14:05 | Using Trigonometry to Find Side Lengths

Name: _____ Class: _____

Examples

$$\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}} \qquad \cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}} \qquad \tan \theta = \frac{\text{opposite}}{\text{adjacent}}$$

1 Find x, to 1 decimal place.

a $\dfrac{x}{5 \cdot 7} = \cos 42°$

$\therefore x = 5 \cdot 7 \times \cos 42°$

$\doteq 4 \cdot 2$

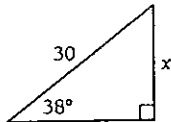b $\dfrac{17}{x} = \tan 22°$

$\therefore x = 17 \div \tan 22°$

$\doteq 42 \cdot 1$

2 State which trigonometric ratio is needed, then find x correct to 1 decimal place.
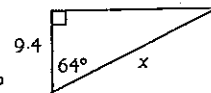
a $\sin 38 - \dfrac{x}{30}$

$x = 30 \times \sin 38°$

$\doteq 18 \cdot 5$

b $\cos 64 - \dfrac{9 \cdot 4}{x}$

$x = 9 \cdot 4 \div \cos 64°$

$\doteq 21 \cdot 4$

Exercise

1 Find x correct to 1 decimal place.

a $\dfrac{x}{8} = \sin 15°$

b $\dfrac{x}{17 \cdot 2} = \tan 38°$

c $\dfrac{x}{90} = \cos 7°$

d $\dfrac{x}{64 \cdot 7} = \tan 80°$

e $\dfrac{x}{200} = \sin 64°$

f $\dfrac{x}{11} = \cos 56°$

2 Find x correct to 1 decimal place.

a $\dfrac{15}{x} = \cos 40°$

b $\dfrac{70}{x} = \tan 10°$

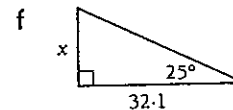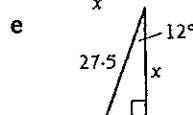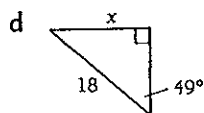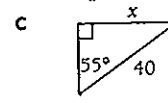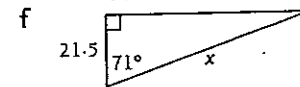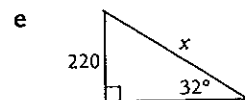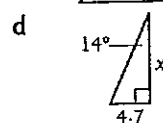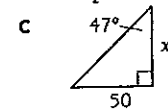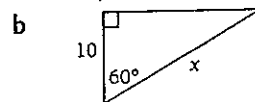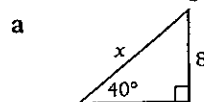c $\dfrac{4}{x} = \sin 28°$

d $\dfrac{120}{x} = \tan 69°$

e $\dfrac{8 \cdot 5}{x} = \sin 73°$

f $\dfrac{47 \cdot 6}{x} = \cos 17°$

3 State which trigonometric ratio is needed, then find x correct to 1 decimal place.

a

b

c

d

e

f

4 State which trigonometric ratio is needed, then find x correct to 1 decimal place.

a

b

c

d

e

f

14:05 Using Trigonometry to Find Side Lengths

1 a 2·1   b 13·4   c 89·3   d 366·9   e 179·8   f 6·2
2 a 19·6   b 397·0   c 8·5   d 46·1   e 8·9   f 49·8
3 a tan 33°, 6·5   b cos 62°, 4·7   c sin 55°, 32·8   d sin 49°, 13·6   e cos 12°, 26·9   f tan 25°, 15·0
4 a sin 40°, 12·4 b cos 60°, 20   c tan 47°, 46·6   d tan 14°, 18·9   e sin 32°, 415·2 f cos 71°, 66·0