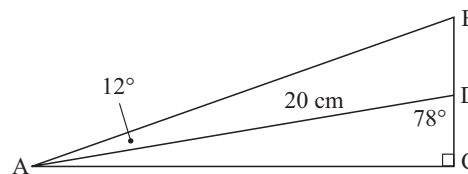
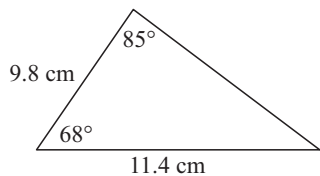
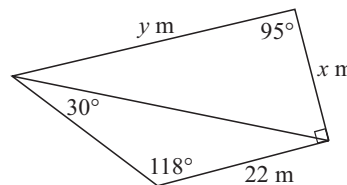


EXERCISE 12B.2

- 1 Triangle ABC has $\angle B = 40^\circ$, $b = 8$ cm and $c = 11$ cm. Find the two possible values for angle C .
- 2 In triangle ABC, find the measure of:
 - a angle A if $a = 14.6$ cm, $b = 17.4$ cm and $\angle ABC = 65^\circ$
 - b angle B if $b = 43.8$ cm, $c = 31.4$ cm and $\angle ACB = 43^\circ$
 - c angle C if $a = 6.5$ km, $c = 4.8$ km and $\angle BAC = 71^\circ$.
- 3 Is it possible to have a triangle with measurements as shown? Explain!
- 4 Find the magnitude of the angle ABC and hence BD in the given figure.



- 5 Find x and y in the given figure.



- 6 Triangle ABC has $\hat{A} = 58^\circ$, $AB = 10$ cm and $AC = 5.1$ cm. Find:
 - a \hat{C} correct to the nearest tenth of a degree using the sine rule
 - b \hat{C} correct to the nearest tenth of a degree using the cosine rule.
 - c Copy and complete: “When faced with using either the sine rule or the cosine rule it is better to use the as it avoids”

C USING THE SINE AND COSINE RULES

First decide which rule to use.

If the triangle is right angled then the trigonometric ratios or Pythagoras’ Theorem can be used, and for some problems adding an extra line or two to the diagram may result in a right triangle.

However, if you have to choose between the sine and cosine rules, the following checklist may assist you.

- Use the **cosine rule** when given
- three sides
 - two sides and an included angle.
- Use the **sine rule** when given
- one side and two angles
 - two sides and a non-included angle (but beware of the *ambiguous case* which can occur when the smaller of the two given sides is opposite the given angle).

- 2 a $a = 21.25$ cm b $b = 76.9$ cm c $c = 5.09$ cm

EXERCISE 12B.2

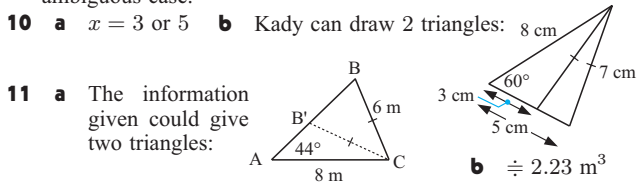
- 1 $\angle C = 62.1^\circ$ or $\angle C = 117.9^\circ$
 2 a $\angle A = 49.5^\circ$ b $\angle B = 72.05^\circ$ or 107.95° c $\angle C = 44.3^\circ$
 3 No, $\frac{\sin 85^\circ}{11.4} \neq \frac{\sin 27^\circ}{9.8}$ 4 $\angle ABC = 66^\circ$, $BD = 4.55$ cm
 6 a 88.7° or 91.3° b 91.3°
 c cosine rule as it avoids the ambiguous case.

EXERCISE 12C

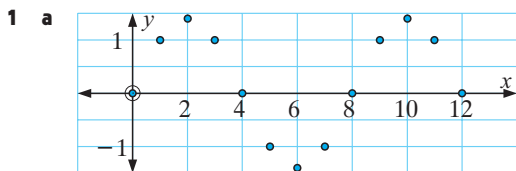
- 1 17.7 m 2 207 m 3 23.9° 4 77.5 m 5 13.2°
 6 69.1 m 7 a 38.0 m b 94.0 m 8 55.1°
 9 AC = 11.7 km BC = 8.49 km
 10 a 74.9 km² b 7490 hectares 11 9.12 km
 12 $\div 85$ mm 13 10.1 km 14 29.2 m 15 37.6 km

REVIEW SET 12

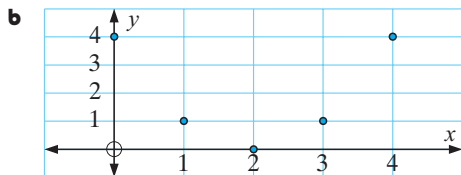
- 1 a $x = 34.1$ b $x = 18.9$ 2 a $x = 41.5$ b $x = 15.4$
 3 AC = 12.55 cm, $\angle A = 48.6^\circ$, $\angle C = 57.4^\circ$
 4 113 cm² 5 7.32 m 6 204 m
 7 530 m, bearing 077.2° 8 179 km, bearing 352°
 9 If the unknown is an angle, use the cosine rule to avoid the ambiguous case.



