



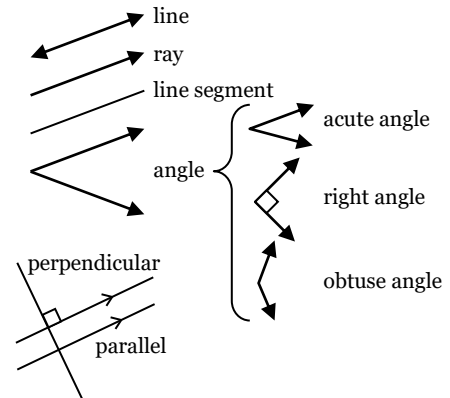
# Vocabulary for Math Class 2:

## Geometry

This worksheet will help you learn some of the vocabulary for **geometry** [ˌdʒiˈɒ·məˌtri], the study of shapes.

### PARTS OF SHAPES

In math, the word **line** has a special meaning. It refers to a line that continues in both directions forever. We show this in a diagram by putting arrows on both ends of the line. If a line only continues in one direction, but stops in the other, then it is called a **ray**. If the line doesn't continue in any direction, and it stops at both ends, it is called a **line segment**.



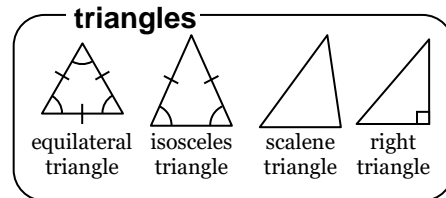
When two lines or rays come together to make a corner, they make an **angle**. We measure angles in **degrees**.

We take a circle and cut it into 360 pieces, and each piece is one degree ( $1^\circ$ ). If an angle is less than  $90^\circ$ , then it is called an **acute angle** [əˌkjʊt]. If it is exactly  $90^\circ$ , then it is a **right angle**, and we often mark right angles with a box, as shown in the diagram. If an angle is between  $90^\circ$  and  $180^\circ$ , then it is an **obtuse angle** [əbˌtʊs]. We can compare lines by the angle they make as well. If two lines cross to make a right angle ( $90^\circ$ ), then they are **perpendicular** [ˌpɛrˌpɛnˈdɪkˌjuːlɚ] lines. Lines are **parallel** [ˌpɛrˌæˌlɛl] when they run side by side at equal distance apart and will never cross at all.

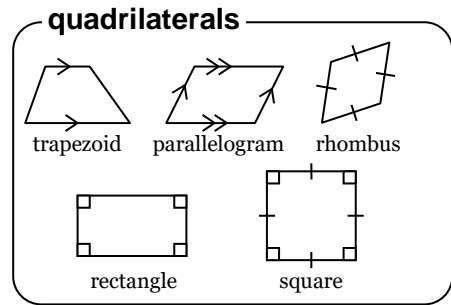
### SHAPES

A **polygon** [ˈpɒˌlɪˌɡɒn] is any shape that is drawn with straight lines only, and no curves. We give more specific names to particular polygons based on the number of **sides** they have.






A **triangle** (adj: **triangular** [ˌtraɪˈæŋˌɡjəˌlɚ]) has three sides. We also give names to different triangles based on their sides and angles. A triangle that has three sides equal in length is an **equilateral triangle** [ˌiːkwəˈlætˌɛrˌəl]. If two sides of a triangle are the same length and the other side is a different length, then the triangle is an **isosceles triangle** [aɪˈsɒˌsəˌlɪz]. If all three sides are different lengths, then the triangle is a **scalene triangle** [ˈskɛɪˌlɪn]. Triangles that have a right angle are called **right triangles**.



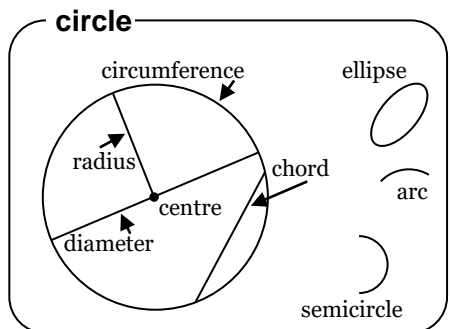
A **quadrilateral** [ˌkwɒˌdrəˈlæt.ər.əl] (adj: **quadrilateral**) is any polygon that has four sides. Quadrilaterals can also have special names based on their sides, angles, and parallel lines. A **trapezoid** [ˈtræp.əˌzɔɪd] has two opposite sides that are parallel. If the other two sides are also parallel, the shape is a **parallelogram** [ˌpæ.rəˈleɪ.əˌɡræm]. If a quadrilateral has four equal sides, it is called a **rhombus** [ˈrɒm.bəs] in math class, or a **diamond** in everyday life. A quadrilateral that has four right angles is a **rectangle** [ˈrek.tæŋ.ɡəl], and if the sides are also all equal, it's a **square**.



There are also names for polygons with more than four sides. Polygons are named after the number of sides they have. We don't usually have special names for different kinds of these polygons, except one. If a polygon's sides are all the same length and its angles all have the same measure, then we say that it is a **regular** polygon.

