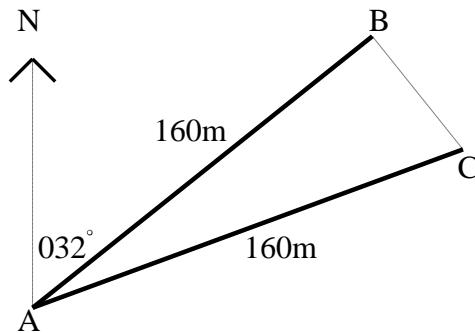1.   Solve these equations for $0 \le x \le 360$.

   (a) $5\sin x° - 2 = 0$ (b) $3\cos x° + 1 = 0$ (c) $4\tan x° - 9 = 0$
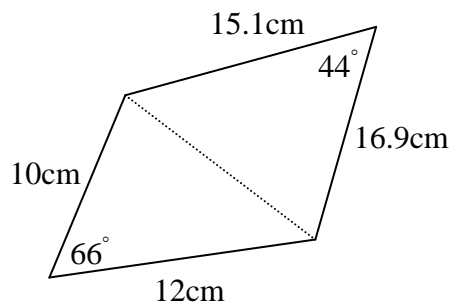
2.   Jane is taking part in an orienteering contest.

   She should have run 160m from A to B on a bearing of $032°$.
   However, she actually ran 160m from A to C on a bearing of $052°$.

   (a)   Write down the size of angle BAC
   (b)   Calculate the length of BC.
   (c)   What is the bearing from C to B?

3.   Calculate the area of the quadrilateral sketched below.

4.   The depth of water in a harbour is given by
$$d = 12 + 10\cos(30t)°,$$
   where d is the depth in metres and t is the number of hours after midnight on Sunday.

   (a)   Write down the greatest and least depths.
   (b)   Calculate the depth at 5 a.m. on Monday.
   (c)   At what time on Monday morning is the depth first equal to 7 metres?
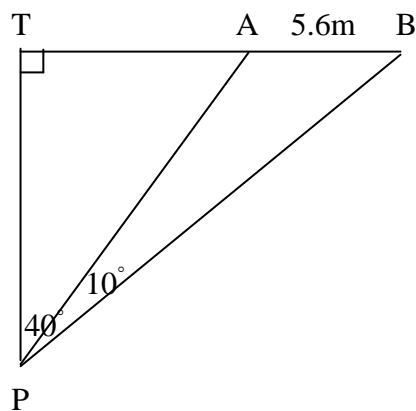
5.   Two fridge magnets are mathematically similar.

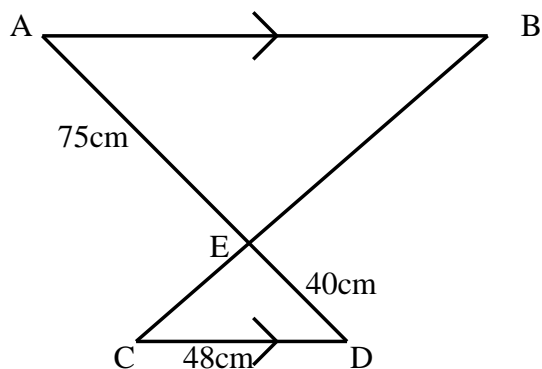   One magnet is 4cm long and the other is 10cm long

   The area of the smaller magnet is 18 square centimeters.

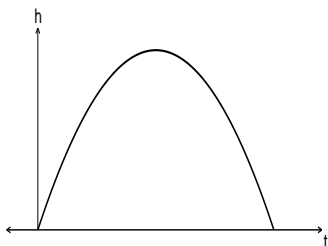   Calculate the area of the larger magnet.

6. Calculate the length of TP in the diagram below, in which AB = 5.6 metres.

7. Find the length of AB in the diagram below.

8. The diagram below shows the path of a rocket which is fired into the air.
The height h metres, of the rocket after t seconds is given by $h(t) = -2t(t-14)$.

   (a)   For how many seconds is the rocket in flight?
   (b)   What is the maximum height reached by the rocket?

9. Solve these quadratic equations by factorising:

   (a) $6x - x^2 = 0$ (b) $x^2 - 3x + 2 = 0$ (c) $2x^2 + x - 1 = 0$

10. Find the roots of these quadratic equations correct to 3 significant figures:

   (a) $x^2 + 4x + 1 = 0$ (b) $2x^2 - 4x + 1 = 0$

11. Solve:

   (a) $5(2y-1) + 4 \le 29$ (b) $\dfrac{y}{2} + \dfrac{(2y+1)}{3} = 5$