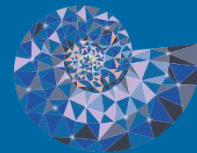


Solving triangle problems



Gold

Two people are having a race. One starts at A, and another starts at B, which is 100 m North of A. The person at A leaves on a bearing of 60° running at a constant speed of 4 m/s, and the person at B leaves on a bearing of 150° running at a constant speed of 7 m/s.

- a Calculate, to 2 significant figures, how far each travels to this point of intersection.
- b Calculate, to 2 significant figures, how far East, from their starting positions, their point of intersection is.
- c Based on the running speeds given, which person wins the race? If the loser was able to run 0.05 m/s faster, would they then win the race?

Silver

A triangle has two sides of length $x + 2$, an angle of 150° between them and has area 1 cm^2 .

- a Show that x satisfies the equation $x^2 + 4x = 0$.
- b Hence find the value of x .

Bronze

A triangle is formed with vertices A, B and C. Given the lengths

$$AB = 4, AC = 3 \text{ and } BC = 5$$

find $\angle ABC$ to the nearest degree.