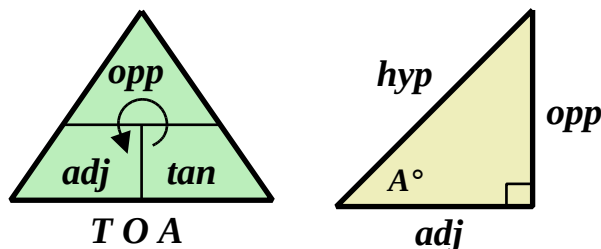


Lesson 8

Coordinate Geometry : Year 9

8.1 Test



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

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

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

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

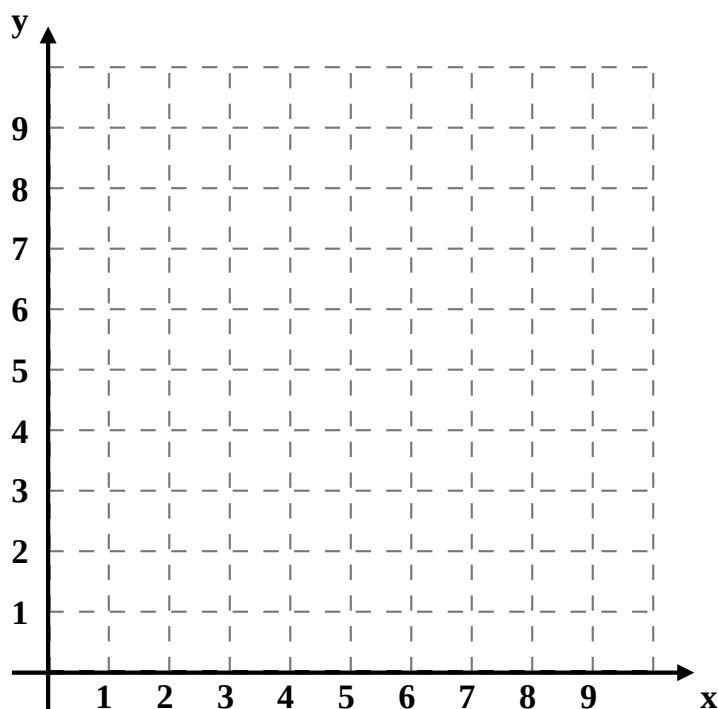
The grid below is a map of a desert and each square represents 1 km by 1 km.

A water hole is at (3, 8).

(i) Mark the location of the water hole with a *W*.

A camel is at (8, 1).

(ii) Mark the location of the camel with a *C*.



(iii) Find the distance between the water hole, *W*, and the camel, *C*.
Give your answer correct to two decimal places.

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

Question 2

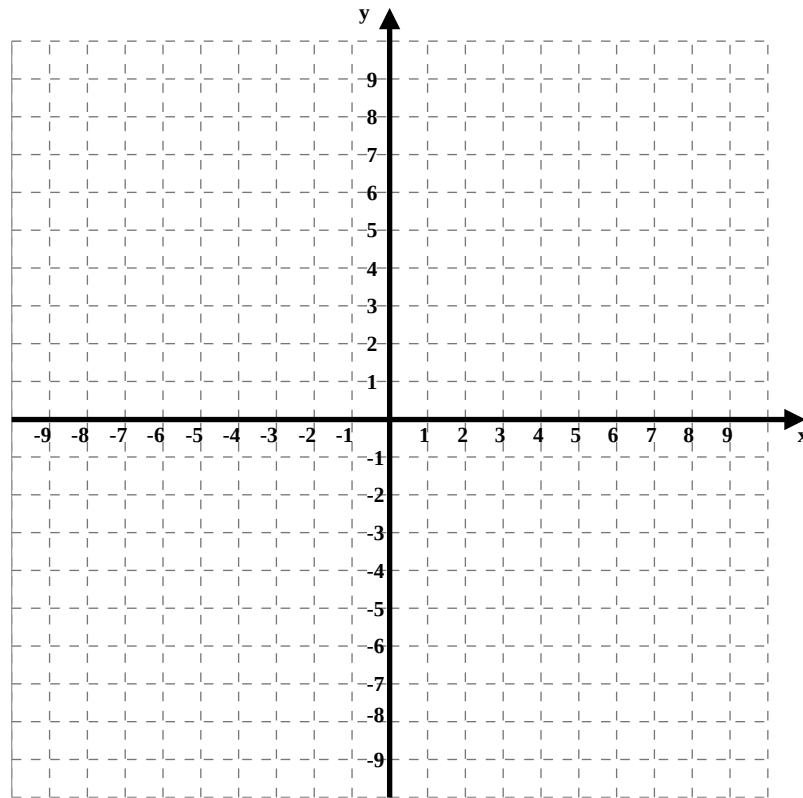
On the grid below each square represents 1 mm by 1 mm.

