Y8 Maths Knowledge Organiser Topic 9: Angles 2

What must I be able to do?

You may need to revise the following:

- Year 7 Topic 16: Angles 1

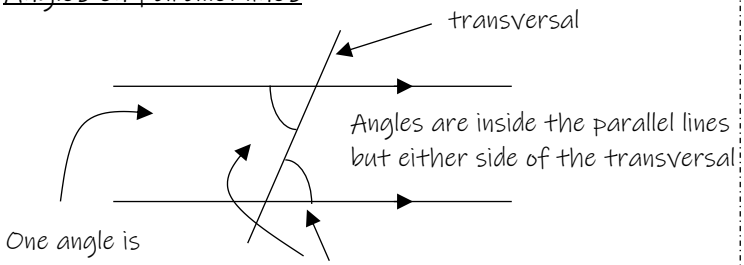
New content:

- ☐ Identify the different types of angles formed by parallel lines and a transversal such as corresponding angles, alternate angles and interior angles
  - ➢ Sparx M606
- ☐ Use the various properties of angles to find unknown angles
  - ➢ Sparx M319
- ☐ Find unknown angles in geometrical figures involving square, rectangle, parallelogram, rhombus, trapezium and triangle

Key vocabulary

Parallel Lines	Straight lines which go in the same direction and never meet.
Transversal	A straight line which passes through a set of parallel lines.
Alternate, corresponding, allied, co-interior	See diagrams

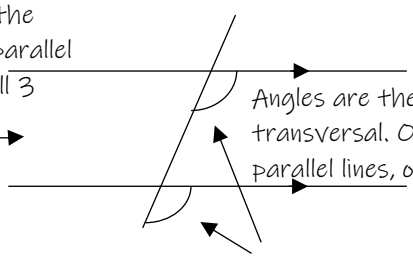
Angles on parallel lines



Angles are inside the parallel lines but either side of the transversal.

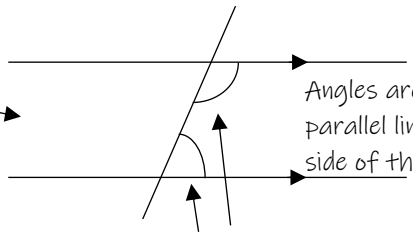
Alternate angles are equal (Z shape)

One angle is against the top parallel line and the other against the bottom parallel line for all 3 rules



Angles are the same side of the transversal. One inside the parallel lines, one outside.

Corresponding angles are equal (F shape)



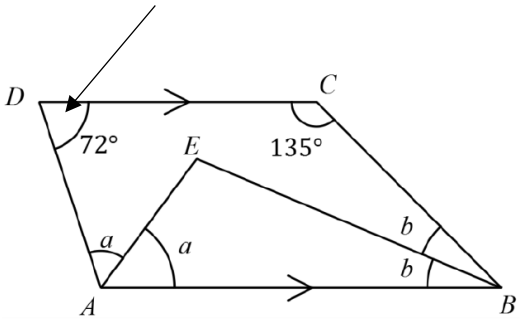
Angles are both inside the parallel lines and on the same side of the transversal.

Allied angles sum to 180° (C shape)

These are also called co-interior angles

Problem solving with angles

We call this angle $\hat{ADC}$ as it is the angle at D, when D is connected to A and C.



Angle $\hat{ADC}$ and angle $\hat{DAB}$ are allied so add to 180°

So $72 + a + a = 180°$

$2a = 108°$

$a = 54°$

The same applies to angles $\hat{DCB}$ and $\hat{ABC}$

So $135 + b + b = 180°$

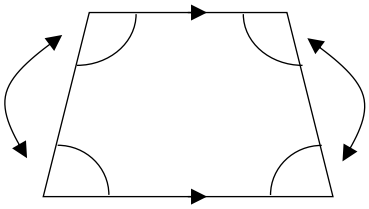
$2b = 45°$

$b = 22.5°$

Note: As both angles are called b, they must be the same size. Similarly for the angles called a.

Angles in trapezia and parallelograms

Trapezium – 2 pairs of allied angles



As a trapezium and a parallelogram have a pair of parallel sides, the angles at each end form a pair of allied angles which sum to 180°

Parallelogram – 4 pairs of allied angles