

## 6.13 Test Geometry

## HSG.SRT.D.11

Find exact values or round decimal approximations to three significant figures.

1. As shown, right  $\triangle ABC$  has  $AC = 8$ ,  $BC = 15$ ,  $AB = 17$ ,  $m\angle C = 90^\circ$ .

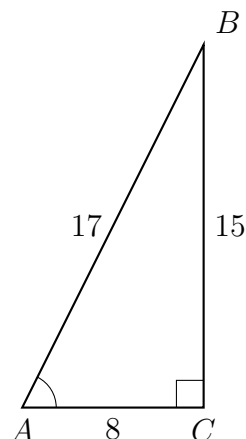
Express each trigonometric ratio as a fraction.

(a)  $\sin A =$

(b)  $\cos A =$

(c)  $\tan A =$

(d) Find  $m\angle A$ .

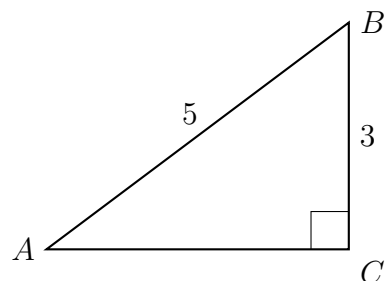


2. Right triangle  $\triangle ABC$  is shown with measures as marked.

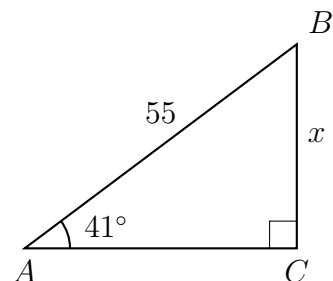
(a) Write down  $\sin A$ .

(b) Find the length of side  $AC$ .

(c) Find the angle measure of  $\angle A$ .



3. Right triangle  $ABC$  is shown with  $AB = 55$ ,  $m\angle A = 41^\circ$ . Find the value of  $BC = x$ .



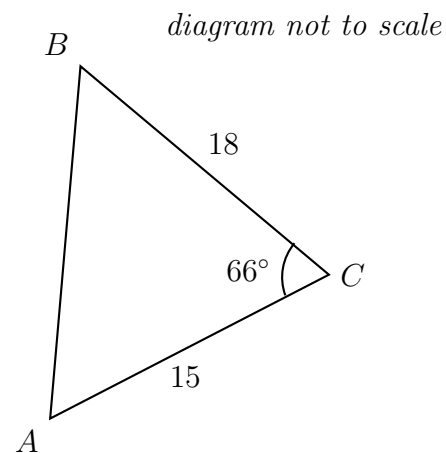
**Given formulas**

Sine rule:  $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine rule:  $c^2 = a^2 + b^2 - 2ab \cos C$ ,  $\cos C = \frac{a^2 + b^2 - c^2}{2ab}$

Area of a triangle:  $A = \frac{1}{2}ab \sin C$

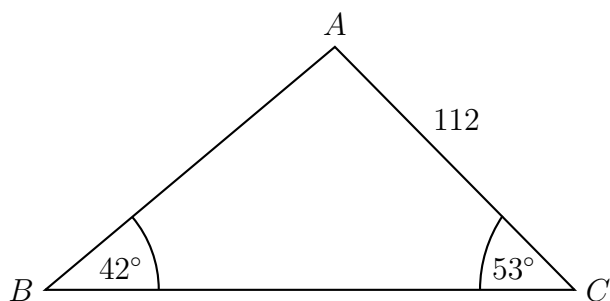
4. Find the area of the given triangle.



5. The following diagram shows triangle  $ABC$ , with  $\hat{A}BC = 42^\circ$ ,  $\hat{A}CB = 53^\circ$ , and  $AC = 112$  cm.

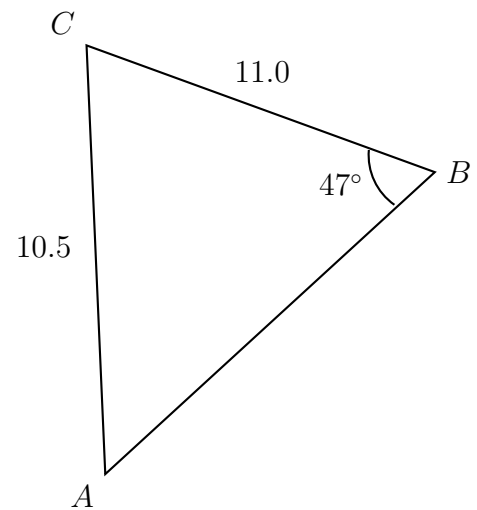
Find  $AB$ .

*diagram not to scale*



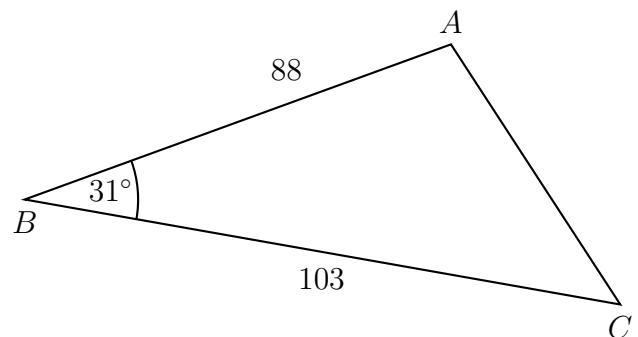
6. Triangle  $ABC$  is drawn with  $AC = 10.5$  cm,  $BC = 11.0$  cm, and  $\hat{ABC} = 47^\circ$ .  
Find  $\hat{BAC}$ .