A spider is at the point $(-7, 8)$.

(i) Mark the location of the spider with an S .

An fly is at $(-2, -5)$.

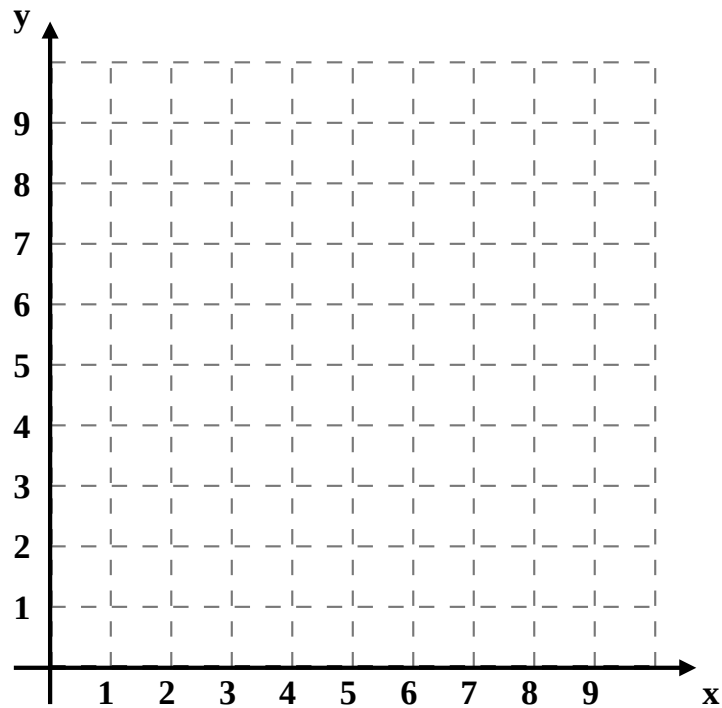
(ii) Mark the location of the fly with an F .



(iii) Find the distance between the spider, S , and the fly, F .

Question 3

On the grid below plot the triangle with vertices (0, 4), (8, 7) and (7, 1).



