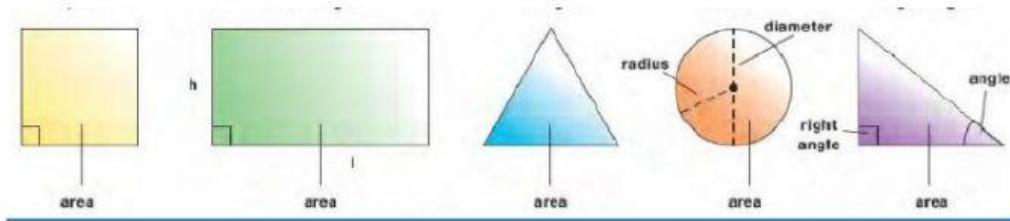


Triangles: Review



- 1) What are the essential features of
 - a square?
 - a rectangle?
 - a right-angled triangle?
- 2) Explain the meaning of
 - Perimeter:
 - Diameter:
 - Radius:
- 3) What's the formula for measuring the area of
 - a square?
 - a triangle?
 - a circle?

Read the text opposite. Choose the best answer in each case.

- 1 What is the area of a triangle with a base of 16 cm and a height of 9 cm?
 - a 8 cm²
 - b 17 cm
 - c 17 cm²
 - d 72 cm²
- 2 Which kind of triangle has no equal angles?
 - a equilateral
 - b isosceles
 - c scalene
 - d right-angled
- 3 What is each angle in an equilateral triangle?
 - a 30°
 - b 60°
 - c 90°
 - d 180°
- 4 In the right-angled triangle in Figure 1, the *hypotenuse* is:
 - a the horizontal line.
 - b the vertical line.
 - c the diagonal line.
 - d the right angle.

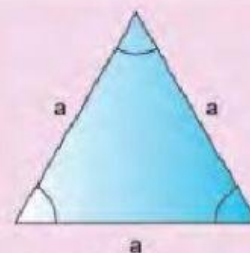
Triangles

There are four kinds of triangles (see Figure 1) but there are two rules that apply to all triangles. Firstly, the internal angles of a triangle always add up to 180° (degrees). Secondly, the area of a triangle is always $\frac{1}{2} \times \text{base} \times \text{height}$.

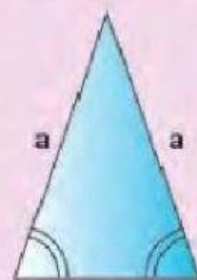
An *equilateral* triangle has three sides that have the same length. It also has three angles that are the same size. An *isosceles* triangle has two sides that are equal and two angles that are equal. A *scalene* triangle has no equal sides or angles.

The most important kind of triangle is the *right-angled triangle*. It gets its name from the 90° (or *right*) angle, which all of these triangles have. This kind of triangle has one of the most well-known rules in science — Pythagoras' theorem.

Pythagoras was a Greek philosopher and mathematician who lived from about 582 to 500 BCE. He worked with a group of other mathematicians and developed his theorem which states: *the square of the hypotenuse is equal to the sum of the squares of the other two sides*. The hypotenuse is the side opposite the right angle. In the right-angled triangle in Figure 1, we could state the theorem as $a^2 + b^2 = c^2$. We can see the theorem in operation in Figure 2.

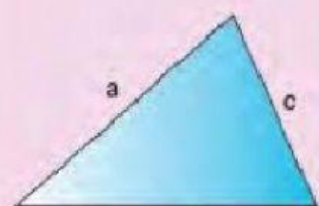


equilateral triangle



b

isosceles triangle



b

scalene triangle

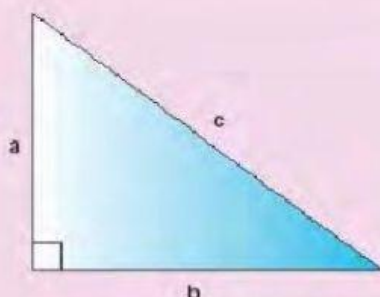


b

right-angled triangle

Figure 1

Figure 2



$$\text{If } a = 3, a^2 = 9$$

$$\text{If } b = 4, b^2 = 16$$

$$\text{therefore } c^2 = 25$$

$$\text{therefore } c = \sqrt{25}$$

$$\text{therefore } c = 5$$

Using *which* or *that*

We use ***which*** or ***that*** to introduce extra information about something.

Examples:

*An equilateral triangle has three sides **which** are the same length.*

*Trigonometry is the branch of geometry **that** only deals with right-angled triangles.*

Find and correct the mistake in each sentence.

- 1 An isosceles triangle has two sides are equal.
- 2 An isosceles triangle has two angles which is equal.
- 3 One kind of triangle is the scalene triangle who has no equal sides or angles.
- 4 There is an important theorem in trigonometry which named after a Greek mathematician.
- 5 There is an important constant in geometry which it is called pi.
- 6 A square is a rectangle has four equal sides and four right angles.
- 7 A rectangle has two pairs of lines which they are parallel.
- 8 A triangle has three angles which adds up to 180° .