Question 1 **(Suggested maximum time: 10 minutes)**

The songs on Gavin's phone are shown in the table below.

Singer	Number of songs
Usher	
Pharrell	15
Ed Sheeran	4
Hozier	3

Gavin has **30 songs** on his phone, in total.

(a) Find how many songs by Usher are on Gavin's phone.

Gavin plays a song at random on his phone.

(b) Find the **probability** that this song is by Hozier.

Answer = $\frac{\quad}{\quad}$

(c) Find the **probability** that this song is by Ed Sheeran **or** Pharrell.

Answer = $\frac{\quad}{\quad}$

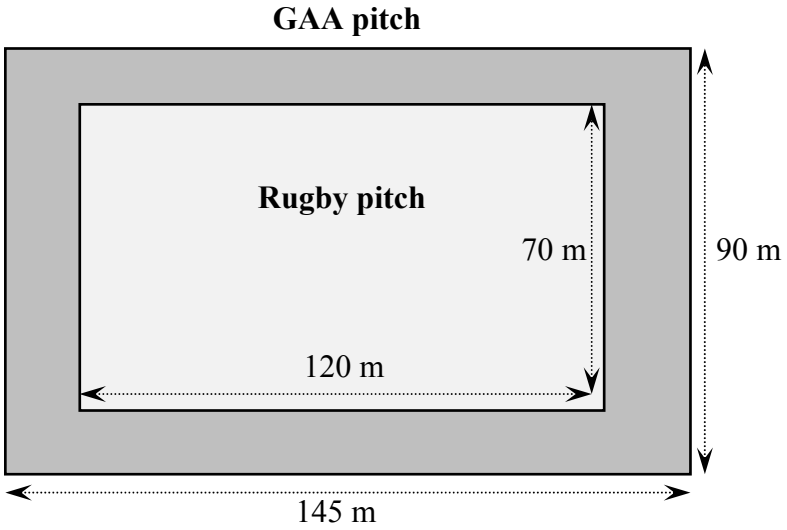
Gavin plays a song by Ed Sheeran, and then plays a song by Hozier.

(d) In **how many different ways** can he do this?
Remember that he has 4 songs by Ed Sheeran and 3 songs by Hozier.

Question 2 **(Suggested maximum time: 5 minutes)**

When the Irish rugby team played in Croke Park, a rugby pitch was made inside the GAA pitch.

The GAA pitch was 145 m long and 90 m wide.
The rugby pitch was 120 m long and 70 m wide.



(a) Find the **area** of each pitch.

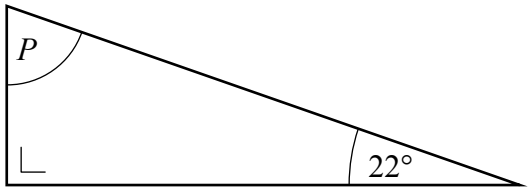
Area of GAA pitch:

Area of rugby pitch:

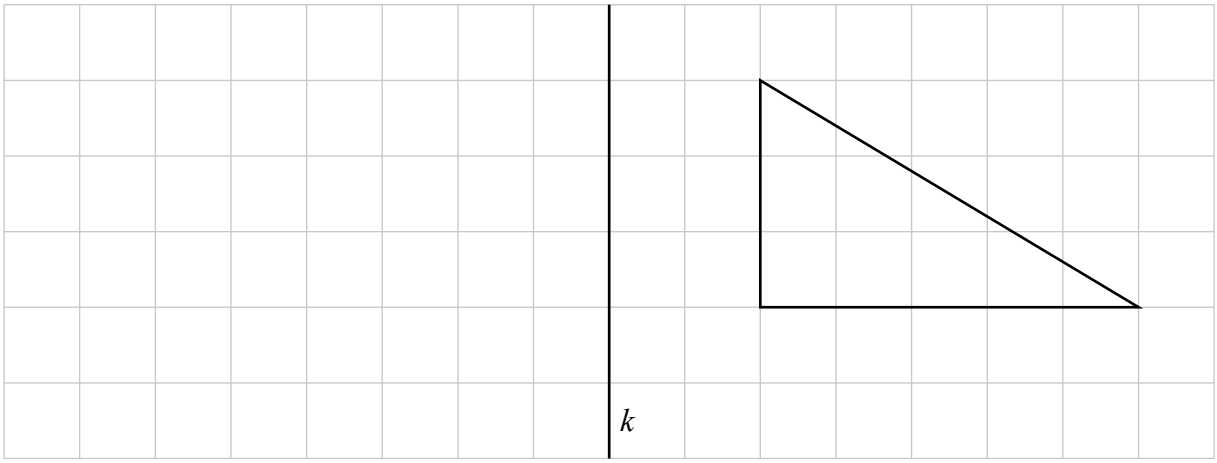
(b) What area of the GAA pitch was **not** used for rugby?

