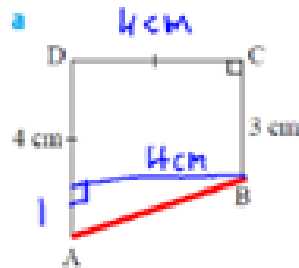


9 Find the distance AB in the following figures. Fig. 84

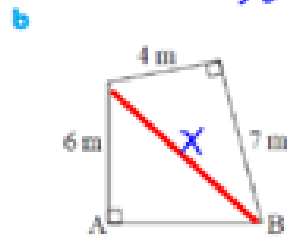


$$1^2 + 4^2 = (AB)^2$$

$$1 + 16 = (AB)^2$$

$$17 = (AB)^2$$

$$\sqrt{17} \text{ cm} = AB$$



$$4^2 + 7^2 = x^2$$

$$16 + 49 = x^2$$

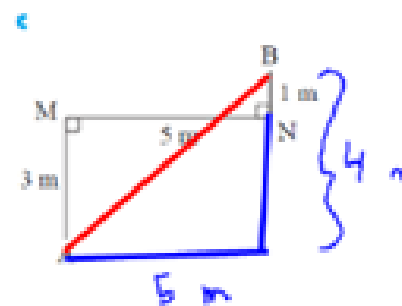
$$65 = x^2$$

$$6^2 + (AB)^2 = 65$$

$$36 + (AB)^2 = 65$$

$$(AB)^2 = 29$$

$$AB = \sqrt{29}$$



$$5^2 + 4^2 = (AB)^2$$

$$25 + 16 = (AB)^2$$

$$41 = (AB)^2$$

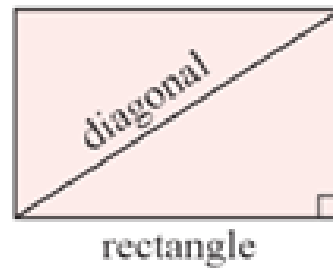
$$\sqrt{41} \text{ m} = AB$$

## 4C – Problem Solving Using Pythagoras' Theorem

Many practical problems involve right triangles which can be solved using Pythagoras' theorem.

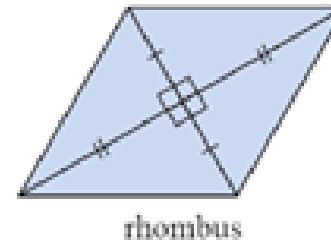
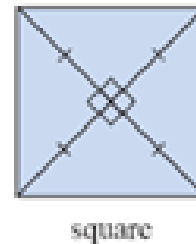
Right triangles can be found in the following situations:

Rectangles:



Square and Rhombus:

Diagonals bisect each other at right angles.



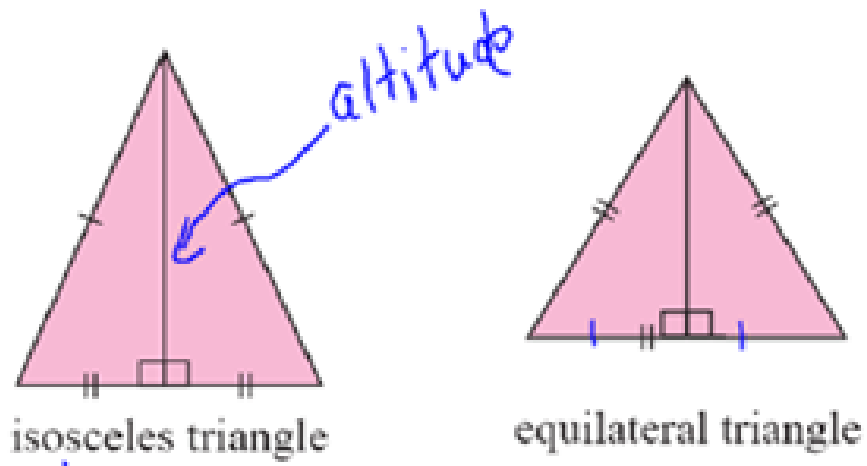
## Isosceles and Equilateral Triangles:

The altitude bisects the base at right angles.

isosceles - 2 equal sides  
- 2 equal angles

Equilateral - 3 equal sides  
- 3 equal angles (all  $60^\circ$ )

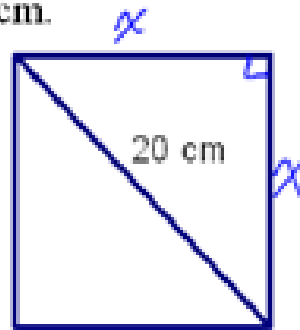
Scalene - 0 equal sides



3 angles in a triangle  
add to be  $180^\circ$

Examples:

1. Find the perimeter and area of a square whose diagonal length is 20 cm.



$$x^2 + x^2 = 20^2$$

$$2x^2 = 400$$

$$x^2 = 200$$

$$x = \sqrt{200}$$

$$x = 14.1421 \text{ cm}$$

Keep intermediate answers in calculator memory or leave at least 4 decimal places

Perimeter:

$$P = 4(14.1421 \text{ cm})$$

$$P = 56.57 \text{ cm}$$

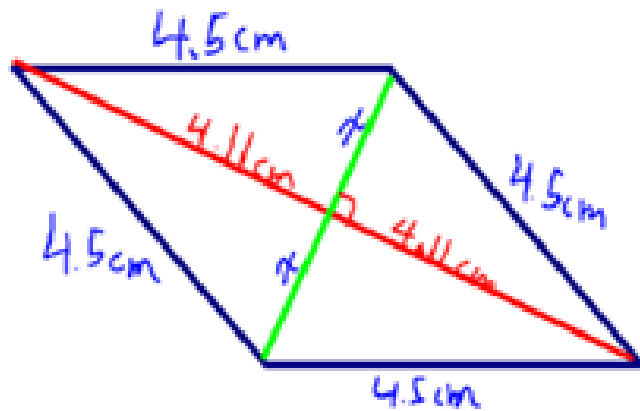
Round final answers to 2 decimal places unless told otherwise

Area =  $L \times W$

$$A = (14.1421)^2$$

$$A = 200 \text{ cm}^2$$

2. A rhombus has side lengths of 4.5 cm. One of its diagonals is 8.22 cm. Find the length of the other diagonal.



$$\frac{8.22}{2} = 4.11 \text{ cm}$$

$$x^2 + 4.11^2 = 4.5^2$$

$$x^2 + 16.8921 = 20.25$$

$$x^2 = 3.3579$$

$$x = 1.8325 \text{ cm}$$

The diagonal length

is  $2 \times 1.8325 = 3.67 \text{ cm}$ .

HW: section 4C #1-8 and radicals  
practice worksheet