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

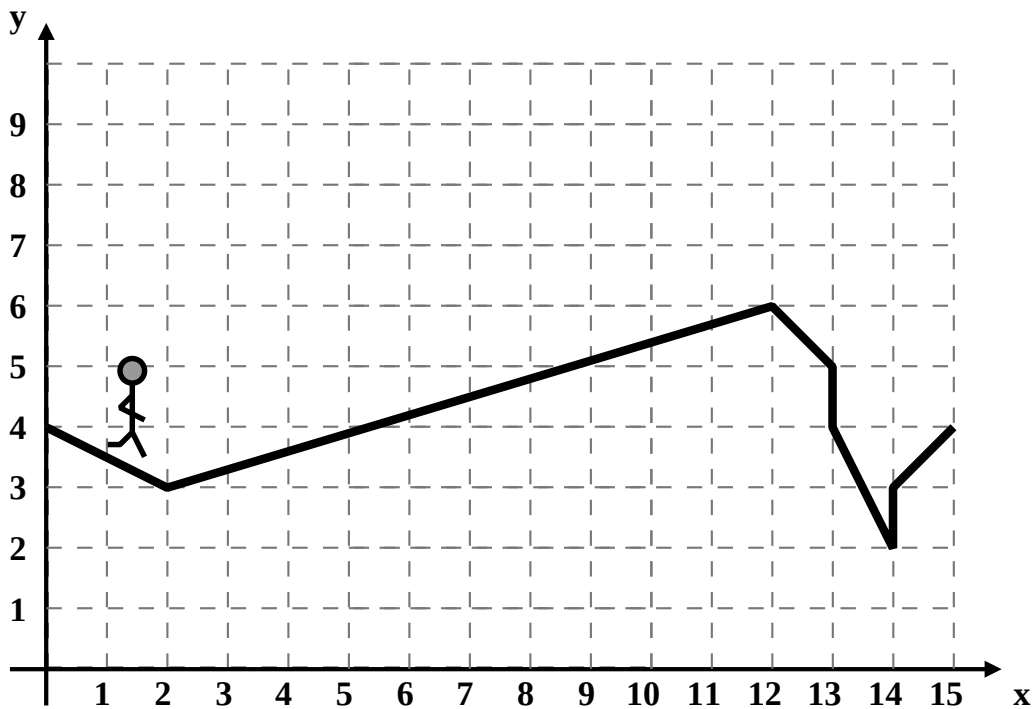
$$\bar{x} =$$

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

$$\bar{y} =$$

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

Question 4



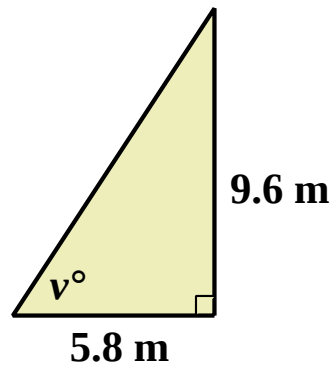
This question is about working out the gradient between (2, 3) and (12, 6).

- (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;
$$m = \frac{\Delta y}{\Delta x}$$
- (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.

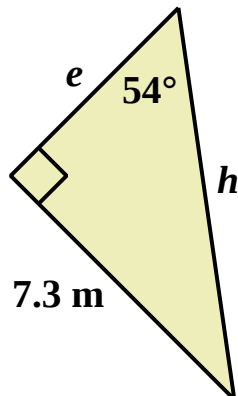
Question 5



- (i) Label the triangle's sides, *hyp*, *opp* and *adj*.
- (ii) Calculate angle v by using the formula;

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

Question 6

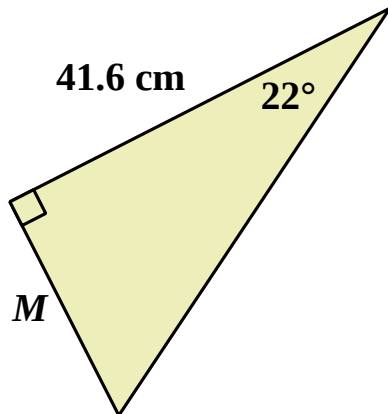


- (i) Label the triangle sides *hyp*, *opp*, and *adj*.
- (ii) Calculate *e* using the formula,

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

- (iii) Calculate *h* by using Pythagoras' theorem.

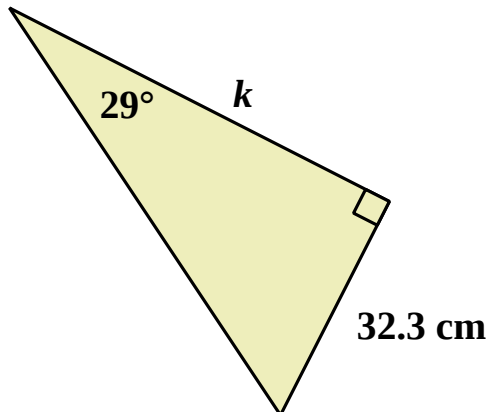
Question 7



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

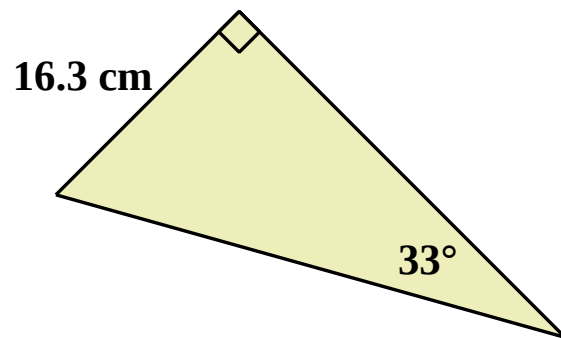
$$\text{EITHER } opp = adj \times \tan A^\circ \quad \text{OR} \quad adj = \frac{opp}{\tan A^\circ}$$

Question 8



Calculate k .

Question 9



Find the perimeter of the triangle.

Question 10

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

A°	275°	280°	285°	290°	295°	300°	305°	310°	315°
$\tan A^\circ$									

A°	320°	325°	330°	335°	340°	345°	350°	355°	360°
$\tan A^\circ$									

