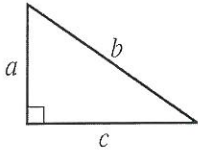
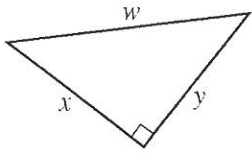
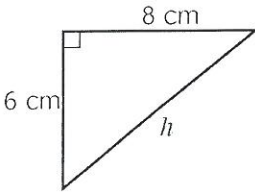
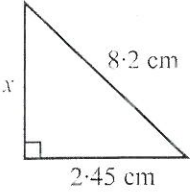
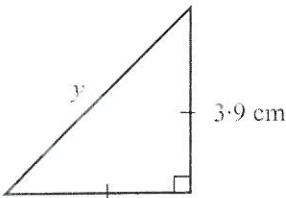


Name:

Date:

<p>1</p>	<p>Label the hypotenuse and write a Pythagorean equation that connects the sides of these triangles:</p> <p>a</p>  <p>b</p>  <p> $hyp^2 = s_1^2 + s_2^2$ $b^2 = a^2 + c^2$ or $b = \sqrt{a^2 + c^2}$ or $c^2 = b^2 - a^2$ $a^2 = b^2 - c^2$ or $a = \sqrt{b^2 - c^2}$ or $c = \sqrt{b^2 - a^2}$ </p> <p> $w^2 = x^2 + y^2$ or $x^2 = w^2 - y^2$ or $y^2 = w^2 - x^2$ $w = \sqrt{x^2 + y^2}$ or $x = \sqrt{w^2 - y^2}$ or $y = \sqrt{w^2 - x^2}$ </p>
<p>2</p>	<p>Find the length of the hypotenuse in each of the following triangle:</p> <p>a</p>  <p> $h^2 = s_1^2 + s_2^2$ $h = \sqrt{(6^2 + 8^2)}$ $h = 10 \text{ cm}$ </p>
<p>3</p>	<p>Find the value of the unknown sides expressed correct to two decimal places:</p> <p>b</p>  <p> $hyp = \sqrt{(s_1^2 - s_2^2)}$ or $s_1 = \sqrt{hyp^2 - s_2^2}$ $s_1 = \sqrt{hyp^2 - s_2^2}$ $x = \sqrt{8.2^2 - 2.45^2}$ $x = 7.83 \text{ cm}$ </p> <p>c</p>  <p> $hyp = \sqrt{s_1^2 + s_2^2}$ $y = \sqrt{3.9^2 + 3.9^2}$ $y = 5.52 \text{ cm}$ </p>
<p>4</p>	<p>Find x, the missing number, in the following Pythagorean triads:</p> <p>a 18, 24, <u>x</u> $x = \sqrt{18^2 + 24^2} = 30$</p> <p>b 35, x, <u>613</u> $x = \sqrt{613^2 - 35^2} = 612$</p> <p>c x, 120, <u>122</u> $x = \sqrt{122^2 - 120^2} = 22$</p>

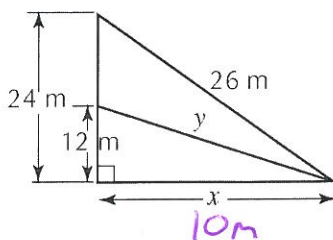
Skills Revision: Pythagoras & Trigonometry

5 Find the length of the sides marked x and y expressed correct to two decimal places:

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

$$x = \sqrt{26^2 - 24^2}$$

$$x = 10\text{m}$$

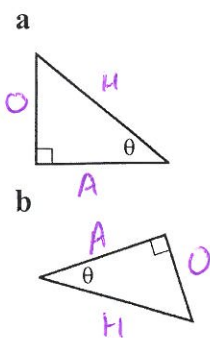


$$\text{hypo} = \sqrt{S_1^2 + S_2^2}$$

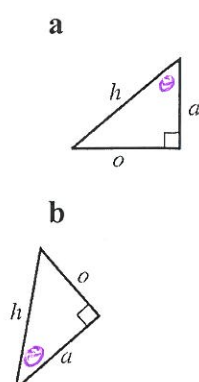
$$y = \sqrt{12^2 + 10^2}$$

$$y = 15.62\text{m}$$

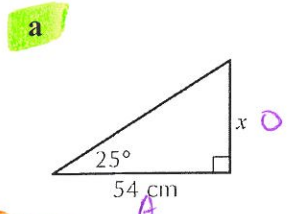
6 Label the sides of each triangle using the letters H (hypotenuse), O (opposite) and A (adjacent) in the following triangles:



Place the angle θ in these triangles to match the labels:



