

2.9: Chapter Review and Glossary

Chapter Review

Geometric Concepts

Geometric shapes and figures are all around us. A point is a zero-dimensional object that defines a specific location on a plane. A line is made up of an infinite number of points, all arranged next to each other in a straight pattern, and going on forever. A ray begins at one point and goes on towards infinity in one direction only. A plane can be described as a two-dimensional canvas that goes on forever.

When two rays share an endpoint, an angle is formed. Angles can be described as acute, right, obtuse, or straight, and are measured in degrees. You can use a protractor (a special math tool) to closely measure the size of any angle.

Properties of Angles

Parallel lines do not intersect, while perpendicular lines cross at a 90° angle. Two angles whose measurements add up to 180° are said to be supplementary, and two angles whose measurements add up to 90° are said to be complementary. For most pairs of intersecting lines, all you need is the measurement of one angle to find the measurements of all other angles formed by the intersection.

Triangles

Triangles are one of the basic shapes in the real world. Triangles can be classified by the characteristics of their angles and sides, and triangles can be compared based on these characteristics. The sum of the measures of the interior angles of any triangle is 180° . Congruent triangles are triangles of the same size and shape. They have corresponding sides of equal length and corresponding angles of the same measurement. Similar triangles have the same shape, but not necessarily the same size. The lengths of their sides are proportional. Knowledge of triangles can be a helpful in solving real-world problems.

The Pythagorean Theorem

The Pythagorean Theorem states that in any right triangle, the sum of the squares of the lengths of the triangle's legs is the same as the square of the length of the triangle's hypotenuse. This theorem is represented by the formula $a^2 + b^2 = c^2$. Put simply, if you know the lengths of two sides of a right triangle, you can apply the Pythagorean Theorem to find the length of the third side. Remember, this theorem only works for right triangles.

Quadrilaterals

A quadrilateral is a mathematical name for a four-sided polygon. Parallelograms, squares, rectangles, and trapezoids are all examples of quadrilaterals. These quadrilaterals earn their distinction based on their properties, including the number of pairs of parallel sides they have and their angle and side measurements.

Perimeter and Area

The perimeter of a two-dimensional shape is the distance around the shape. For a polygon this is found by adding up all the sides (as long as they are all the same unit). The area of a two-dimensional shape is found by counting the number of squares that cover the shape. Many formulas have been developed to quickly find the area of standard polygons, like triangles and parallelograms.

Circles

Circles are an important geometric shape. The distance around a circle is called the circumference, and the interior space of a circle is called the area. Calculating the circumference and area of a circle requires a number called pi (π), which is a non-terminating, non-repeating decimal. Pi is often approximated by the values 3.14 and $\frac{22}{7}$. You can find the perimeter or area of composite shapes, including shapes that contain circular sections, by applying the circumference and area formulas where appropriate.

Solids

Three-dimensional solids have length, width, and height. You use a measurement called volume to figure out the amount of space that these solids take up. To find the volume of a specific geometric solid, you can use a volume formula that is specific to that solid. Sometimes, you will encounter composite geometric solids. These are solids that combine two or more basic solids. To find

the volume of these, identify the simpler solids that make up the composite figure, find the volumes of those solids, and combine them as needed.

Glossary:

acute angle	Angles that are between 0° and 90°
acute triangle	triangle with three acute angles
angle	two rays with a common endpoint
area	amount of surface the shape covers
circle	set of points, all of which are the same distance away from a center
circumference	perimeter of a circle
complementary angles	two angles whose measurements add up to 90° are called complementary angles
Cone	A solid figure with a single circular base and a round, smooth face that diminishes to a single point
congruent sides	Sides of equal length
congruent triangles	triangles are congruent if they are exactly the same size and shape
cube	A six-sided polyhedron that has congruent squares as faces
Cylinder	A solid figure with a pair of circular, parallel bases and a round, smooth face between them
diameter	distance across the circle through the center
Equilateral Triangle	triangle whose three sides have the same length
face	flat side of a 3-dimensional figure
hypotenuse	side of a right triangle opposite of the right angle
isosceles trapezoid	trapezoid with congruent non-parallel sides
Isosceles Triangle	triangle with exactly two congruent sides
leg	side of a right triangle attached to the right angle
line	one-dimensional figure that is made up of an infinite number of individual points
line segment	section between any two points on a line
obtuse angle	Angles that are between 90° and 180°
obtuse triangle	triangle with one obtuse angle
parallel	two lines are parallel if they never intersect
parallelogram	quadrilaterals that have two pairs of parallel sides
perimeter	distance around a 2-dimensional shape
perpendicular	two lines are perpendicular if they intersect at a right angle
plane	triangle whose three sides have the same length
point	location on the plane that has no dimensions
polygon	closed plane figure with three or more straight sides
polyhedron	shapes that have four or more faces, each one being a polygon
protractor	tool to measure angles
Pyramid	A polyhedron with a polygonal base and a collection of triangular faces that meet at a point

quadrilateral	a quadrilateral is a four-sided polygon
radius	distance from the center of the circle to any point on the circle
ray	one endpoint and goes on forever in one direction
rectangle	quadrilateral with four right angles
Rectangular prism	A polyhedron that has three pairs of congruent, rectangular, parallel faces
rhombus	quadrilateral with all sides congruent
right angle	measures exactly 90°
right triangle	triangle with one right angle
Scalene Triangle	triangle in which all three sides are a different length
similar triangles	triangles have the same angle measurements
sphere	A solid, round figure where every point on the surface is the same distance from the center
square	rectangle with all sides congruent
straight angle	measures exactly 180°
supplementary angles	Two angles whose measures add up to 180° are called supplementary angles
trapezoid	quadrilateral with only one pair of opposite sides that are parallel
triangle	polygon with three sides
vertex	common endpoint of two rays that form an angle
volume	amount of space a three-dimensional figure takes up

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