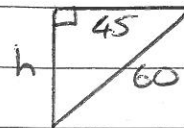
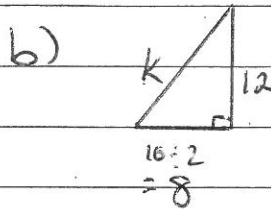
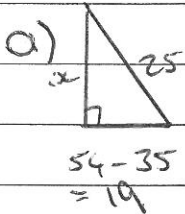
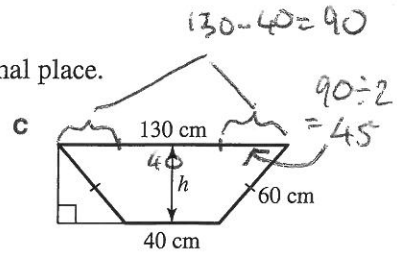
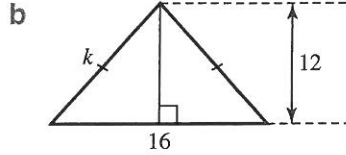
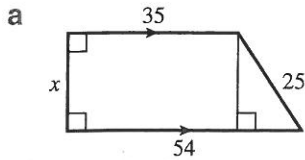


Exploring composite shapes

What to do

Complete the following questions in your workbook.

1 Calculate the value of the stated pronumerals below correct to 1 decimal place.



$$S_1 = \sqrt{\text{hyp}^2 - S_2^2}$$

$$x = \sqrt{25^2 - 19^2}$$

$$x = 16.2$$

$$\text{hyp} = \sqrt{S_1^2 + S_2^2}$$

$$k = \sqrt{8^2 + 12^2}$$

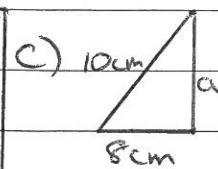
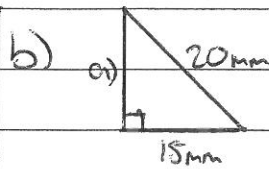
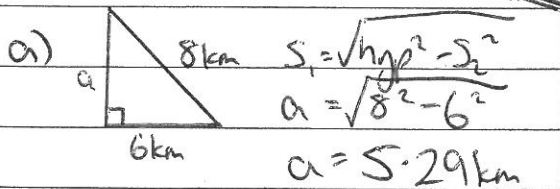
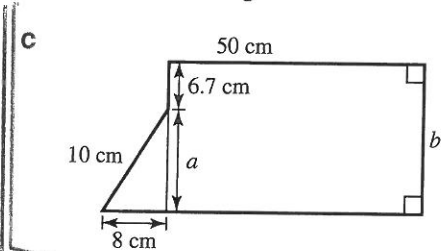
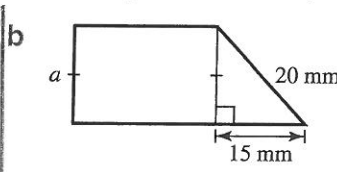
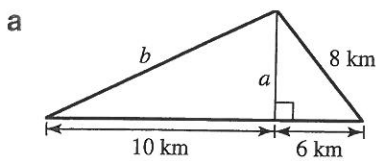
$$k = 14.4$$

$$S_1 = \sqrt{\text{hyp}^2 - S_2^2}$$

$$h = \sqrt{60^2 - 45^2}$$

$$h = 39.7 \text{ cm}$$

2 Calculate the values of the pronumerals (in alphabetical order) in each of the following.



$$\text{hyp} = \sqrt{S_1^2 + S_2^2}$$

$$b = \sqrt{5.29^2 + 10^2}$$

$$b = 11.3 \text{ km}$$

$$S_1 = \sqrt{\text{hyp}^2 - S_2^2}$$

$$a = \sqrt{20^2 - 15^2}$$

$$a = 13.2 \text{ mm}$$

$$S_1 = \sqrt{\text{hyp}^2 - S_2^2}$$

$$a = \sqrt{10^2 - 8^2}$$

$$a = 6$$

$$b = a + 6.7$$

$$b = 6 + 6.7$$

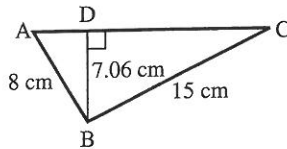
$$b = 12.7$$

6-C-1 Exploring Composite Shapes Continued

3 Consider the figure shown.

a Calculate the lengths of:

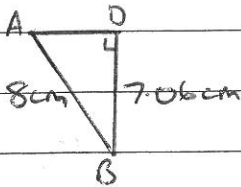
- i AD
- ii DC
- iii AC.



b Is triangle ABC right-angled? Use calculations to justify your answer.

Hint: The triangle is right-angled if $AB^2 + BC^2 = AC^2$.

ai)

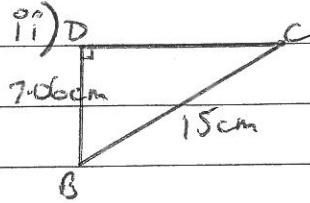


$$S_1 = \sqrt{\text{hyp}^2 - S_2^2}$$

$$\overline{AD} = \sqrt{8^2 - 7.06^2}$$

$$\overline{AD} = 3.76 \text{ cm}$$

ii)



$$S_1 = \sqrt{\text{hyp}^2 - S_2^2}$$

$$\overline{DC} = \sqrt{15^2 - 7.06^2}$$

$$\overline{DC} = 13.23$$

iii)

$$\overline{AC} = \overline{AD} + \overline{DC}$$

$$= 3.76 + 13.23$$

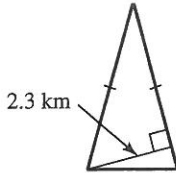
$$= 16.998$$

$$= 17.00$$

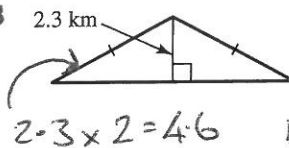
4 The height of an isosceles triangle is 2.3 km and its equal sides are twice as long as its height.

a MC Which diagram represents the triangle described?

A



B



$$(b) S_1 = \sqrt{\text{hyp}^2 - S_2^2}$$

$$S_1 = \sqrt{4.6^2 - 2.3^2}$$

$$S_1 = 3.98 \text{ km}$$

$$\text{base} = 2 \times 3.98 = 7.967 \text{ km}$$

$$c) A_{\Delta} = \frac{1}{2} b \times h$$

$$= \frac{1}{2} (7.967) \times 2.3$$

$$= 9.16 \text{ km}^2$$

b Calculate the length of the third side.

c Calculate the area of the triangle. Hint: $\text{Area}_{\Delta} = \frac{b \times h}{2}$.

5 The side length of an equilateral triangle is 6.2 m.

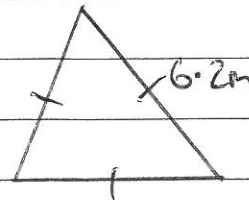
a Draw a diagram to illustrate this triangle.

b Calculate:

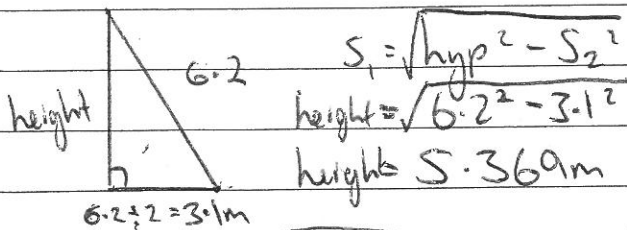
i the height of the triangle

ii the area of the triangle. Hint: $\text{Area}_{\Delta} = \frac{b \times h}{2}$.

a)



b)



$$\text{Area} = \frac{1}{2} b \times h$$

$$= \frac{1}{2} \times 6.2 \times 5.369$$

$$= 16.65 \text{ m}^2$$