Right Triangles and the Sine Ratio

MATHPOWER™ *Nine*, pp. 239–241

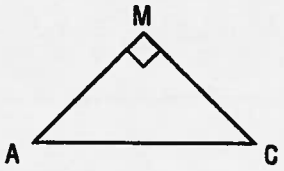
A second example of a **trigonometric ratio** is the **sine ratio**.

In a right triangle, the sine ratio of an acute angle is defined as

$$\frac{\text{side opposite the angle}}{\text{hypotenuse}}.$$

In $\triangle MAC$, the sine ratio of $\angle A$ is $\frac{MC}{AC}$.

In $\triangle MAC$, the sine ratio of $\angle C$ is $\frac{AM}{AC}$.



Use a calculator to find the sine of each angle, to three decimal places.

1. 62° 0.883
2. 21° 0.358
3. 85° 0.996
4. 45° 0.707
5. 5° 0.087
6. 70° 0.940

Find $\angle B$, to the nearest degree.

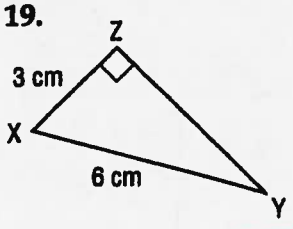
7. sin B = 0.990 82
8. sin B = 0.208 12
9. sin B = 0.500 30
10. sin B = 1.000 90
11. sin B = 0.345 20
12. sin B = 0.755 49

Find $\angle G$, to the nearest degree.

13. sin G = $\frac{1}{2}$ 30
14. sin G = $\frac{2}{5}$ 24
15. sin G = $\frac{4}{5}$ 53
16. sin G = $\frac{5}{8}$ 39
17. sin G = $\frac{1}{11}$ 5
18. sin G = $\frac{8}{9}$ 63

Calculate sin Y. Then, find $\angle Y$, to the nearest degree.

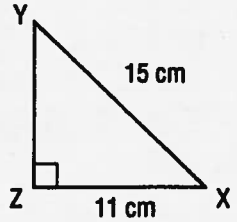
19.



Sin Y = 0.50 ~~50~~

∠Y = 30

20.

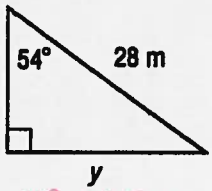


Sin y = 0.733

∠Y = 47°

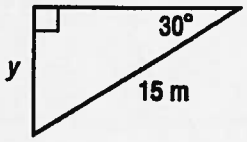
Calculate y, to the nearest hundredth of a metre.

21.



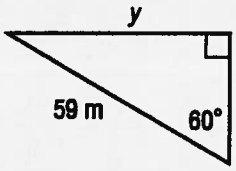
22.5m

22.



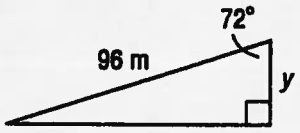
7.50m

23.



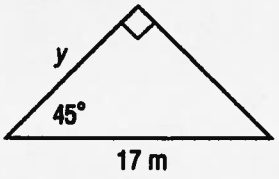
51.09m

24.



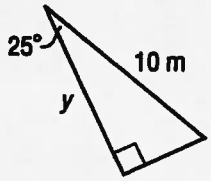
29.66m

25.



12.02m

26.



9.06m

27. $\triangle KLM$ is an equilateral triangle. The length of each side of the triangle is 15 cm. Find the height of the triangle, to the nearest tenth of a centimetre.

13.0 cm