Lines are fundamental elements in geometry, characterized by their length and direction.

Here are some common types of lines:

Straight Line:

A line that extends indefinitely in both directions and does not curve.

Curved line:

A curved line is a type of line that does not follow a straight path

Ray:

A part of a line that has one endpoint and extends infinitely in one direction.

Line Segment:

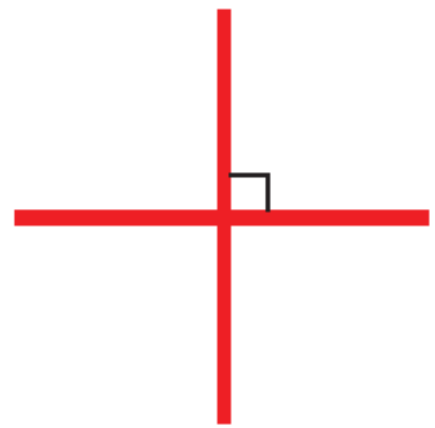
A part of a line that has two endpoints.

Parallel Lines:

Lines in the same plane that do not intersect. They remain equidistant from each other at all points.

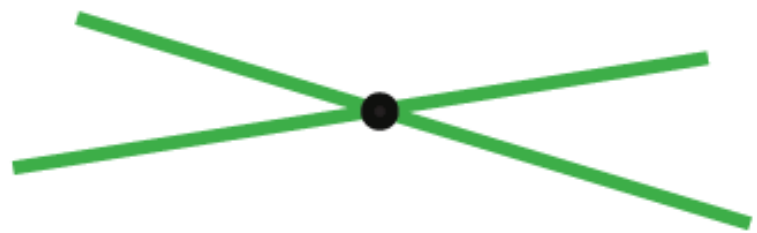
Perpendicular Lines:

Lines that intersect at a right angle (90 degrees).

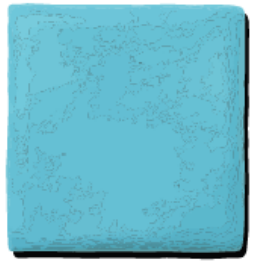


Intersecting Lines:

Lines that cross or meet at a common point.



Square



- All sides are equal in length.
- All angles are right angles (90 degrees).
- Opposite sides are parallel and equal in length.

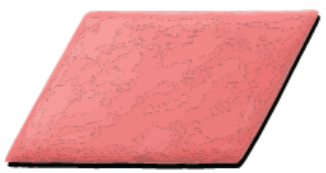
Rectangle:

- Opposite sides are equal in length.
- All angles are right angles (90 degrees).
- Opposite sides are parallel.

Circle:

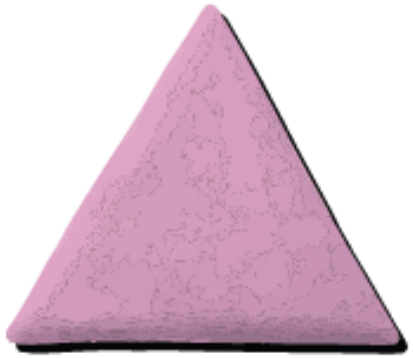
- No straight sides; consists of a curved boundary.
- No angles.
- All points on the boundary are equidistant from the center.

Parallelogram:



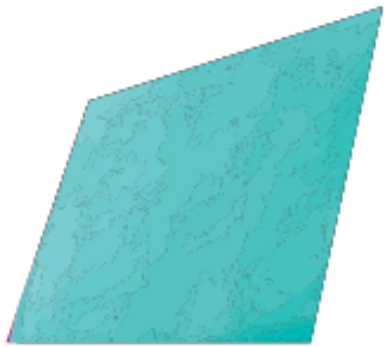
- Opposite sides are equal in length.
- Opposite angles are equal.
- Opposite sides are parallel.

Triangle:



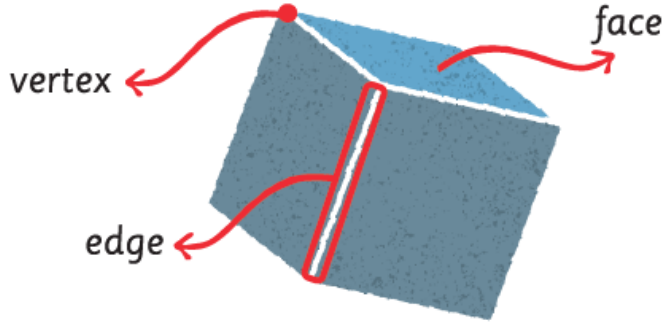
- Three sides.
- Three angles.
- The sum of interior angles is always 180 degrees.

