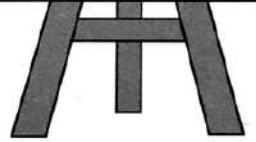


CHAPTER 3

Angles

Complementary & Supplementary Angles

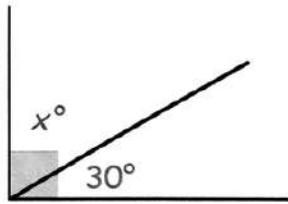
Be able to find a complementary or supplementary angle



A 90° angle is called a right angle.

Any two angles that, when added together come to 90° , are called **Complementary Angles**.

Example :-



$$x + 30 = 90$$

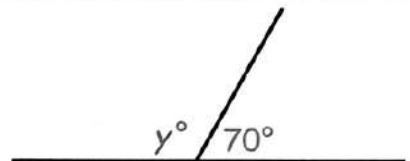
$$\text{so } x = 60$$

The complement of 30° is 60° .

A 180° angle is called a straight angle.

Any two (or more) angles that, when added together, make 180° , are called **Supplementary Angles**.

Example :-



$$y + 70 = 180$$

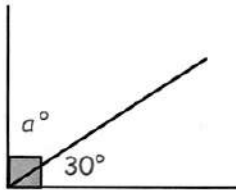
$$\text{so } y = 110$$

The supplement of 70° is 110° .

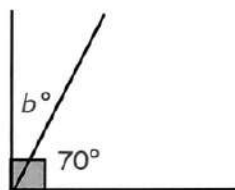
Exercise 1

1. Calculate the missing angle in each of the following :-

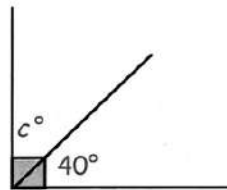
a



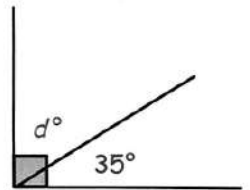
b



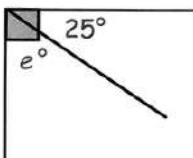
c



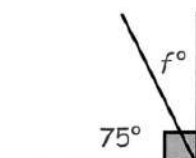
d



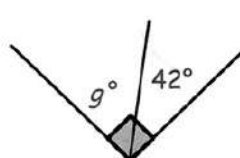
e



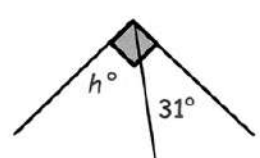
f



g



h



2. Write down the complement (complementary angle) of :-

a 60°

b 10°

c 88°

d 11°

e 19°

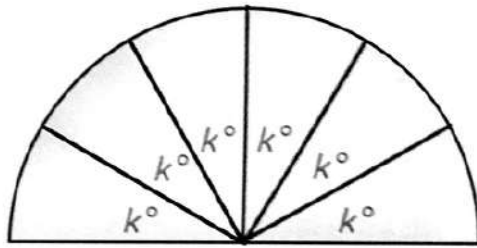
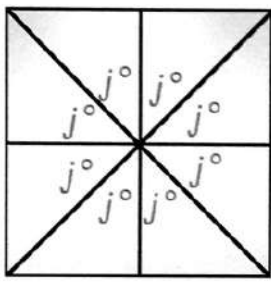
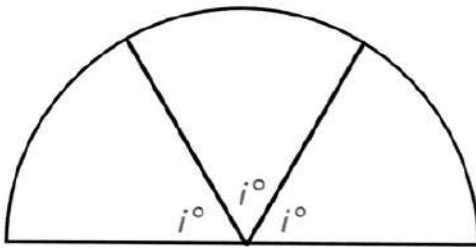
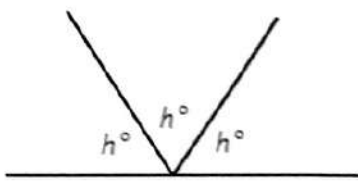
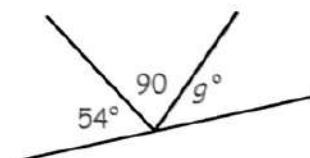
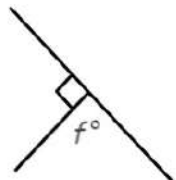
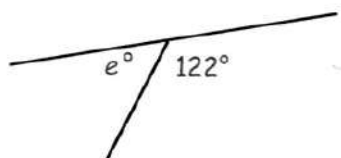
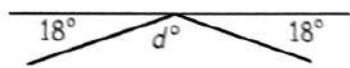
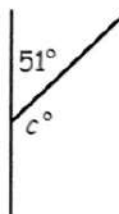
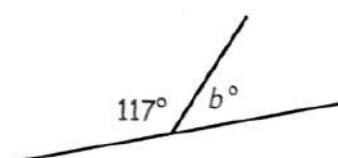
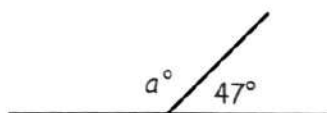
f 73°

g 8.5°

h 52.5°

3. What angle is its own complement?

4. Calculate the missing angle in each of the following :-



5. Write down the supplement (supplementary angle) of :-

- | | | | | | | | |
|---|-------------|---|-------------|---|---------------|---|--------------|
| a | 100° | b | 25° | c | 137° | d | 176° |
| e | 1° | f | 111° | g | 179.5° | h | 87.5° |

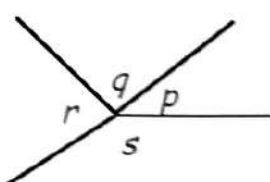
6. What angle is its own supplement ?