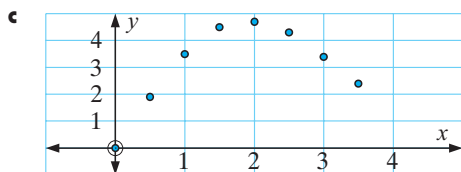
EXERCISE 13A



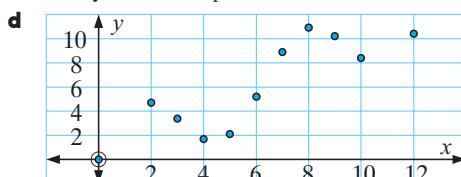
Data exhibits periodic behaviour.



Not enough information to say data is periodic. It may in fact be quadratic.

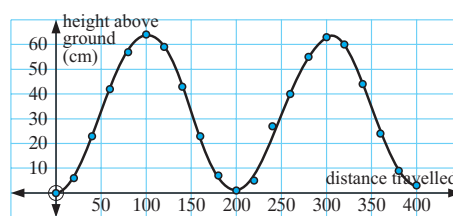


Not enough information to say data is periodic. It may in fact be quadratic.



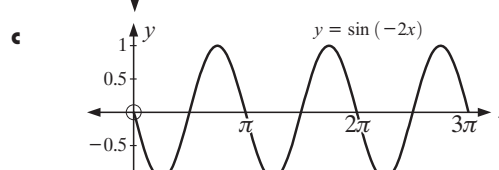
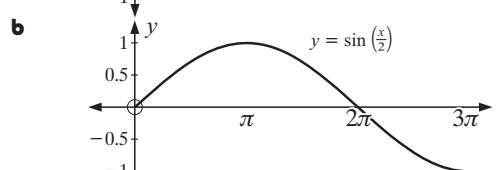
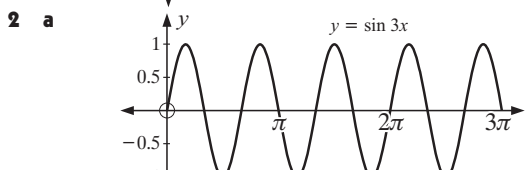
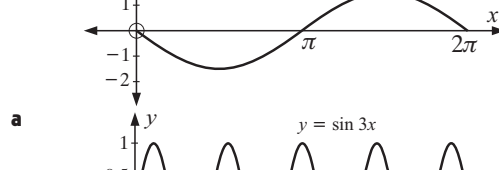
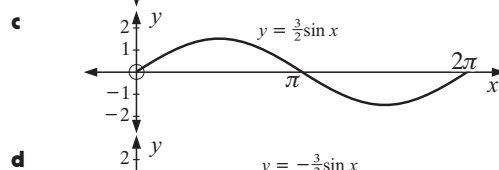
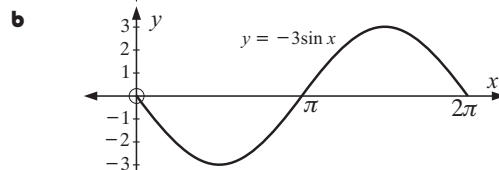
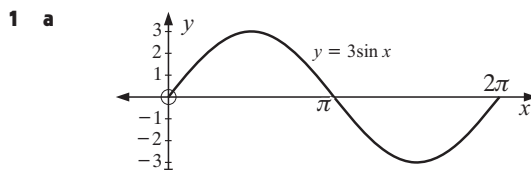
Not enough information to say data is periodic.

- 2 a



- b The data is periodic. i $y = 32$ (approx.)
 ii $\div 64$ cm iii $\div 200$ cm iv $\div 32$ cm
 c A curve can be fitted to the data.
 3 a periodic b periodic c periodic d not periodic
 e periodic f periodic

EXERCISE 13B.1



- 3 a $\frac{\pi}{2}$ b $\frac{\pi}{2}$ c 6π d $\frac{10\pi}{3}$
 4 a $B = \frac{2}{5}$ b $B = 3$ c $B = \frac{1}{6}$ d $B = \frac{\pi}{2}$ e $B = \frac{\pi}{50}$