

**NM** Public Education Department

# MATHEMATICS: GEOMETRY

END-OF-COURSE EXAM | GRADE 9–12 | YEAR 18–19

ASSESSMENT BLUEPRINT

# Purpose Statement

## Geometry

The Geometry End-of-Course (EOC) exam is designed to measure student proficiency of the Common Core State Standards pertaining to Geometry. This course-level exam is provided to all students who have completed Geometry or related courses.

### EOC Assessment Aligns to the Following Course Codes:

- 2034 – Geometry

Intended as a final exam for the course, this is a summative exam covering a wide range of content, skills, and applications. Scores are reported at the teacher, school, district, and state levels for the purposes of student grades, curriculum review, and—for optional use—as input into the Educator Effectiveness System.

### Resources Required for Testing:

- Graphing calculator allowed for all items with the same restrictions as PARCC
- PARCC math reference sheet, attached

### ***“The EOCs are exams written by New Mexico Teachers for New Mexico Students.”***

During the 2016-17 school year, teachers were brought together in person and online to revise the blueprints. The NMPED extends our gratitude to those who contributed to this improvement process. Although we were unable to implement *every* suggestion due to conflicting viewpoints at times, this blueprint reflects the best collaborative effort among dedicated peers.

NMPED wants to especially recognize the following person(s) who led the revision for this blueprint:

*Ronda Davis, Albuquerque Public Schools, Blueprint Lead*  
*Shafiq Chaudhary, New Mexico Public Education Department*

## Test Specifications Guide

CCSS STANDARD IDENTIFIER	CONTENT STANDARD	PARCC EVIDENCE STATEMENT KEY	PARCC CLAIM CATEGORY
<p><b>A.APR.A.1</b></p> <p style="text-align: center;">↑</p> <p><b>This coding follows the same identifier in the CCSS</b></p>	<p><i>Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.</i></p> <p style="text-align: center;">↑</p> <p><b>CCSS Mathematics Standards are located at:</b>  <a href="http://www.corestandards.org">http://www.corestandards.org</a></p>	<p>A-APR.1-1: Add, subtract, and multiply polynomials.</p> <p style="text-align: center;">↑</p> <p><b>The PARCC Evidence Statement Key uses the same coding as the PARCC Evidence Statements which are located at:</b></p> <p><a href="https://prc.parcconline.org/library/grades-3-11-mathematics-evidence-statementsinformational-guides">https://prc.parcconline.org/library/grades-3-11-mathematics-evidence-statementsinformational-guides</a></p> <p><b>PARCC does not have evidence statements provided for all standards.</b></p>	<p><i>Major</i></p> <p style="text-align: center;">↑</p> <p><b>PARCC Claims are identified as Major, Supporting, and Additional</b></p>
	<p><b>ITEM TYPES:</b> Identifies the format of the response for the item. Response modes on the Algebra I EOC may include:</p> <p style="padding-left: 40px;"> <b>MC</b> Multiple Choice  <b>MS</b> Multiple Select  <b>EE</b> Equation Editor  <b>HS</b> Hot Spot                 </p>		
	<p><b>STIMULUS:</b> Conveys that the question includes a graph, chart, number line, etc., is used when measuring the specific standard</p>		
	<p><b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b> Provides additional supporting information</p>		

## Geometry EoC Test Specifications

Based on CCSS High School: Geometry

CCSS STANDARD	CONTENT STANDARD	PARCC EVIDENCE STATEMENT KEY	PARCC CLAIM CATEGORY
<b>G.CO.A.1</b>	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment based on the undefined notions of point, line, distance along a line, and distance around a circular arc.	G-CO.1 : Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.	Supporting
	<b>ITEM TYPES:</b> MC		
	<b>STIMULUS:</b> None		
	<b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b> <ul style="list-style-type: none"> <li>• Definitions are limited to those in the evidence statement.</li> <li>• Plane is also considered an undefined notion.</li> </ul>		
<b>G.CO.A.3</b>	Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it on to itself.	G-CO.3: Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it on to itself.	Supporting
	<b>ITEM TYPES:</b> MC		
	<b>STIMULUS:</b> Geometric Shape		
	<b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b>		
<b>G.CO.A.5</b>	Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.	G-CO.5 : Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.	Supporting
	<b>ITEM TYPES:</b> MC		

