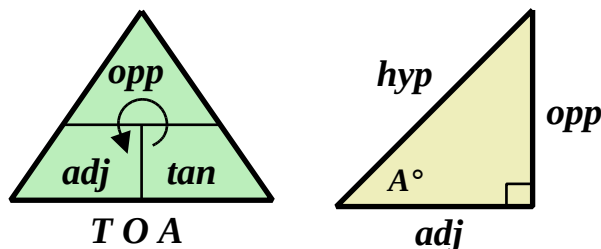


Lesson 6

Coordinate Geometry : Year 9

6.1 Revision



$$\tan A^\circ = \frac{\text{opp}}{\text{adj}} \quad \text{which gives} \quad A^\circ = \arctan\left(\frac{\text{opp}}{\text{adj}}\right)$$

$$\text{opp} = \text{adj} \times \tan A^\circ$$

$$\text{adj} = \frac{\text{opp}}{\tan A^\circ}$$

Labelling

- First** *hyp* Look for the *right-angle*.
The *hypotenuse* does not touch the *right-angle*.
- Second** *opp* Look for the *angle-of-focus*.
The *opposite* does not touch the *angle-of-focus*.
- Third** *adj* The *adjacent* touches both the *right-angle* and the *angle-of-focus*.

Theorem of Pythagoras

$$\begin{aligned} \text{hyp}^2 &= \text{opp}^2 + \text{adj}^2 \\ \text{opp}^2 &= \text{hyp}^2 - \text{adj}^2 & \text{adj}^2 &= \text{hyp}^2 - \text{opp}^2 \end{aligned}$$

Question 1

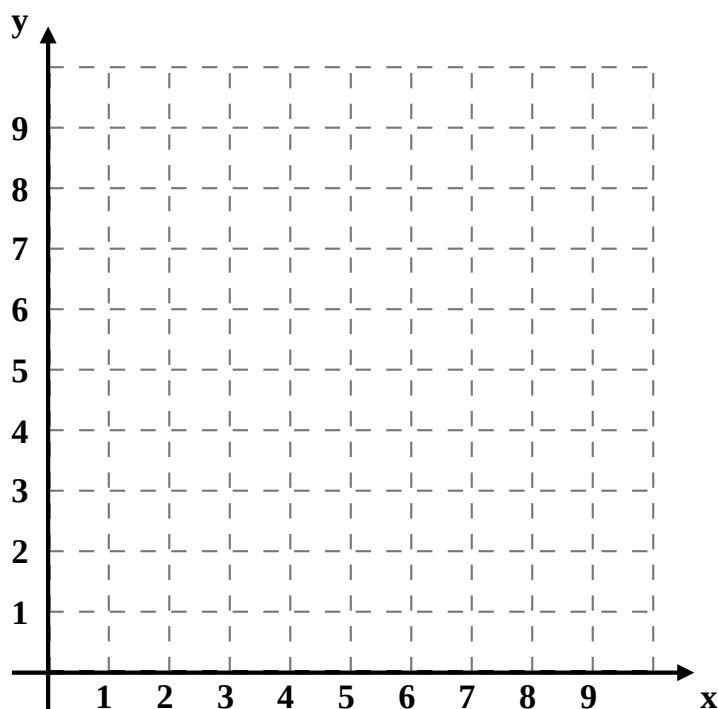
On the grid below each square represents 1 km by 1 km.

Buried treasure is at (2, 1).

(i) Mark the location of the buried treasure with an X .

A man is at (9, 6).

(ii) Mark the location of the man with an M .



(iii) Find the distance between the treasure, X , and the man, M .
Give your answer correct to two decimal places.

HINT : Draw a line between X and M .
Form a *right-angled* triangle.
Use the theorem of Pythagoras.

Question 2

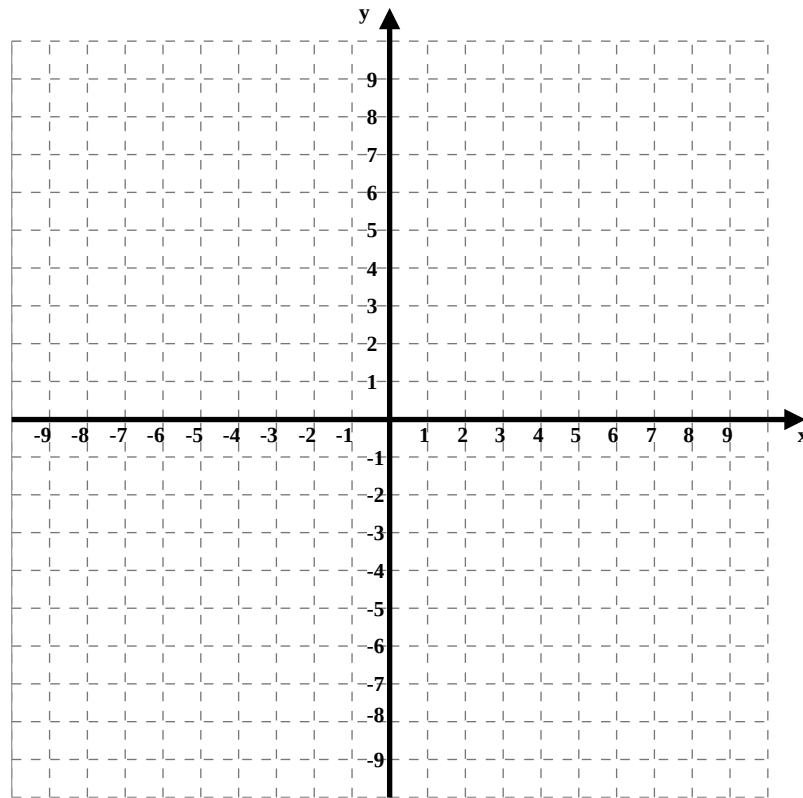
On the grid below each square represents 1 mm by 1 mm.