*diagram not to scale*



7. As shown in the diagram, triangle  $ABC$  has  $\hat{ABC} = 31^\circ$ ,  $AB = 88$ , and  $BC = 103$ .  
Find  $AC$ .

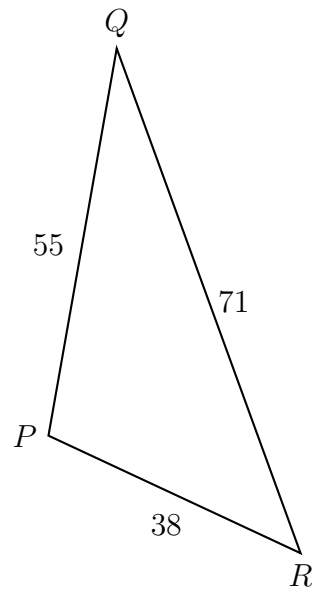
*diagram not to scale*



8. The following diagram shows triangle  $PQR$ . (*not to scale*)

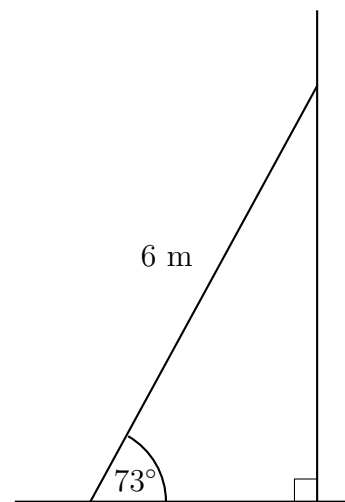
$PQ = 55$  meters,  $QR = 71$  m., and  $PR = 38$  m.

Find  $\hat{QPR}$ .



9. A ladder that is 6 meters long leans against a wall making an angle to the ground of  $73^\circ$ , as shown in the diagram. (not drawn to scale)

- (a) Find the height of the top of the ladder above the ground.



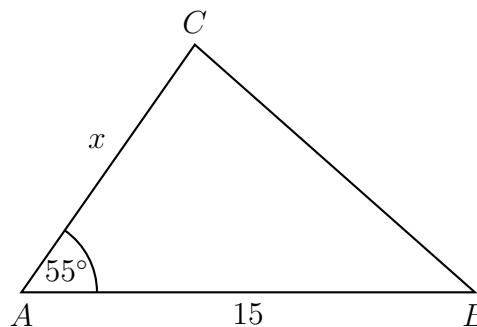
- (b) Find the distance of the bottom of the ladder to the base of the wall.

10. The following diagram shows a triangle  $ABC$ . (diagram not to scale)

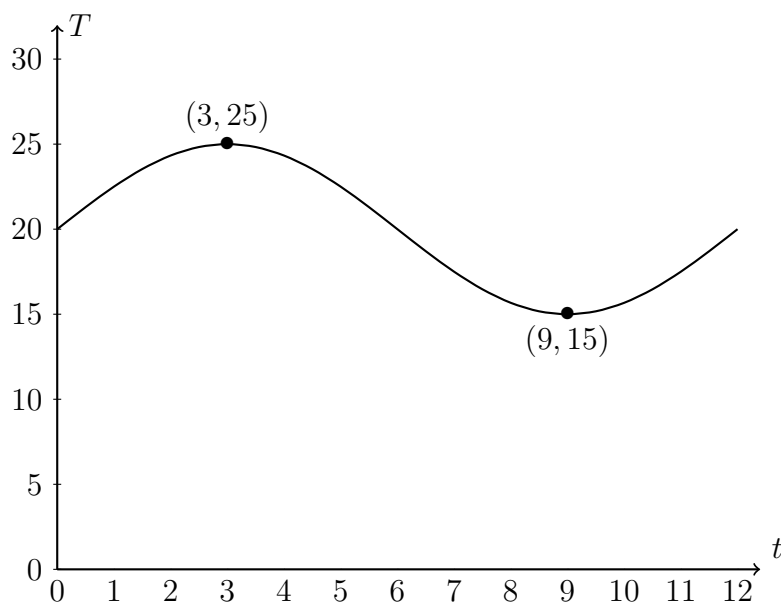
The area of the triangle  $ABC$  is  $75 \text{ cm}^2$ ,  $AB = 15 \text{ cm}$ ,  $AC = x \text{ cm}$ , and  $\hat{BAC} = 55^\circ$ .

(a) Find  $x$ .

(b) Find  $BC$ .



11. The function  $T(x) = A \sin(Bx) + D$  is used to model weather for a Caribbean island with  $x$  the time in months and  $T(x)$  the daily high temperature in degrees Celsius.



The modeled high and low temperatures are  $25^\circ$  in the third month and  $15^\circ$  in the ninth month, respectively.

(a) Find the value of the parameter  $D$ .

(b) Find the value of the parameter  $A$ .