CCSS STANDARD	CONTENT STANDARD	PARCC EVIDENCE STATEMENT KEY	PARCC CLAIM CATEGORY
	<b>STIMULUS:</b> Graph <b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b> None		
<b>G.CO.B.6</b>	Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.	G-CO.6 : Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.	Major
	<b>ITEM TYPES:</b> MC		
	<b>STIMULUS:</b> None		
	<b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b> None		
<b>G.CO.B.7</b>	Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if, and only if, corresponding pairs of sides and corresponding pairs of angles are congruent.	No PARCC Evidence Statement	Major
	<b>ITEM TYPES:</b> MC		
	<b>STIMULUS:</b> Geometric Shape		
	<b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b> None		
<b>G.CO.B.8</b>	Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.	No PARCC Evidence Statement	Major
	<b>ITEM TYPES:</b> MC		
	<b>STIMULUS:</b> Geometric Shape		
	<b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b> None		
<b>G.CO.C.9</b>	Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a	G-CO.C Prove geometric theorems as detailed in G-CO.C	MAJOR

CCSS STANDARD	CONTENT STANDARD	PARCC EVIDENCE STATEMENT KEY	PARCC CLAIM CATEGORY
	<p>perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.</p> <p><b>ITEM TYPES:</b> MC</p> <p><b>STIMULUS:</b> Geometric Shape</p> <p><b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b></p> <ul style="list-style-type: none"> <li>• Theorems include but are not limited to the examples listed in standards G-CO.9, 10, 11.</li> <li>• Multiple types of proofs are allowed (e.g., two-column proof, indirect proof, paragraph proof, and flow diagrams).</li> </ul>		
<b>G.CO.C.10</b>	<p>Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to <math>180^\circ</math>, base angles of isosceles triangles are congruent, the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length, the medians of a triangle meet at a point.</p> <p><b>ITEM TYPES:</b> MC</p> <p><b>STIMULUS:</b> Geometric Shape</p> <p><b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b></p> <ul style="list-style-type: none"> <li>• Theorems include but are not limited to the examples listed in standards G-CO.9, 10, 11.</li> <li>• Multiple types of proofs are allowed (e.g., two-column proof, indirect proof, paragraph proof, and flow diagrams).</li> </ul>	<p>G-CO.C: Prove geometric theorems as detailed in G-CO.C.</p>	Major
<b>G.CO.C.11</b>	<p>Prove theorems about parallelograms. Theorems include: opposite sides are congruent; opposite angles are congruent; the diagonals of a parallelogram bisect each other; and conversely, rectangles are parallelograms with congruent diagonals.</p> <p><b>ITEM TYPES:</b> MC</p> <p><b>STIMULUS:</b> Geometric Shape</p> <p><b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b></p> <ul style="list-style-type: none"> <li>• Theorems include but are not limited to the examples listed in standards G-CO.9, 10, 11.</li> <li>• Multiple types of proofs are allowed (e.g., two-column proof, indirect proof, paragraph proof, and flow diagrams).</li> </ul>	<p>G-CO.C: Prove geometric theorems as detailed in G-CO.C.</p>	Major
<b>G.SRT.A.1.B</b>	Verify experimentally the properties of dilations given by a	G-SRT.1a:	Major