Trapezoid



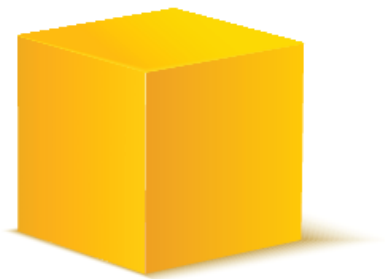
- At least one pair of parallel sides.
- No sides are equal in length (unless it's an isosceles trapezoid).

Common 3D shapes include:



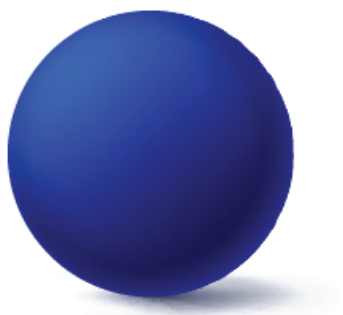
Cube:

- All faces are squares.
- All edges are equal in length.
- All angles are right angles.



Sphere:

- A perfectly round shape.
- No edges or vertices.
- All points on the surface are equidistant from the center.



Cylinder:

- No vertices.
- Two circular faces.

Pyramid (with a square base):

- Five faces.
- Five vertices.

Area

Area is the amount of space inside a shape.

For example, if you want to find the area of your bedroom, you're measuring how much space is inside the room.

Perimeter

Perimeter is the distance around the outside of a shape.

For example, if you want to know how much fencing you need to enclose your garden, you're measuring the perimeter of the garden.

Square

Area = Side × Side

Perimeter = 4 × Side

Rectangle

Area = Length × Width

Perimeter = 2 × (Length + Width)

Circle

Area = $\pi \times \text{Radius}^2$

Perimeter = $2 \times \pi \times \text{Radius}$

Triangle

Area = $\frac{1}{2} \times \text{Base} \times \text{Height}$

Perimeter = Side1 + Side2 + Side3

Parallelogram

Area = Base × Height

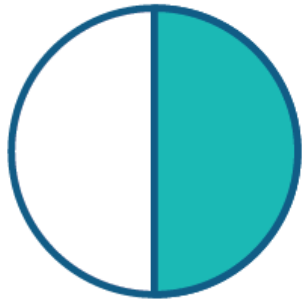
Perimeter = 2 × (Base + Side)

Trapezoid

Area =

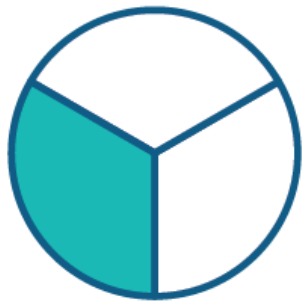
$\frac{1}{2} \times$ (Sum of parallel sides) × Height

Perimeter = Sum of all four sides



$\frac{1}{2}$: *half / one half*

$\frac{1}{5}$: *one fifth*



$\frac{1}{3}$: *a third/ one third*

$\frac{2}{3}$: *two thirds*

$\frac{1}{4}$: *a quarter/ one quarter*

$\frac{3}{7}$: *three sevenths*

This is how we read mathematical equations.

Addition

$2 + 3 = 5$

Two plus three equals five

Subtraction

$8 - 4 = 2$

Eight minus four equals two.

Multiplication

$2 \times 3 = 6$

Two times three equals six.
Two multiplied by three equals six.

Division

$4 \div 2 = 2$

Four divided by two equals two.

$25 = 2 \times 2 \times 2 \times 2 \times 2 = 32$

Two to the power of five equals thirty two.

42 = 8 : Four squared equals eight

43 = 64 : Four cubed equals sixty four

$2 \times (\text{Length} + \text{Width})$

Two times open parenthesis length plus width close parenthesis.

Two times the sum of the length and width.

$\frac{1}{2} \times \text{Base} \times \text{Height}$

one-half times base times height