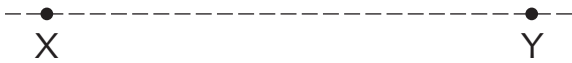


Unit 8 : Geometry

Friendly Notes

Points, Lines, Line Segments, Rays, and Angles

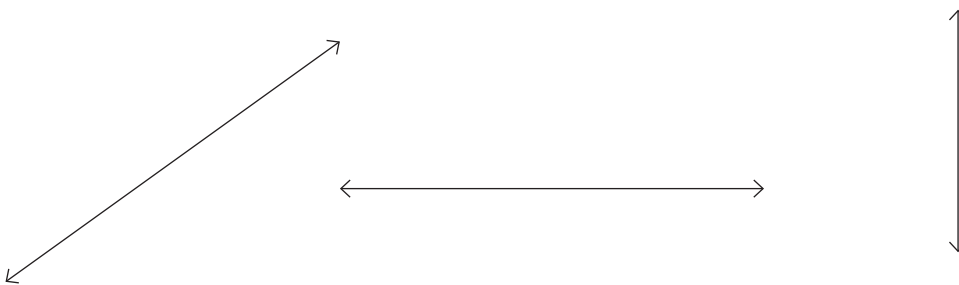
A point is a location in space.
A point is often represented by a dot and usually named with a capital letter.



All geometric figures are made up of points.



A line goes on forever in both directions.



A line is often drawn with arrows at both ends.

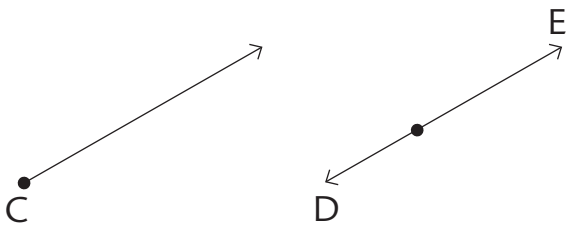


A line segment is part of a line between two points.

Line segment PQ is shorter than the Line segment RS.



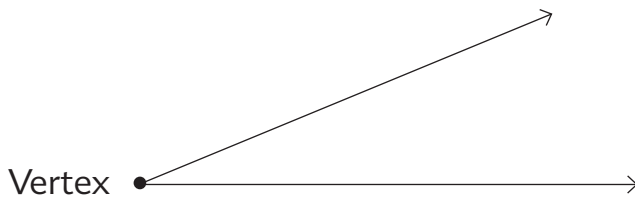
A ray is a line with one end point.



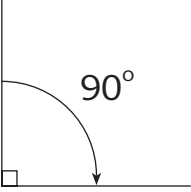
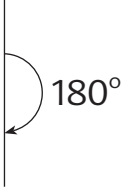
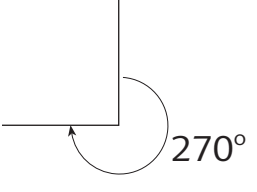
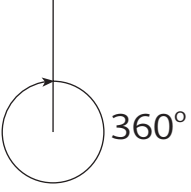
Ray DE is not the same as ray ED.



An angle is formed when two rays have the same endpoint. The point where the two end points meet is called the vertex.



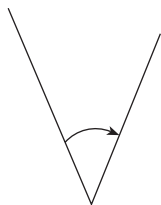
Right Angles

			
A $\frac{1}{4}$ -turn forms a right angle.	A $\frac{1}{2}$ -turn forms two right angles.	A $\frac{3}{4}$ -turn forms 3 right angles.	A complete turn forms 4 right angles.

1 right angle = 90°
 2 right angles = 180°
 3 right angles = 270°
 4 right angles = 360°



This angle is less than 90° .



It is called an **acute** angle.

This angle is more than 90° .



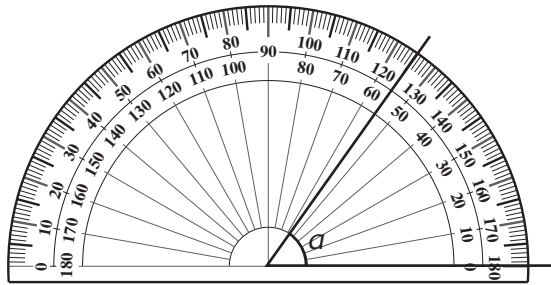
It is called an **obtuse** angle.



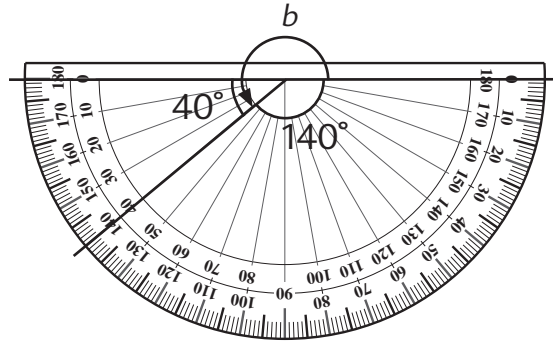
An acute angle is $< 90^\circ$.
 An obtuse angle is $> 90^\circ$ but $< 180^\circ$.

Measuring Angles

We use a protractor to measure angles.
We measure angles in degrees.



$$m\angle a = 55^\circ$$



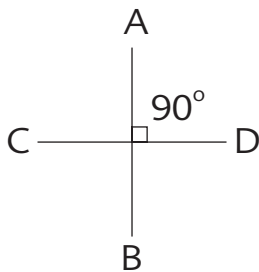
$$\begin{aligned} m\angle b &= 180^\circ + 40^\circ \\ &= 220^\circ \end{aligned}$$

OR

$$\begin{aligned} m\angle b &= 360^\circ - 140^\circ \\ &= 220^\circ \end{aligned}$$

Perpendicular Lines

Perpendicular lines meet at right angles.