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	center and a scale factor.	Verify experimentally the properties of dilations given by a center and a scale factor. a) A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.	
<b>ITEM TYPES:</b> MC			
<b>STIMULUS:</b> Geometric Shape			
<b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b> None			
<b>G.SRT.A.2</b>	Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.	G-SRT.2: Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar.	Major
<b>ITEM TYPES:</b> MC			
<b>STIMULUS:</b> Geometric Shape			
<b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b> <ul style="list-style-type: none"> <li>The "explain" part of standard G-SRT.2 is not assessed here.</li> </ul>			
<b>G.SRT.B.4</b>	Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely, the Pythagorean Theorem proved using triangle similarity.	HS.C.14.6: Construct, autonomously, chains of reasoning that will justify or refute geometric propositions or conjectures.	Major
<b>ITEM TYPES:</b> MC			
<b>STIMULUS:</b> Geometric Shape			
<b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b> None			
<b>G.SRT.B.5</b>	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	G-SRT.5: Use congruence and similarity criteria for triangles to solve problems and to prove	Major

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		relationships in geometric figures.	
	<b>ITEM TYPES:</b> MC		
	<b>STIMULUS:</b> Geometric Shape		
	<b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b> None		
<b>G.SRT.C.6</b>	Understand that, by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.	G-SRT.6: Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.	Major
	<b>ITEM TYPES:</b> MC		
	<b>STIMULUS:</b> Geometric Shape		
	<b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b>		
	<ul style="list-style-type: none"> <li>Trigonometric ratios include sine, cosine, and tangent only.</li> </ul>		
<b>G.SRT.C.7</b>	Explain and use the relationship between the sine and cosine of complementary angles.	G-SRT.7-2: Use the relationship between the sine and cosine of complementary angles.	Major
	<b>ITEM TYPES:</b> MC		
	<b>STIMULUS:</b> Geometric Shape		
	<b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b>		
	<ul style="list-style-type: none"> <li>The "explain" part of standard G-SRT.7 is not assessed here.</li> </ul>		
<b>G.SRT.C.8</b>	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.	G-SRT.8: Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.	Major
	<b>ITEM TYPES:</b> MC		
	<b>STIMULUS:</b> Geometric Shape		
	<b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b>		
	<ul style="list-style-type: none"> <li>The task may have a real world or mathematical context. For rational solutions, exact values are required. For irrational solutions, exact or decimal approximations may be required. Simplifying or rewriting radicals is not</li> </ul>		

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	required; however, students will not be penalized if they simplify the radicals correctly.		
<b>G.C.A.1</b>	Prove that all circles are similar.		Additional
	<b>ITEM TYPES:</b> MC		
	<b>STIMULUS:</b> Circle		
	<b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b> None		
<b>G.C.A.2</b>	Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.	G-C.2: Identify and describe relationships among inscribed angles, radii, and chords and apply these concepts in problem solving situations.	Additional
	<b>ITEM TYPES:</b> MC		
	<b>STIMULUS:</b> Geometric Shape		
	<b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b> <ul style="list-style-type: none"> <li>• Include the relationship between central, inscribed, and circumscribed angles: inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.</li> <li>• This does not include angles and segment relationships with tangents and secants. Tasks will not assess angle relationships formed outside the circle using secants and tangents.</li> <li>• Tasks may involve the degree measure of an arc.</li> </ul>		
<b>G.GPE.B.4</b>	Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point $(1, \sqrt{3})$ lies on the circle centered at the origin and contains the point $(0, 2)$ .	HS.C.13.2: Apply geometric reasoning in a coordinate setting, and/or use coordinates to draw geometric conclusions.	Major
	<b>ITEM TYPES:</b> MC		
	<b>STIMULUS:</b> Graph		
	<b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b> None		
<b>G.GPE.B.5</b>	Prove the slope criteria for parallel and perpendicular lines	HS.C.13.3:	Major

