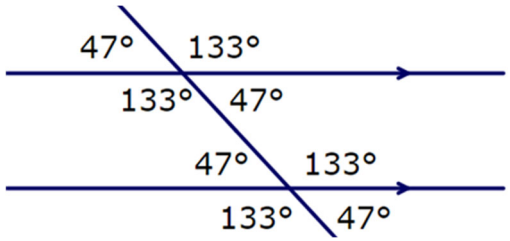
Maths, Y9 - Angle reasoning

1. Key words

Parallel lines run in exactly the same direction and never meet. Parallel lines are shown by arrows.

When a straight line crosses two or more parallel lines, **corresponding**, **alternate** and **co-interior** angles are formed.

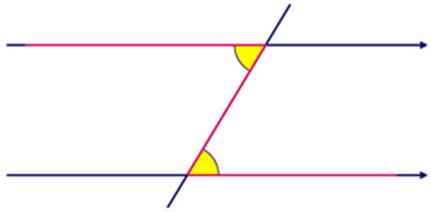


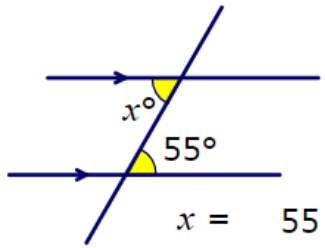
There are only 2 angle measures among all 8 angles created by parallel lines and a crossing straight line

2. Alternate angles

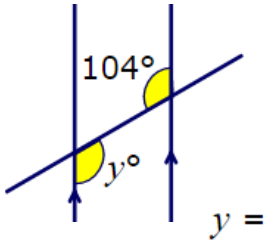
Alternate angles are formed on opposite (alternate) sides of a line which crosses two or more parallel lines.

Alternate angles are always equal in size





$x = 55°$

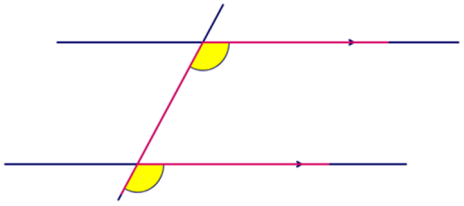


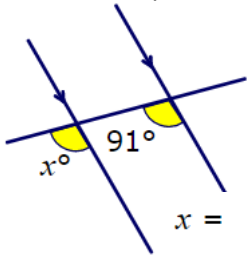
$y = 104°$

3. Corresponding angles

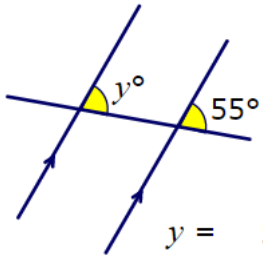
Corresponding angles are formed on the same side of a line, which crosses two or more parallel lines. They all appear in matching (corresponding) positions above or below the parallel lines.

Corresponding angles are always equal in size





$x = 91°$

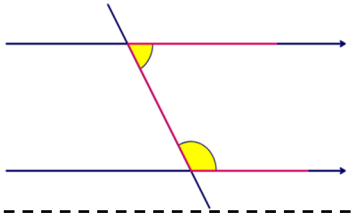


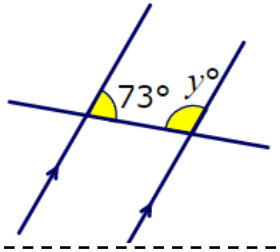
$y = 55°$

4. Co-interior angles

Co-interior angles are formed on the same side of a line, which crosses two or more parallel lines. They appear inside two parallel line, facing each other.

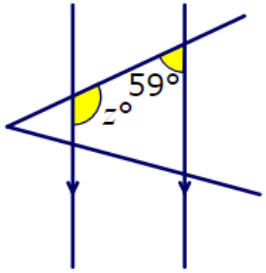
Co-interior angles always add to 180°





$y = 180° - 73°$

$y = 107°$

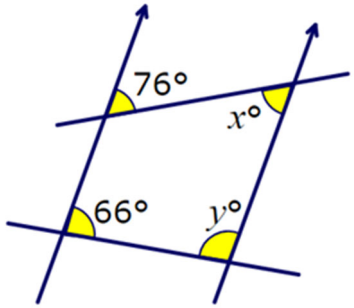


$z = 180° - 121°$

$z = 121°$

5. Mixed examples

You must always give reasons for your answers



Alternate angles are equal

$x = 76°$

Co-interior angles add to 180°

$y = 180° - 66°$

$y = 114°$

Angles on a straight line add to 180 °

$180° - 113° = 67°$

Alternate angles are equal

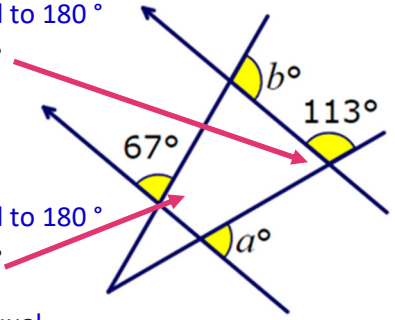
$a = 67°$

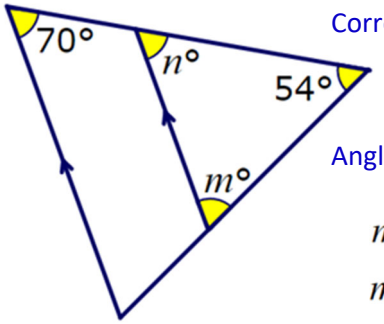
Angles on a straight line add to 180 °

$180° - 67° = 113°$

Corresponding angles are equal

$b = 113°$





Corresponding angles are equal

$n = 70°$

Angles in a tringle add to 180 °

$m = 180° - (70° + 54°)$

$m = 56°$