
11. Line Segment		
12. Median		
13. Midpoint		
14. Obtuse Angle		
15. Parallel Lines		
16. Perpendicular Lines		

Term	Definition	Illustration
17. Perpendicular Bisector		
18. Plane		
19. Point		
20. Ray		
21. Right Angle		
22. Similar Triangles		
23. Supplementary Angles		
24. Straight Angle		
25. Vertex		