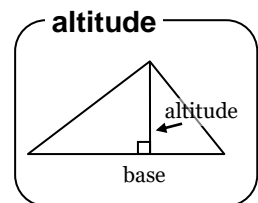
polygons		
 5 sides	pentagon [ˈpen.təˌɡɒn]	pentagonal [ˌpen.təˈɡeɪ.nəl]
 6 sides	hexagon [ˈhek.səˌɡɒn]	hexagonal [ˌhek.səˈɡeɪ.nəl]
 7 sides	heptagon [ˈhep.təˌɡɒn]	heptagonal [ˌhep.təˈɡeɪ.nəl]
 8 sides	octagon [ˈɒk.təˌɡɒn]	octagonal [ˌɒk.təˈɡeɪ.nəl]
 10 sides	decagon [ˈdek.əˌɡɒn]	decagonal [ˌdeɪ.kəˈɡeɪ.nəl]

The shape that is perfectly round is called a **circle** (adj: **circular** [ˈsɜː.kjə.lər]). A circle that's longer in one direction than the other is called an **ellipse** [ˌiˈlɪps, əˈlɪps] (adj: **elliptical** [əˈlɪp.tə.kəl]) or an **oval**. We have names for parts of a circle and line segments in a circle. The point in the exact middle of the circle is called its **centre**. The outside edge of the circle is called its **circumference** [sərˈkɒm.fəˌrɪns]. A curved line that is a part of the circumference is called an **arc** [ˈɜːk]. An arc that is exactly half of the circle is called a **semicircle** [ˈse.mi.sər.kəl]. A line segment from the centre to any point on the circumference is called a **radius** [ˈreɪ.di.əs]. Any line segment that begins and ends at points on the circumference is a **chord** [ˈkɔːd], and a chord that goes through the centre is a **diameter** [ˌdaɪ.əˈmɛt.ər] (adj: **diametric** [ˌdaɪ.əˈmɛt.ɪk]).



## DIMENSION AND MEASUREMENT

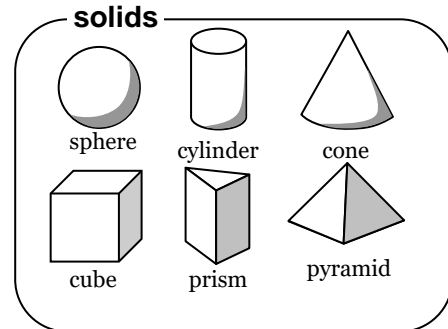
A geometry question might ask you about the size of a shape. The amount of space on the paper a shape uses is called its **area** [ˈɛr.i.ə]. To calculate the area of a rectangle, you need to know how long it is (its **length**) and how wide it is (its **width**). Usually “length” refers to the longer side and “width” refers to the shorter side. To calculate the area of a triangle, you need the length of the **base** of the triangle (the length of one side) and the **height** or **altitude** [ˈæɪ.tə.tud] (the length of the line that is perpendicular to the base and goes to the opposite corner of the triangle from the base). You might also be asked to find the **perimeter** [pəˈrɪ.mə.tər] of a shape — the distance around the outside of the shape. If the shape is a circle, we don't use the word “perimeter”. We say “circumference”.



## SOLID SHAPES

All the shapes in this review sheet so far have been shapes you can draw correctly on a sheet of paper. They're flat. Other shapes are not. They have a length, a width and a **height**. They represent real objects you could pick up. These shapes are called **solids**, **solid shapes**, or **three-dimensional** shapes ['θri·dɪ'mɛn·ʃə·nəl]. We say **3-D** for short.

The mathematical name for a ball is a **sphere** ['sfɪr] (adj: **spherical** ['sfɪr·ə·kəl]). The shape of a can is a **cylinder** ['sɪ·lən·dər] (adj: **cylindrical** [sə'lɪn·drə,kəl]). A round shape that's pointed at one end is called a **cone** ['kəʊn], just like an ice cream cone (adj: **conic** ['kɒ·nɪk]). A polygon that is extended in the third dimension to make a box is called a **prism** ['prɪzəm], and we say which kind of prism it is by saying which polygon was used. (So you can have a triangular prism, a pentagonal prism, etc.) A polygon that is extended in the third dimension to come to a point is called a **pyramid** ['pɪr·ə·mɪd], and we can also say which kind of pyramid it is (triangular pyramid, pentagonal pyramid, ...) A box that is a square on every side is called a **cube** ['kjuːb] (adj: **cubic** ['kju·bɪk]).



Any side of a solid shape is called a **face**. A corner of a solid shape is called a **vertex** ['vɜː·tɪks] (pl: **vertices** ['vɜː·tɪsɪz]). The amount of space a solid shape takes up is its **volume** ['vɒl·jum]. The total of the areas of all the faces of a solid shape is called its **surface area** ['sɜː·fəs 'ɛr·i·ə].

## GRAPHS

A **graph** [græf] is a drawing that shows all the answers to an equation or formula. The solution usually looks like one long stroke across the page. The name for the stroke is a **curve** ['kɜːv]. We still use the word "curve" even if the graph is a straight line. (Outside of math class, we don't — most people think curves and straight lines are different.) The flat surface where a curve is drawn is called the **plane**. The plane is defined by two lines called **axes** ['æks·sɪz] (sing: **axis** ['æksɪs]). There's a horizontal axis, the **x-axis** and a vertical axis, the **y-axis**. The location where the axes cross, or **intersect** [ɪn·tər'sɛkt] is called the **origin** ['ɔː·ə·dʒən]. Any location, or **point** on the graph can be described by two numbers. Each number is a **coordinate** [kəʊ·ɔː·də·nət]. The coordinates of a point are its **x-coordinate** and its **y-coordinate**. The numbers are written like this: (-5, 3), as an **ordered pair** ['ɔː·dɜːd 'pɜːr] (because the order of the numbers matters; (3, -5) is a different location). We **plot** a graph when we find values for x and y that make an equation true, and draw a graph using those values as points.

