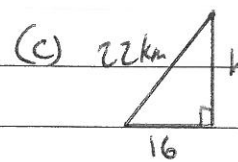
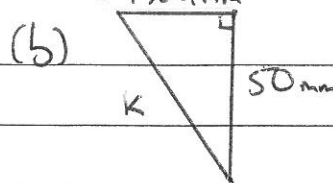
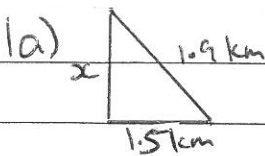
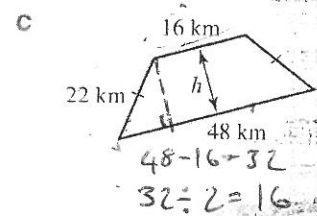
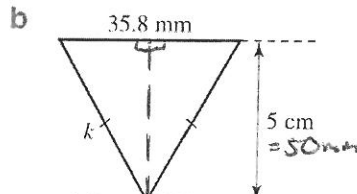
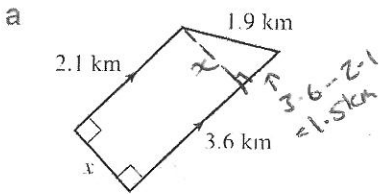


Tricky composite shapes

What to do

Complete the following questions in your workbook.

1 Calculate the values of the stated pronumerals.



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

$$x = \sqrt{1.9^2 - 1.5^2}$$

$$x = 1.166 \text{ km}$$

$$x = 1.17 \text{ km}$$

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

$$k = \sqrt{17.9^2 + 50^2}$$

$$k = 53.108 \text{ mm}$$

$$k = 53.11 \text{ mm}$$

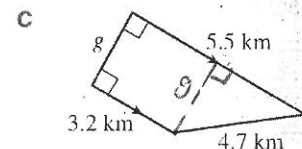
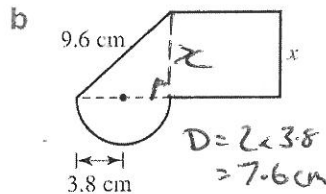
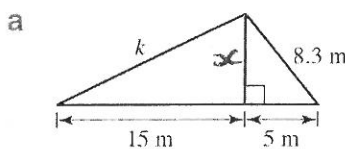
$$S_1 = \sqrt{\text{hyp}^2 - S_2^2}$$

$$h = \sqrt{22^2 - 16^2}$$

$$h = 15.0997 \text{ km}$$

$$h = 15.10 \text{ km}$$

2 Calculate the value of the pronumeral in each of the following.



2a)

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

$$= \sqrt{8.3^2 - 5^2}$$

$$= 6.62 \text{ m}$$

(b)

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

$$= \sqrt{9.6^2 - 7.6^2}$$

$$= 5.87 \text{ cm}$$

(c)

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

$$g = \sqrt{4.7^2 - 2.3^2}$$

$$= 4.10 \text{ km}$$

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

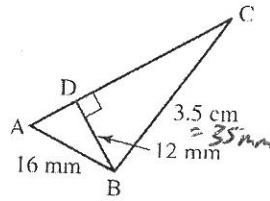
$$k = \sqrt{15^2 + 6.62^2}$$

$$k = 13.46 \text{ m}$$

6-C-3 Tricky Composites continued.

3 Consider the figure shown.

- Calculate the length of-side AC.
- Is triangle ABC right-angled? Use calculations to justify your answer.



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

$$\overline{AD} = \sqrt{16^2 - 12^2}$$

$$\overline{AD} = 10.58^{\text{④}}$$

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

$$\overline{CD} = \sqrt{35^2 - 12^2}$$

$$\overline{CD} = 32.88 \text{ mm}$$

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

$$10.58 + 32.88 = \overline{AC}$$

$$43.46 = \overline{AC}$$

$$\overline{AC} = 43.46^{\text{③}} \text{ mm}$$

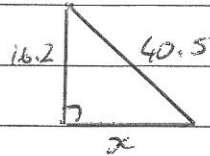
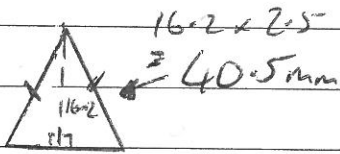
$$(b) 16^2 + 35^2 = 43.46^2$$

$$256 + 1225 = 1888.908$$

$$1481 = 1888.908$$

NO

4 The height of an isosceles triangle is 16.2 mm and its equal sides are two and a half times as long. Calculate the area of the triangle.