AB and CD are perpendicular lines.



We say AB is perpendicular to CD.
We write **AB \perp CD**.

Parallel Lines

Parallel lines never meet.

A \longrightarrow B

C \longrightarrow D

AB and CD are parallel lines.
We draw arrowheads on the lines to show they are parallel.

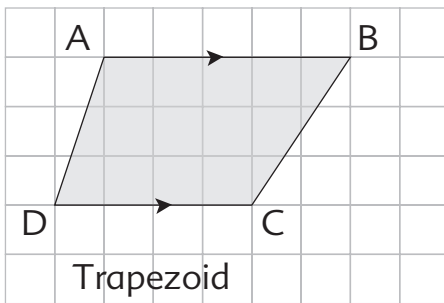
We say AB is parallel to CD.
We write **AB // CD**.



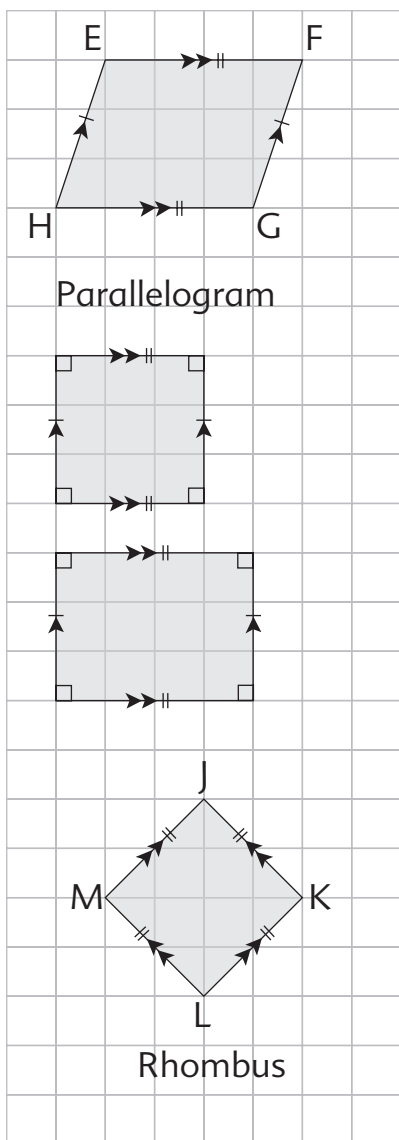
Quadrilaterals

A polygon is a closed figure with straight sides.
A **quadrilateral** is a 4-sided polygon.

These are quadrilaterals.



ABCD is a trapezoid.
It has at least one pair of parallel lines.



EFGH is a parallelogram.
It has two pairs of parallel lines which are equal on opposite sides.
So, a parallelogram is a trapezoid.

A square has 4 equal sides.
It also has 4 equal angles.
Each angle = 90°

A rectangle has equal opposite sides.
It also has 4 equal angles.
Each angle = 90°
So, a square and a rectangle are both parallelograms.

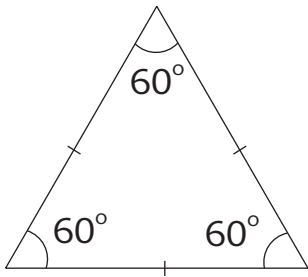
JKLM is a rhombus.
It has two pairs of parallel lines. It has 4 equal sides.
It is a parallelogram with equal sides.

We use arrowheads (\triangleright) to show parallel lines.
We use strokes ($/$) to show equal sides.

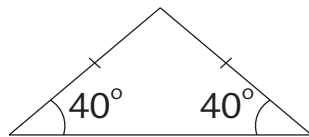


Triangles

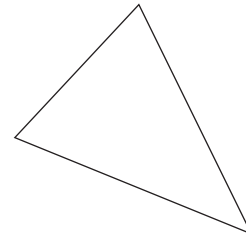
A **triangle** is a 3-sided polygon.
An equilateral triangle has 3 equal sides.
An isosceles triangle has 2 equal sides.
A scalene triangle has no equal sides.
An equilateral triangle is also an isosceles triangle.



Equilateral triangle



Isosceles triangle

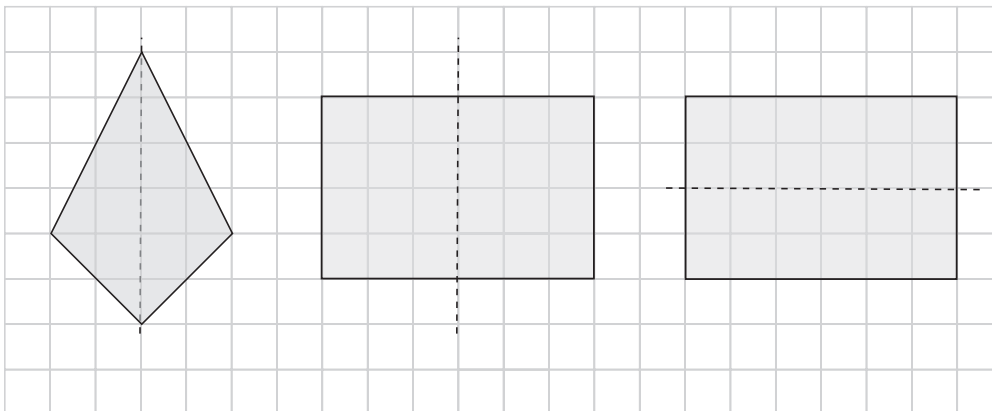


Scalene triangle

Line Symmetry

A symmetric figure has one or more lines of symmetry.
A **line of symmetry** divides a figure into two equal parts.
These equal parts fit exactly.

Each of the following figures has one line of symmetry.





The figure has more than one line of symmetry.