7 Find the length of the sides marked x in these triangles:

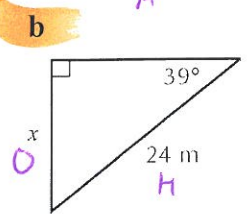


Tan

$$\text{opp} = \text{Tan } \theta \times \text{adj}$$

$$= \text{Tan } 25 \times 54$$

$$= 25.18\text{cm}$$

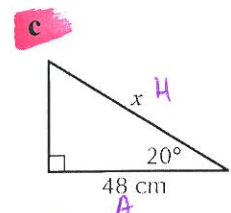


Sin

$$\text{opp} = \text{Sin } \theta \times \text{h}$$

$$= \text{Sin } 39 \times 24$$

$$= 15.10\text{m}$$

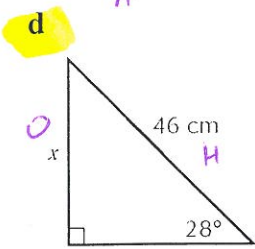


Cos

$$\text{hyp} = \frac{\text{Adj}}{\text{Cos } \theta}$$

$$= \frac{48}{\text{Cos } 20}$$

$$= 51.08\text{cm}$$



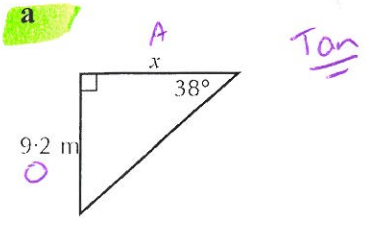
Sin

$$\text{opp} = \text{Sin } \theta \times \text{hyp}$$

$$= \text{Sin } (28) \times 46$$

$$= 21.60\text{cm}$$

8 Find the length of the sides marked x in these triangles:

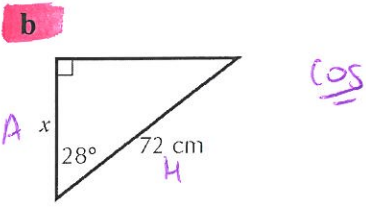


Tan

$$\text{Adj} = \frac{\text{Opp}}{\text{Tan } \theta}$$

$$x = \frac{9.2}{\text{Tan}(38)}$$

$x = 11.78 \text{ m}$

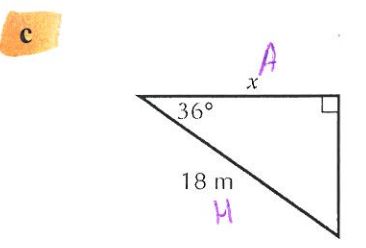


cos

$$\text{Adj} = \text{Cos } \theta \times \text{hypo}$$

$$x = \text{Cos}(28) \times 72$$

$x = 63.5 \text{ cm}$

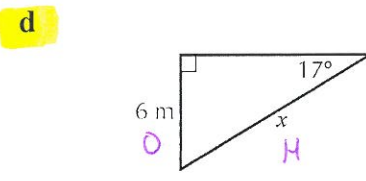


cos

$$\text{Adj} = \text{Cos } \theta \times \text{hypo}$$

$$x = \text{Cos}(36) \times 18$$

$x = 14.56 \text{ m}$



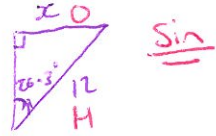
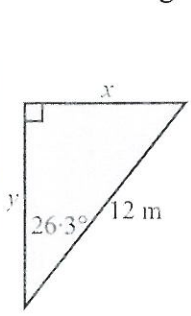
Sin

$$\text{hypo} = \frac{\text{opp}}{\text{Sin } \theta}$$

$$x = \frac{6}{\text{Sin } 17}$$

$x = 20.52 \text{ m}$

9 Find the length of the sides marked x and y expressed correct to two decimal places.

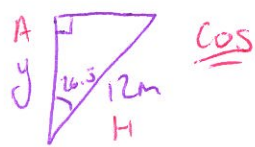


Sin

$$\text{opp} = \text{Sin } \theta \times \text{hypo}$$

$$= \text{Sin}(26.3) \times 12$$

$$= 5.32 \text{ m}$$



cos

$$\text{Adj} = \text{Cos } \theta \times \text{hypo}$$

$$= \text{Cos}(26.3) \times 12$$

$$= 10.76 \text{ m}$$

10 Find the unknown angles correct to two decimal places.

a

\sin $\theta = \sin^{-1}\left(\frac{\text{opp}}{\text{hyp}}\right)$
 $= \sin^{-1}\left(\frac{13.2}{18.5}\right) = 45.52^\circ$

b

\cos $\theta = \cos^{-1}\left(\frac{\text{Adj}}{\text{hyp}}\right)$
 $= \cos^{-1}\left(\frac{85}{110}\right) = 39.40^\circ$

c

\tan $\theta = \tan^{-1}\left(\frac{\text{opp}}{\text{adj}}\right)$
 $= \tan^{-1}\left(\frac{17.5}{23}\right) = 37.27^\circ$

11 Bert and Liz go on a bushwalk. They start at the car park and walk 1.6 km south, 3.2 km east then 2.8 km north to a campsite and then return in a straight line to the car park.

- a** Draw a fully labelled diagram showing the distances walked.
- b** Calculate how far they walked in total.
- c** What is the angle from the campsite to the carpark

a)

b)

$\text{hyp} = \sqrt{3.2^2 + 1.2^2}$
 $x = 3.42 \text{ km}$

c)

\tan $\theta = \tan^{-1}\left(\frac{\text{opp}}{\text{adj}}\right)$
 $= \tan^{-1}\left(\frac{1.2}{3.2}\right) = 69.44^\circ$

Walk = $1.6 + 3.2 + 2.8 + x$
 $= 1.6 + 3.2 + 2.8 + 3.42 \text{ km}$
 $= 11.02 \text{ km}$