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

$$x = \sqrt{40.5^2 - 16.2^2}$$

$$= 37.12 \text{ mm}$$

$$\text{Base} = 2 \times 37.12 \text{ mm}$$

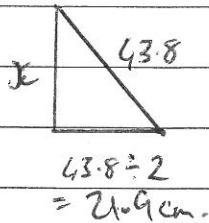
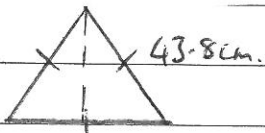
$$= 74.24 \text{ mm}$$

$$\text{Area} = \frac{1}{2} b \times h \quad b = 74.24$$

$$= \frac{1}{2} (74.24)(16.2) \quad h = 16.2$$

$$= 601.33 \text{ mm}^2$$

5 The side length of an equilateral triangle is 43.8 cm. Calculate the area of the triangle.



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

$$= \sqrt{43.8^2 - 21.9^2}$$

$$= 37.93 \text{ cm}$$

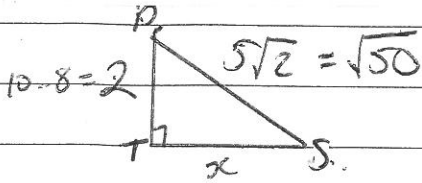
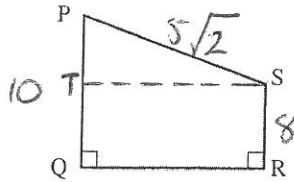
$$\text{Area} = \frac{1}{2} b \times h \quad b = 43.8$$

$$= \frac{1}{2} (43.8)(37.93) \quad h = 37.93$$

$$= 830.71 \text{ cm}^2$$

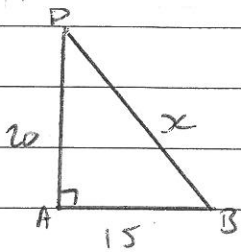
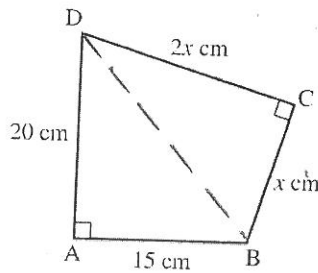
6-C-3 Tricky Composite Shapes Continued.

6 If $PQ = 10$, $RS = 8$ and $PS = 5\sqrt{2}$, find the exact value of QR .

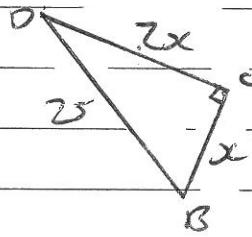


$$\begin{aligned}
 S_1 &= \sqrt{\text{hyp}^2 - S_2^2} \\
 &= \sqrt{50^2 - 2^2} \\
 &= \sqrt{50 - 4} \\
 S_1 &= \sqrt{46}
 \end{aligned}$$

7 Use the information given in the diagram to find the exact value of x .



$$\begin{aligned}
 \text{hyp} &= \sqrt{S_1^2 + S_2^2} \\
 x &= \sqrt{15^2 + 20^2} \\
 x &= 25 \quad \rightarrow
 \end{aligned}$$



$$\begin{aligned}
 25^2 &= x^2 + (2x)^2 \\
 625 &= x^2 + 2^2 x^2 \\
 625 &= x^2 + 4x^2 \\
 625 &= 5x^2 \\
 \frac{625}{5} &= \frac{5x^2}{5}
 \end{aligned}$$

$$\begin{aligned}
 125 &= x^2 \\
 \sqrt{125} &= x \\
 5\sqrt{5} &= x
 \end{aligned}$$

or $11.18\text{cm} = x$