Question 3 **(Suggested maximum time: 10 minutes)**

(a) **Calculate** the size of the angle marked P in the right-angled triangle below.

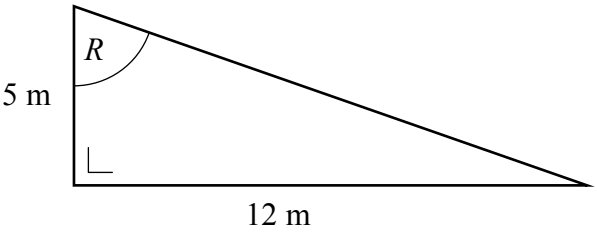


(b) Draw the image of the triangle below under **axial symmetry** in the line k.



(c) **(i)** Write down the length of the side **opposite** the angle R in the triangle shown.

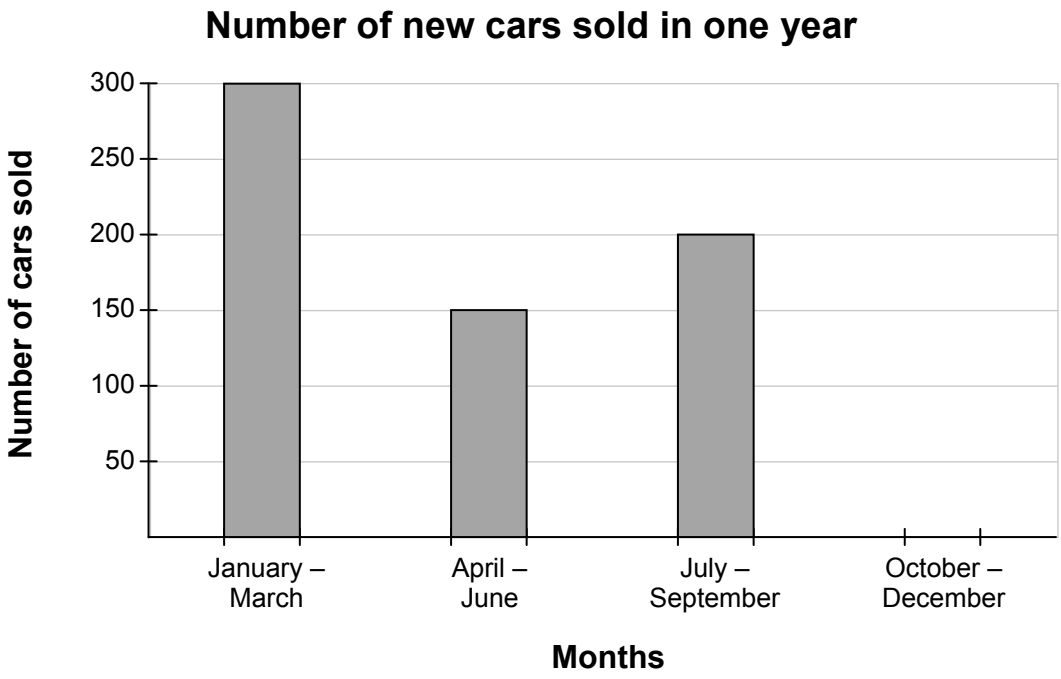
Opposite = ☐ m



(ii) Use the Theorem of **Pythagoras** to find the length of the **hypotenuse** of this triangle.

