# Pairs of angles

When two angles are related in a certain way, they form a pair of angles. These pairs help us understand the position and relationship between angles.

## **Types of Pairs of Angles**

# i. Complementary Angles

## Two angles whose sum is 90°



# ii. Supplementary Angles

Two angles whose sum is 180°



# iii. Adjacent Angles

Two angles that have a common arm and a common vertex, and don't overlap



## iv. Linear Pair

Two adjacent angles that form a straight line and their sum is 180°



# v. Vertically Opposite Angles

Formed when two lines intersect. Opposite angles are equal



# **Examples with Solutions**

#### Example

Are 40° and 50° complementary?

 $40^{\circ} + 50^{\circ} = 90^{\circ}$ 

• Yes, they are complementary angles

#### Example

Find the supplement of 65°

Supplement = 180° - 65° = 115°

• Supplementary angle = 115°

#### Example

Two angles are adjacent if one is  $35^{\circ}$  and the other is  $55^{\circ}$ , and they share a common arm  $35^{\circ} + 55^{\circ} = 90^{\circ}$ , and they touch each other

• They are adjacent and complementary angles

## Example

Two adjacent angles form a straight line. One angle is 110°. Find the other

Other angle =  $180^{\circ} - 110^{\circ} = 70^{\circ}$ 

• The angles form a linear pair

#### Example

Two lines intersect and form vertically opposite angles of 2x and 60°. Find x

$$x = \frac{60}{2} = 30$$

• Vertically opposite angles are equal, so x = 30

# **Summary Points**

- Complementary angles sum to 90°.
- Supplementary angles sum to 180°.
- Adjacent angles share a vertex and an arm.
- Linear pair is a special adjacent pair on a straight line.
- Vertically opposite angles are always equal.