7. An angle is measured and found to be 83° .

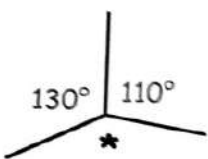
- | | | | |
|---|--------------------------|---|--------------------------|
| a | What is its complement ? | b | What is its supplement ? |
|---|--------------------------|---|--------------------------|

8. Shown are 4 angles which fit exactly around a point.

- a What answer will you get if you add all 4 angles ?
($p + q + r + s = ?$).
- b In general, what answer will you ALWAYS get when you add together all the angles round a point ?



9. a What do you get when you add $130^\circ + 110^\circ$?
- b Calculate the size of the 3rd angle (*).



10. a There are 3 angles round a point. One is 120° . A second is a right angle. Calculate the size of the third angle.
- b Four angles round a point are 37° , 111° , 104° and x° . Calculate the value of x .

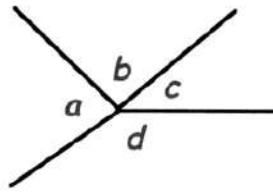
Angles Round a Point

The angles round a point must total 360° . (2 straight angles).

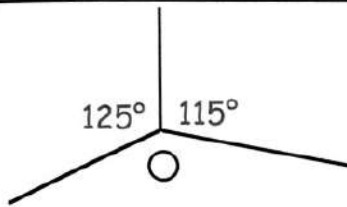
In the diagram shown

$$a + b + c + d = 360.$$

Examples :-



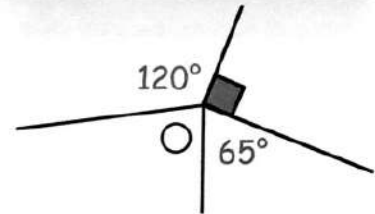
Be able to
calculate a missing
angle round
a point



$$\bigcirc + 125 + 115 = 360$$

$$\Rightarrow \bigcirc + 240 = 360$$

$$\Rightarrow \bigcirc = 120.$$



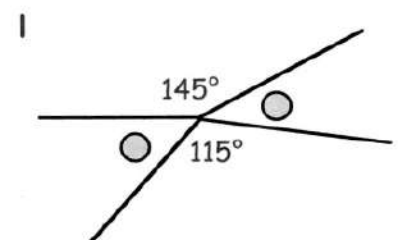
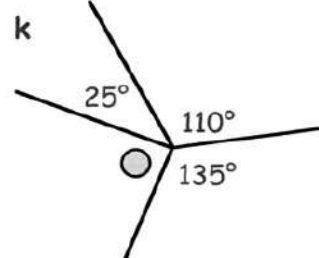
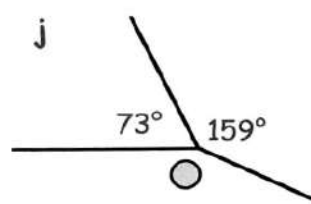
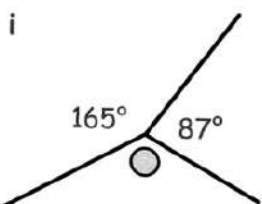
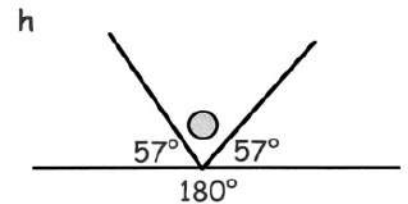
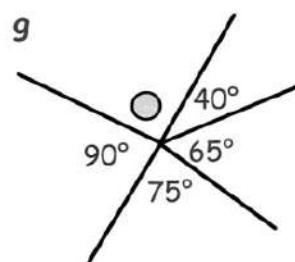
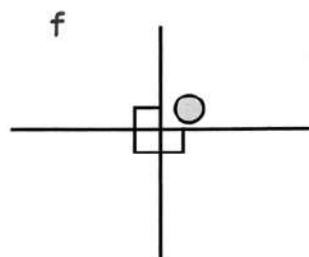
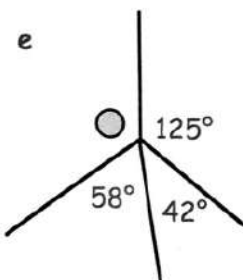
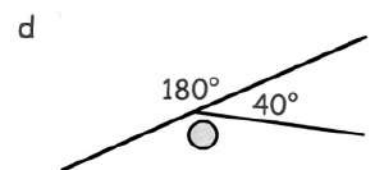
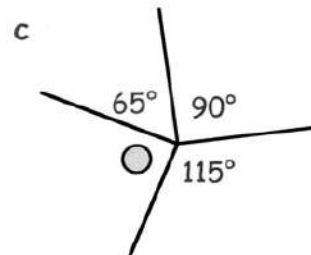
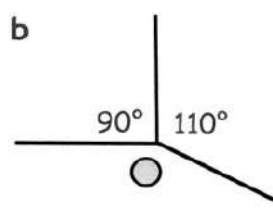
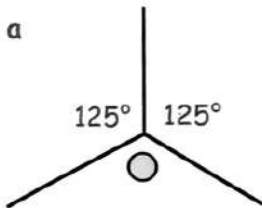
$$\bigcirc + 120 + 90 + 65 = 360$$

$$\Rightarrow \bigcirc + 275 = 360$$

$$\Rightarrow \bigcirc = 85.$$

Exercise 2

1. Calculate the value of the angles marked \bigcirc :-



2. Sketch some diagrams similar to question 1.
Get your partner to find the missing angles.