Question 4 **(Suggested maximum time: 15 minutes)**

The diagram shows the number of new cars sold in a garage in one year.



(a) How many new cars were sold in the months **April – June**?

In the months **October – December**, there were exactly **half** as many new cars sold as in April – June.

(b) How many new cars were sold in **October – December**?

(c) **Draw** the bar for **October – December** on the diagram above.

(d) When were the **most** new cars sold? Put a tick (✓) in the correct box.

January – March	April – June	July – September	October – December
❒	❒	❒	❒

(e) Calculate the **total** number of new cars sold in the year.

(f) Calculate the **average** (mean) number of new cars sold **per month** in the year.
Give your answer correct to one decimal place.

Question 5 **(Suggested maximum time: 5 minutes)**

(a) One of the following is a description of the **mode** of a list.
Put a tick (✓) in the correct box to show which one.

Description	Put a tick (✓) in **one** box
The **middle** value in an ordered list	
The **biggest** value in a list	
The **most common** value in a list	

(b) Write out a list that has a mode, and write down the mode of your list.

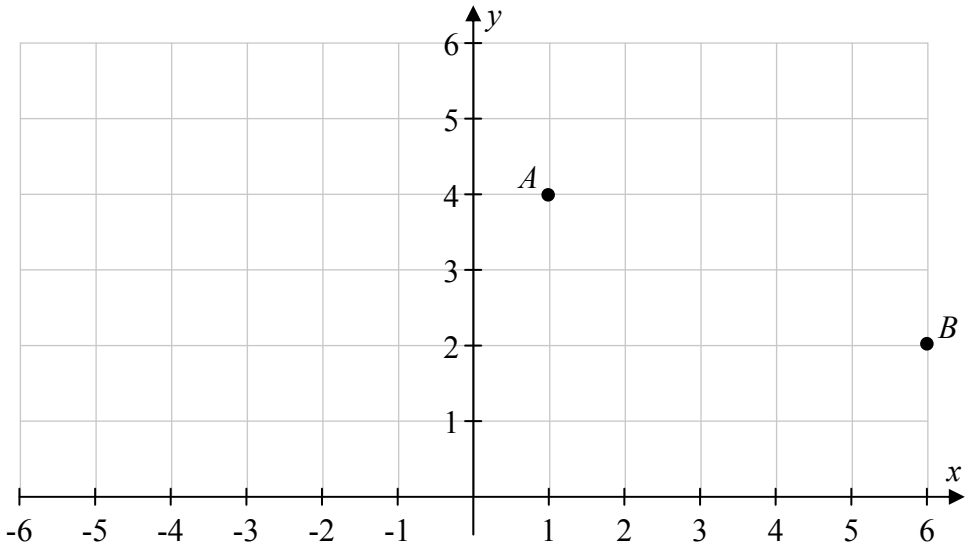
List:

Mode:

page	running

Question 6 **(Suggested maximum time: 10 minutes)**

The points A and B are shown on the co-ordinate grid below.



(a) Write down the co-ordinates of the point A.

$A =$ (,)

B is the point $(6, 2)$.

(b) Find the **length** of $[AB]$. Give your answer in the form $\sqrt{x}$, where $x \in \mathbb{N}$.

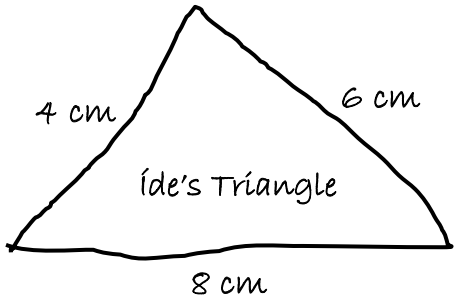
C is the point $(-4, 1)$.

