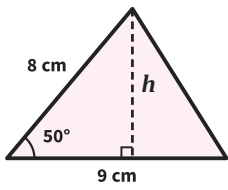


Area of a Triangle: $\frac{1}{2}ab \sin C$

ANSWERS

1 Two sides and the angle between them.

Find the area to 1 decimal place.



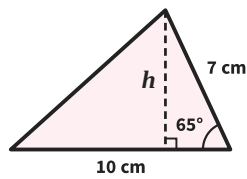
$$h = 8 \times \sin 50^\circ = 6.13$$

$$\frac{1}{2} \times 9 \times 8 \times \sin 50^\circ$$

$$\text{Area} = 27.6 \text{ cm}^2$$

2

Find the area to 1 decimal place.

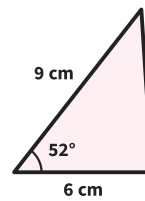


$$\frac{1}{2} \times 10 \times 7 \times \sin 65^\circ$$

$$\text{Area} = 31.7 \text{ cm}^2$$

3

Find the area to 1 decimal place.



$$\frac{1}{2} \times 6 \times 9 \times \sin 52^\circ$$

$$\text{Area} = 21.3 \text{ cm}^2$$

4

Find the area to 1 decimal place.

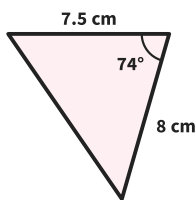


$$\frac{1}{2} \times 12 \times 4 \times \sin 110^\circ$$

$$\text{Area} = 22.6 \text{ cm}^2$$

5

Find the area to 1 decimal place.

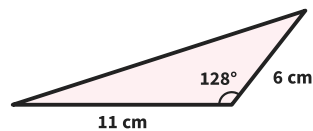


$$\frac{1}{2} \times 7.5 \times 8 \times \sin 74^\circ$$

$$\text{Area} = 28.8 \text{ cm}^2$$

6

Find the area to 1 decimal place.



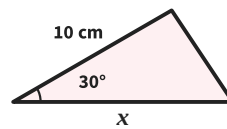
$$\frac{1}{2} \times 11 \times 6 \times \sin 128^\circ$$

$$\text{Area} = 26.0 \text{ cm}^2$$

7

Notice the change!

The area is 30 cm^2 . Find x .



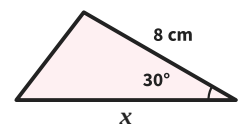
$$30 = \frac{1}{2} \times x \times 10 \times \sin 30^\circ$$

$$x = \frac{60}{10 \times \sin 30^\circ}$$

$$x = 12 \text{ cm}$$

8

The area is 20 cm^2 . Find x .



$$20 = \frac{1}{2} \times x \times 8 \times \sin 30^\circ$$

$$x = \frac{40}{8 \times \sin 30^\circ}$$

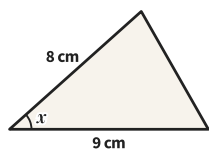
$$x = 10 \text{ cm}$$

Area of a Triangle: $\frac{1}{2}ab \sin C$ further practice

ANSWERS

9

The area of the triangle is 24 cm^2 and x is acute. Find x to 1 decimal place.



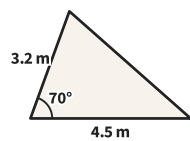
$$\frac{1}{2} \times 8 \times 9 \times \sin x = 24$$

$$\sin x = 24 \div 36 = \frac{2}{3}$$

$$\text{Answer } x = 41.8^\circ$$

10

A triangular sail has two edges of 3.2 m and 4.5 m with an angle of 70° between them. Find the area of the sail to 1 decimal place.

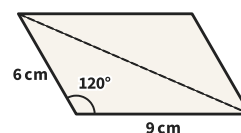


$$\frac{1}{2} \times 3.2 \times 4.5 \times \sin 70^\circ$$

$$\text{Answer } 6.8 \text{ m}^2$$

11

Find the area of the parallelogram to 1 decimal place.



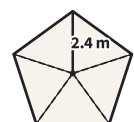
a diagonal makes two equal triangles

$$2 \times \frac{1}{2} \times 9 \times 6 \times \sin 120^\circ$$

$$\text{Answer } 46.8 \text{ cm}^2$$

12

The floor of a gazebo is a regular pentagon. Each corner is 2.4 m from the centre. Find the area of the floor to 1 decimal place.



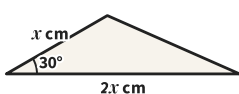
5 triangles, each with an angle of $360 \div 5 = 72^\circ$ at the centre

$$5 \times \frac{1}{2} \times 2.4 \times 2.4 \times \sin 72^\circ$$

$$\text{Answer } 13.7 \text{ m}^2$$

13

The area of the triangle is 30 cm^2 . Find x to 1 decimal place.



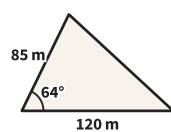
$$\frac{1}{2} \times x \times 2x \times \sin 30^\circ = 30, \text{ so } \frac{1}{2}x^2 = 30$$

$$x^2 = 60$$

$$\text{Answer } x = 7.7$$

14

A triangular field is to be sown with grass seed. One box of seed covers 400 m^2 . How many boxes are needed?



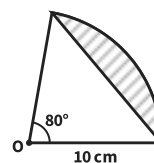
$$\text{area} = \frac{1}{2} \times 120 \times 85 \times \sin 64^\circ = 4583.8... \text{ m}^2$$

$$4583.8... \div 400 = 11.4..., \text{ so round up}$$

$$\text{Answer } 12 \text{ boxes}$$

15

O is the centre of a circle with radius 10 cm. Find the area of the shaded segment to 1 decimal place.



$$\text{sector: } 80 \div 360 \times \pi \times 10^2 = 69.81...$$

$$\text{triangle: } \frac{1}{2} \times 10 \times 10 \times \sin 80^\circ = 49.24...$$

$$\text{Answer } 20.6 \text{ cm}^2$$

16

Two triangles each have sides 7 cm and 10 cm. The angle between them is 50° in one and 130° in the other. Kai says the 130° triangle has the bigger area. Is Kai right? Explain.



$$\frac{1}{2} \times 7 \times 10 \times \sin 50^\circ = 26.8 \text{ cm}^2$$

$$\sin 130^\circ = \sin 50^\circ, \text{ so it is } 26.8 \text{ cm}^2 \text{ too}$$

$$\text{Answer } \text{No, they are equal}$$