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	and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).	Apply geometric reasoning in a coordinate setting, and/or use coordinates to draw geometric conclusions.	
<b>ITEM TYPES:</b> MC			
<b>STIMULUS:</b> None			
<b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b> None			
<b>G.GPE.B.7</b>	Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.	HS.C.13.1: Apply geometric reasoning in a coordinate setting, and/or use coordinates to draw geometric conclusions.	Major
<b>ITEM TYPES:</b> MC			
<b>STIMULUS:</b> Graph			
<b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b> None			
<b>G.GMD.A.3</b>	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.	G-GMD.3: Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.	Additional
<b>ITEM TYPES:</b> MC			
<b>STIMULUS:</b> Geometric Shape			
<b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b> None			
<b>G.GMD.B.4</b>	Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.	G-GMD.4: Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.	Additional
<b>ITEM TYPES:</b> MC			
<b>STIMULUS:</b> Geometric Shape			
<b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b> <ul style="list-style-type: none"> <li>• If the cross section is a conic section it will be limited to circles, ellipses, and parabolas. (It will not include hyperbolas.)</li> </ul>			

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<b>G.MG.A.2</b>	Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).	G-Int 1: Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in G-MG and G-GPE.7.	Major
	<b>ITEM TYPES:</b> MC		
	<b>STIMULUS:</b> Table		
	<b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b> Tasks will involve a conceptual word problem.		
<b>G.MG.A.3</b>	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).	G-Int 1: Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in G-MG and G-GPE.7.	Major
	<b>ITEM TYPES:</b> MC		
	<b>STIMULUS:</b> Geometric Shape		
	<b>ASSESSMENT LIMITS &amp; CLARIFICATIONS:</b> Tasks will involve a conceptual word problem.		

Geometry EoC Reporting Category Alignment Framework						
Reporting Category	Standard	DOK (Item # by DOK)			Grand Total	CCSS Focus Cluster
		1	2	3		
1	G.CO.A.1	1			1	Supporting
	G.CO.A.3	1			1	Supporting
	G.CO.A.5	1			1	Supporting
	G.CO.B.6		1		1	Major
	G.CO.B.7		1		1	Major
	G.CO.B.8		1		1	Major
	G.CO.C.9	1			1	Major
	G.CO.C.10		1		1	Major
	G.CO.C.11			1	1	Major
2	G.SRT.A.1.B	1			1	Major
	G.SRT.A.2		1		1	Major
	G.SRT.B.4	1			1	Major
	G.SRT.B.5		1		1	Major
	G.SRT.C.6	1			1	Major
	G.SRT.C.7		1		1	Major
	G.SRT.C.8	1			1	Major
3	G.C.A.1		1		1	Additional
	G.C.A.2	1			1	Additional
<b>Subtotal</b>		<b>9</b>	<b>8</b>	<b>1</b>	<b>18</b>	

Geometry EoC Reporting Category Alignment Framework						
Reporting Category	Standard	DOK (Item # by DOK)			Grand Total	
		1	2	3		
4	G.GPE.B.4	2			2	Major
	G.GPE.B.5		2		2	Major
	G.GPE.B.7		1		1	Major
5	G.GMD.A.3	1			1	Additional
	G.GMD.B.4	1	1		2	Additional
6	G.MG.A.2		1	1	2	Major
	G.MG.A.3		2		2	Major
	<b>Subtotal</b>	<b>4</b>	<b>7</b>	<b>1</b>		
	<b>Grand Total</b>	<b>13</b>	<b>15</b>	<b>2</b>	<b>30</b>	<b>72% Major</b>

## Sample Questions

1. A part of a line that begins at an endpoint and extends endlessly in one direction is called a(n)?

- A. angle
- B. line
- C. ray
- D. segment

**G.CO.1 DOK 1**

Released PED item

2. What is the slope of a line parallel to the line containing the points (5, 5) and (3, 1)?

- A. -2
- B.  $-\frac{1}{2}$
- C.  $\frac{1}{2}$
- D. 2

**G.GPE.5b DOK 2**

Released PED item

3. You have been hired by the owner of a bakery to design a rectangular box that can contain at most 12 brownies. Each brownie has a volume of  $25 \text{ cm}^3$ . Which dimensions of the box will allow you to fit all the brownies with the least waste?

