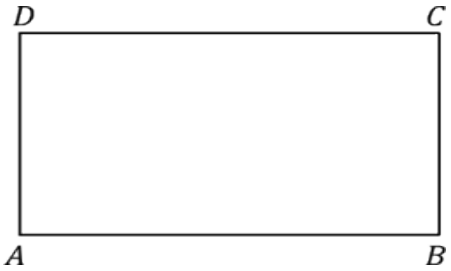
Perimeter and Area

Plane Figures

Perimeter of a closed figure is the distance around it, whereas area is the region enclosed by closed figure.
Perimeter of a regular polygon = number of sides x length of one side.

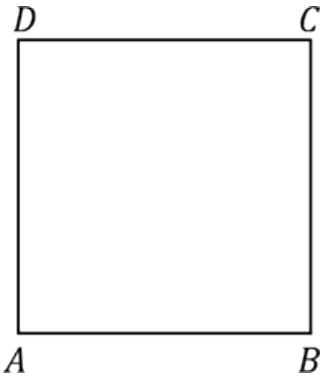
Area and perimeter of a rectangle
The perimeter of a rectangle is twice the sum of the lengths of its adjacent sides.
Perimeter of a rectangle of length 'l' units and breadth 'b' units = 2(l + b).
The area of a rectangle is the product of its length and breadth.
Area of a rectangle of length 'l' units and breadth 'b' units = l × b.
The perimeter of rectangle ABCD = 2(AB + BC).
Area of rectangle ABCD = AB x BC.



Each diagonal of a rectangle divides it into two triangles that are equal in area.

Area and perimeter of a square
The perimeter of a square with side s units is the four times the length of its side.
Perimeter of a square with side s units = 4 × s
The area of a square with side s is is equal to side multiplied by side.
Area of a square with side s units = s × s

The perimeter of square ABCD = 4AB or 4BC or 4CD or 4DA.
Area of square ABCD = AB^2 or BC^2 or CD^2 or DA^2.



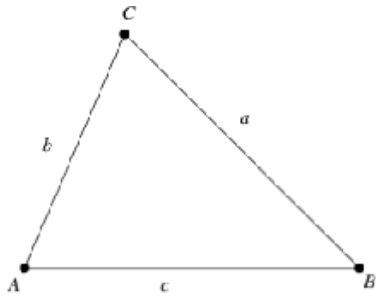
Perimeter and Area

The diagonals of a square divide it into four triangles that are equal in area. A rectangle and a square having the same perimeter need not have the same area. If the perimeter of a figure increases it is not necessary that its area also increases.

Area and perimeter of a triangle

The perimeter of a triangle is the sum of the lengths of its sides.

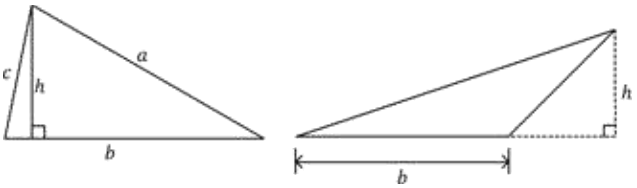
Perimeter of a triangle with sides a, b and c = (a + b + c).



The area of a triangle is the space enclosed by its three sides.

Area of a triangle is half of the product of its base and the corresponding altitude.

Area of a triangle with b as the base and h as the altitude = $\frac{1}{2} \times bh$.



Triangles equal in area need not be congruent, but all congruent triangles are equal in area.

Area and perimeter of a parallelogram

The perimeter of a parallelogram is twice the sum of the lengths of the adjacent sides.

The area of a parallelogram is the product of its base and the corresponding altitude.

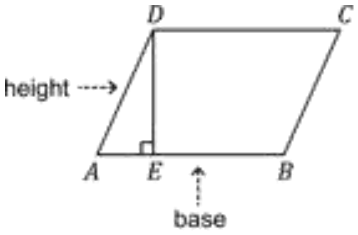
Area of a parallelogram with b as the base and h as the altitude = b × h.

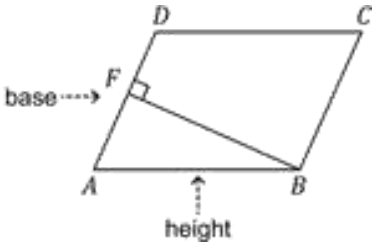
Any side of a parallelogram can be considered as the base. The perpendicular drawn on that side from the opposite vertex is known as the height (altitude).

The perimeter of parallelogram ABCD = 2(AB + BC)

Area of parallelogram ABCD = (AB x DE) or (AD x BF).

Perimeter and Area





A parallelogram in which the adjacent sides are equal is called a rhombus.

The perimeter and area of a rhombus can be calculated using the same formulae as that for a parallelogram.

Conversion of units

1cm = 10 mm

1 cm^2 = 100 mm^2

1 m^2 = 10000 cm^2

1 hectare = 10,000 m^2

Circles

Circle

A circle is defined as a collection of points on a plane that are at an equal distance from a fixed point on the plane. The fixed point is called the centre of the circle.

Any line segment that passes through the centre of a circle and whose end points are on the circle is called its diameter.

Any line segment from the centre of the circle to its circumference is called the radius of the circle.
The diameter of a circle is two times the radius.

Circumference of a circle

The distance around a circular region is known as its circumference.
Ratio of circumference and diameter of a circle is denoted by the Greek symbol π.
π is an irrational number, whose value is approximately equal to $\frac{227}{}$ or 3.14

Circumference of a circle = 2πr, where r is the radius of the circle or
Circumference of a circle = πd, where d is the diameter of the circle.
Circumference = Diameter x 3.14

Perimeter and Area

Area of a circle

The area of a circle is the region enclosed in the circle.

The area of a circle can be calculated by using the formula is πr^2, if radius r is given; $\pi d24$, if diameter d is given; $C24\pi$, if circumference C is given.

Concentric circles

Circles with the same centre but different radii are called concentric circles.

Area between two concentric circles = Area of outer circle – Area of inner circle.

Conversion of units

To convert from a unit of area to its smaller unit of area, we multiply. To convert from a unit of area to a larger unit of area, we divide.

1 cm = 10 mm

1 m = 100 cm

1 km = 1000 m

1 cm^2 = 100 mm^2

1 m^2 = 10000 cm^2

1 km^2 = 1000000 m^2

1 hectare = 10000 m^2