An ant is at the point $(-6, -5)$.

(i) Mark the location of the ant with an A .

An ant-eater is at $(3, 7)$.

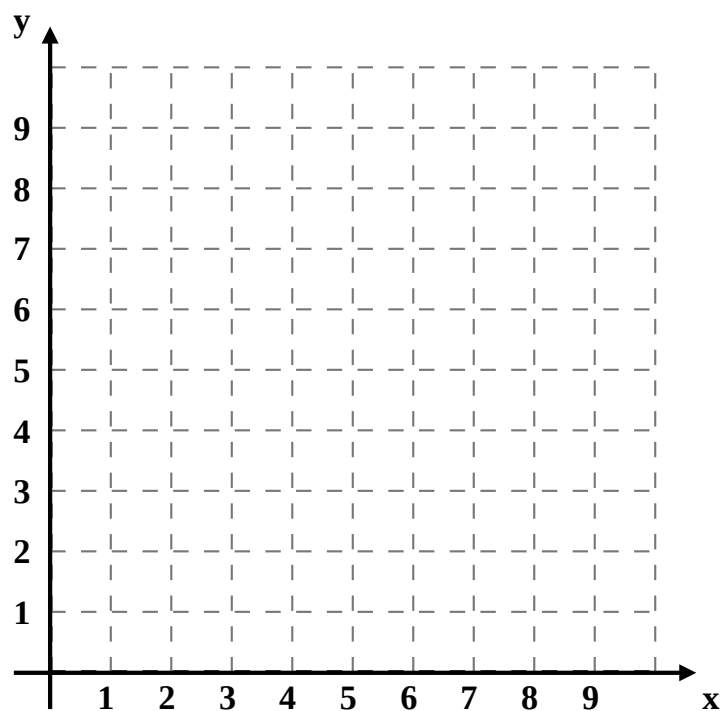
(ii) Mark the location of the ant-eater with an E .



(iii) Find the distance between the ant, A , and the ant-eater, E .

Question 3

On the grid below plot the triangle with vertices (1, 5), (6, 4) and (8, 9).



- (i) Find the average (mean) of the x parts of the coordinates.