- A. 6 cm by 2 cm by 5 cm
- B. 10 cm by 6 cm by 3 cm
- C. 10 cm by 15 cm by 2 cm
- D. 20 cm by 15 cm by 2 cm

**G.MG.3a DOK 2**

Released PED item

4. Which of the following is true?

- A.  $\cos 30^\circ = \sin 30^\circ$
- B.  $\cos 60^\circ = \sin 30^\circ$
- C.  $\sin 60^\circ = \cos 60^\circ$
- D.  $\sin 60^\circ = \sin 30^\circ$

**G.SRT.7 DOK 2**

Released PED item

5. Two consecutive vertices of a square have coordinates  $(2, 3)$  and  $(-2, 0)$ . What is the perimeter of the square?

- A. 5 units
- B. 20 units
- C. 25 units
- D. 100 units

**G.GPE.7b DOK 2**  
Released PED item

## High School Assessment Reference Sheet

1 inch = 2.54 centimeters	1 kilometer = 0.62 mile	1 cup = 8 fluid ounces
1 meter = 39.37 inches	1 pound = 16 ounces	1 pint = 2 cups
1 mile = 5280 feet	1 pound = 0.454 kilograms	1 quart = 2 pints
1 mile = 1760 yards	1 kilogram = 2.2 pounds	1 gallon = 4 quarts
1 mile = 1.609 kilometers	1 ton = 2000 pounds	1 gallon = 3.785 liters
		1 liter = 0.264 gallons
		1 liter = 1000 cubic centimeters

Triangle	$A = \frac{1}{2}bh$
Parallelogram	$A = bh$
Circle	$A = \pi r^2$
Circle	$C = \pi d$ or $C = 2\pi r$
General Prisms	$V = Bh$
Cylinder	$V = \pi r^2 h$
Sphere	$V = \frac{4}{3}\pi r^3$
Cone	$V = \frac{1}{3}\pi r^2 h$
Pyramid	$V = \frac{1}{3}Bh$

Pythagorean Theorem	$a^2 + b^2 = c^2$
Quadratic Formula	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Arithmetic Sequence	$a_n = a_1 + (n - 1)d$
Geometric Sequence	$a_n = a_1 r^{n-1}$
Geometric Series	$S_n = \frac{a_1 - a_1 r^n}{1 - r}$ where $r \neq 1$
Radians	1 radian = $\frac{180}{\pi}$ degrees
Degrees	1 degree = $\frac{\pi}{180}$ radians
Exponential Growth/Decay	$A = A_0 e^{k(t-t_0)} + B_0$



## Geometry Formula Sheet

**Slope formula:**  $m = \frac{y_2 - y_1}{x_2 - x_1}$

**Distance Formula:**  $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

**Geometric Mean:**  $\frac{A}{X} = \frac{X}{B}$

**Midpoint Formula:**  $(\frac{x_2 + x_1}{2}, \frac{y_2 + y_1}{2})$

### **Volume Formulas:**

Rectangular Solid:  $V = lwh$

Sphere:  $V = \frac{4}{3}\pi r^3$

Cone:  $V = \frac{1}{3}\pi r^2 h$

Cylinder:  $V = \pi r^2 h$

### **Area:**

Rectangular:  $A = \text{length} \times \text{width}$

Triangular:  $A = \frac{1}{2}(\text{base} \times \text{height})$  or  $\frac{bh}{2}$

### **Surface Area:**

Rectangular Prism:  $SA = 2lw + 2lh + 2wh$

Cone :  $SA = \pi r l + \pi r^2$

Sphere:  $SA = 4\pi r^2$

Pyramid:  $SA = \frac{1}{2}pl + B$

Cylinder:  $SA = 2\pi r h + 2\pi r^2$

### **Trigonometric Ratios:**

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

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

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

### **Pythagorean Theorem:**

$$a^2 + b^2 = c^2$$

