ADA MERRITT K-8 CENTER

8TH GRADE GEOMETRY

SUMMER STUDY PACKET

THE FOLLOWING STUDY GUIDE INCLUDES MATHEMATICS CONTENT THAT IS A PRE-REQUISITE FOR NEXT SCHOOL YEAR. YOU WILL RECEIVE CREDIT FOR THE COMPLETION OF THE PACKET SO MAKE SURE TO ATTACH ALL OF THE WORK NECESSARY TO ANSWER EACH PROBLEM.

STUDENT NAME: _____

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

Area

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	$A = \frac{1}{2}aP$

KEY

b	= base	A	= area
h	= height	B	= area of base
w	= width	C	= circumference
d	= diameter	V	= volume
r	= radius	P	= perimeter of base
ℓ	= slant height		
a	= apothem	$S.A.$	= surface area

Use 3.14 or $\frac{22}{7}$ for π.

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 $V = Bh$	$S.A. = 2\pi rh + 2\pi r^2$ or $S.A. = 2\pi rh + 2B$
	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

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

$$y = mx + b$$

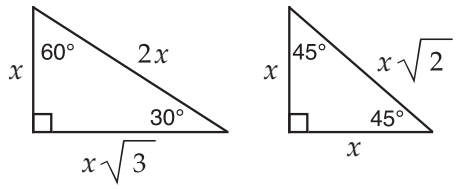
where m = slope and b = y-intercept

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 the line

Special Right Triangles



Distance between two points

$P_1 (x_1, y_1)$ and $P_2 (x_2, y_2)$

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

Midpoint between two points

$P_1 (x_1, y_1)$ and $P_2 (x_2, y_2)$

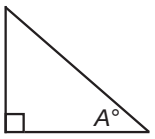
$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

Quadratic formula

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

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

Trigonometric Ratios



$$\sin A° = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos A° = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\tan A° = \frac{\text{opposite}}{\text{adjacent}}$$

Conversions

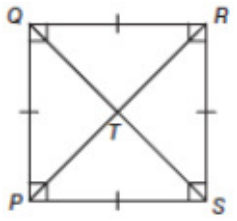
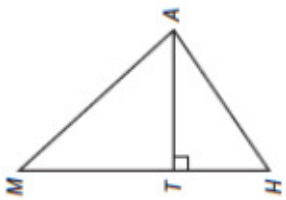
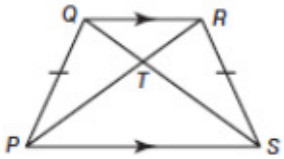
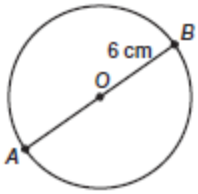
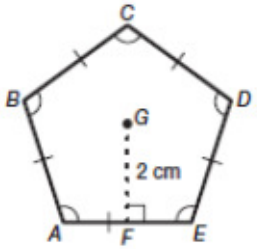
1 yard = 3 feet
1 mile = 1,760 yards = 5,280 feet
1 acre = 43,560 square feet
1 hour = 60 minutes
1 minute = 60 seconds

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

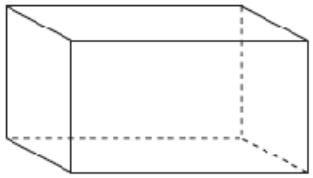
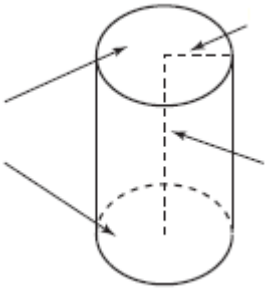
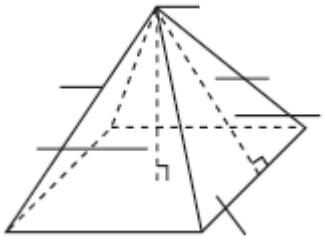
1 meter = 100 centimeters = 1000 millimeters
1 kilometer = 1000 meters
1 liter = 1000 milliliters = 1000 cubic centimeters
1 gram = 1000 milligrams
1 kilogram = 1000 grams

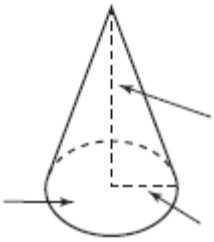
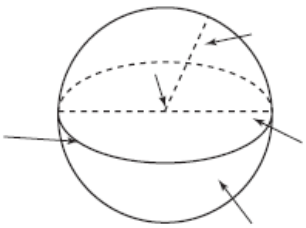
Vocabulary