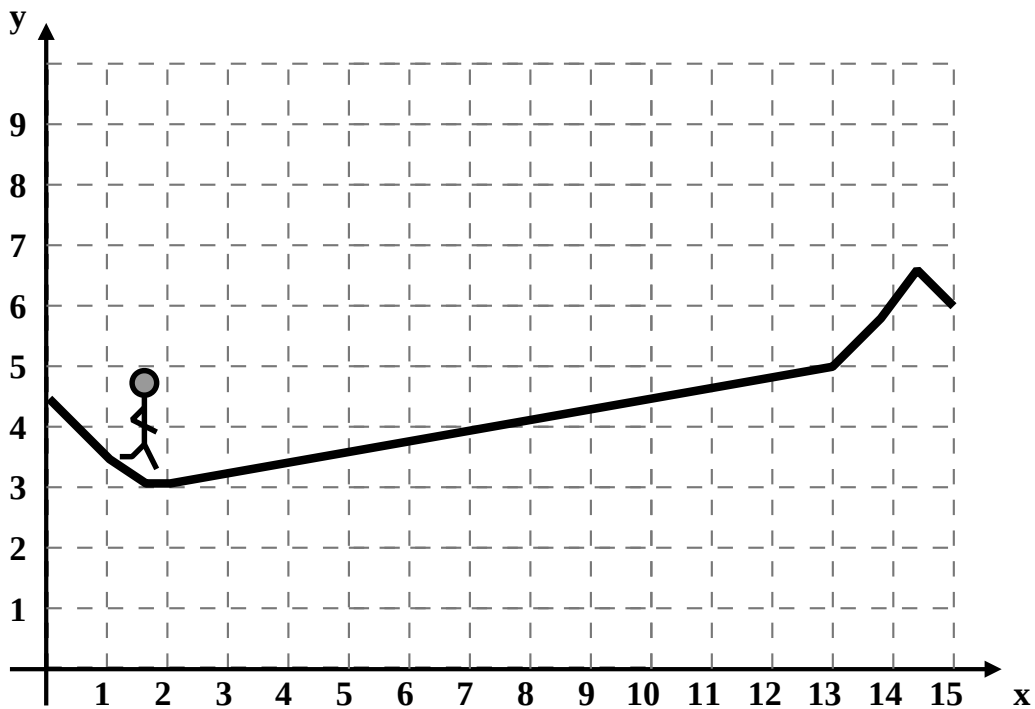
$$\bar{x} =$$

- (ii) Find the average (mean) of the y parts of the coordinates.

$$\bar{y} =$$

- (iii) Plot the point $(\bar{x}, \bar{y})$.

Question 4



This question is about working out the gradient between $(2, 3)$ and $(13, 5)$.

- (i) Plot a suitable triangle on the grid.
- (ii) For your triangle, what is Δy ?
- (iii) For your triangle, what is Δx ?
- (iv) Find the gradient between the two points by use of the formula;

$$m = \frac{\Delta y}{\Delta x}$$

Give your answer to three decimal places.

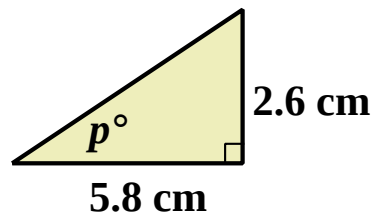
- (v) Find the angle of the slope by use of the formula;

$$a = \arctan(m)$$

Give your answer to one decimal place.

- (vi) Mark this angle on your triangle on the grid.

Question 5

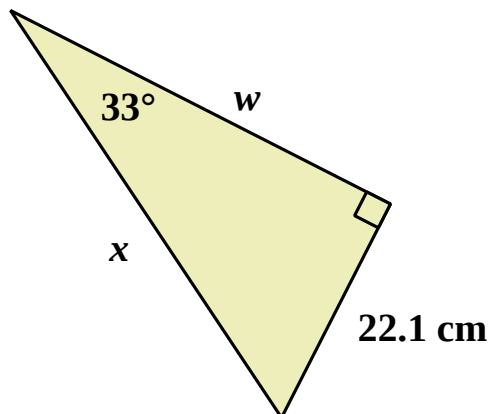


(i) Label the triangle's sides, *hyp*, *opp* and *adj*.

(ii) Calculate angle p by using the formula;

$$p = \arctan\left(\frac{opp}{adj}\right)$$

Question 6



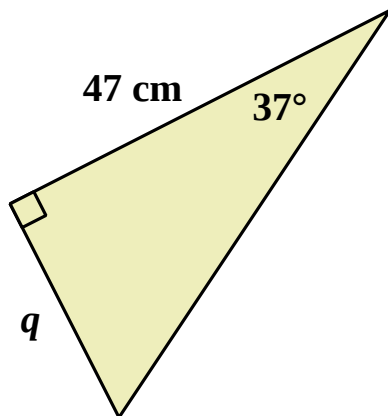
(i) Label the triangle sides *hyp*, *opp*, and *adj*.

(ii) Calculate w using the formula,

$$adj = \frac{opp}{\tan A^\circ}$$

(iii) Calculate x by using Pythagoras' theorem.

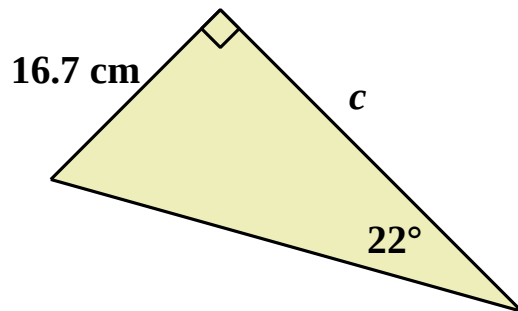
Question 7



- (i) Label the triangle sides *hyp*, *opp*, and *adj*.
- (ii) Calculate q using the correct formula,

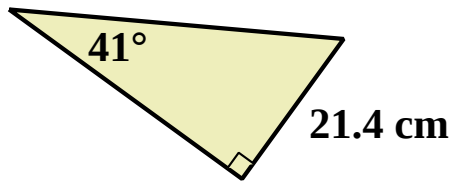
$$\text{EITHER } opp = adj \times \tan A^\circ \quad \text{OR} \quad adj = \frac{opp}{\tan A^\circ}$$

Question 8



Calculate c .

Question 9



Find the perimeter of the triangle.

Question 10

This question is about plotting a graph of the $\tan$ function.

A°	95°	100°	105°	110°	115°	120°	125°	130°	135°
$\tan A^\circ$									

A°	140°	145°	150°	155°	160°	165°	170°	175°	180°
$\tan A^\circ$									