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

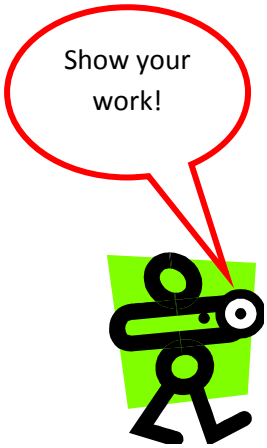
Name	Label each part	Formula breakdown:
		$A = {}^{1}/_{2}bh$ b- h-
		$A = {}^{1}/_{2}bh$ b- h-
		$A = {}^{1}/_{2}h(b_1 + b_2)$ h- b_{1}- b_{2}-
		$A= \pi^2 r$
		$A = {}^{1}/_{2}aP$ a- P-

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

Name	Label each part	Formula breakdown:
		V = bwh b- w- h- SA = Ph + 2B P- h- B-
		V = Bh B- h- SA = 2πrh + 2B π- r- h- B- What formula is used to calculate the area of the Base?
		V = $^1/_3$Bh B- h- SA = $^1/_2$Pℓ + B P- ℓ- B

Name	Label each part	Formula breakdown:
		$V = {}^{1}/_{3}\pi r^2$ π- r^2- $SA = {}^{1}/_{2}(2\pi r)\ell + B$ π- r- ℓ- B-
		$V = {}^{4}/_{3}\,\pi r^3$ π- r^3- $SA = 4\pi r^2$ π- r^2-

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



1) $6\frac{5}{6} \div 6\frac{1}{11} =$ _____

2) $2\frac{7}{9} \div 2\frac{1}{2} =$ _____

3) $3\frac{2}{4} \div 2\frac{5}{10} =$ _____

4) $4\frac{1}{5} \div 9\frac{1}{3} =$ _____

5) $8\frac{9}{10} \div 6\frac{6}{11} =$ _____

6) $7\frac{1}{7} \div 5\frac{1}{2} =$ _____

7) $8\frac{3}{12} \div 8\frac{1}{2} =$ _____

8) $1\frac{8}{9} \div 7\frac{5}{7} =$ _____

9) $9\frac{1}{2} \div 3\frac{1}{3} =$ _____

10) $4\frac{1}{3} \div 5\frac{1}{7} =$ _____

11) $5\frac{5}{12} \div 1\frac{6}{7} =$ _____

12) $8\frac{1}{3} \div 3\frac{1}{8} =$ _____

13) $6\frac{1}{9} \div 2\frac{1}{5} =$ _____

14) $5\frac{1}{6} \div 1\frac{1}{4} =$ _____

15) $4\frac{1}{8} \div 2\frac{2}{12} =$ _____

16) $3\frac{1}{4} \div 9\frac{2}{6} =$ _____

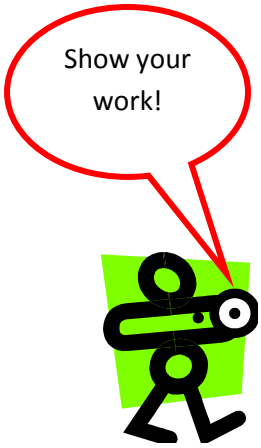
17) $3\frac{1}{11} \div 4\frac{1}{8} =$ _____

18) $5\frac{7}{10} \div 4\frac{3}{5} =$ _____

19) $9\frac{2}{9} \div 9\frac{3}{8} =$ _____

20) $3\frac{1}{6} \div 8\frac{6}{11} =$ _____

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

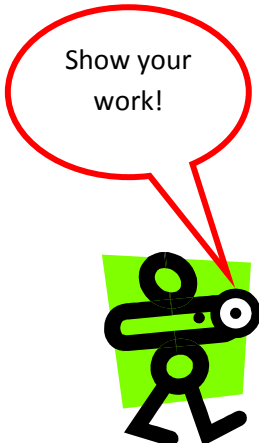
17) $4\sqrt{12} + 2\sqrt{75} =$

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

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

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

Solve for x on the equations below. SHOW ALL 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) $-6x + 9 = 5x + 75$

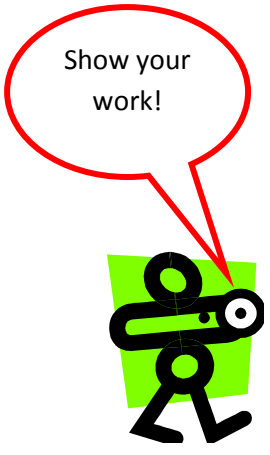
16) $3x - 7 = -3x - 49$

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

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

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

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



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) $A = 1/2h(b + c)$ *(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)*

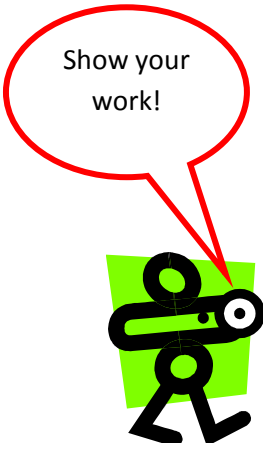
14) $R = \frac{E}{I}$ *(I)*

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)*



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		