(c) **Plot** the point C on the co-ordinate grid above.
Label the point C clearly.

(d) Find the **slope** of the line CA.

Question 7 **(Suggested maximum time: 10 minutes)**

Íde draws the sketch of the triangle shown. The lengths of the sides are 4 cm, 6 cm, and 8 cm.



(a) What type of triangle has Íde sketched? Put a tick (✓) in the correct box.

Type of Triangle	Put a tick (✓) in **one** box
Isosceles	
Scalene	
Equilateral	

(b) **Construct** Íde's triangle in the box below. Show your construction lines clearly.

(c) Measure the biggest angle in your triangle from part **(b)**.
Write the size of this angle into the box below, correct to the nearest degree.

Size of biggest angle = ☐ °

page | running

Question 8 **(Suggested maximum time: 10 minutes)**

The marks that 9 students got on a test are:

23	16	13	30	26	15	18	23	20

(a) Write out all 9 marks **in order**, from the smallest to the biggest.

Answer = | | | | | | | | | |

(b) Write down the **median** mark. Median mark= |

(c) Find the **range** of the marks.

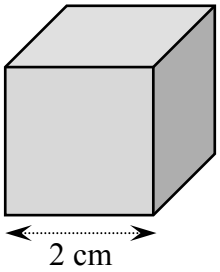
The teacher **adds 2 marks** onto each student's mark.

(d) Find the **new range** of the marks.

Question 9 **(Suggested maximum time: 5 minutes)**

A cube has sides of length 2 cm.

(a) Find the **volume** of the cube.

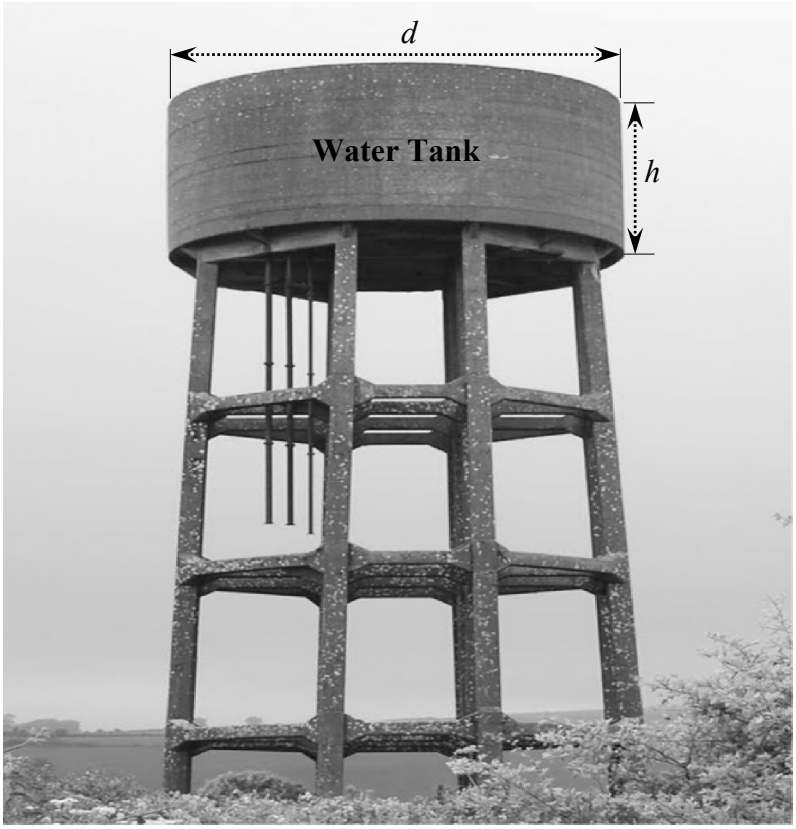


(b) How many **faces** does a cube have?

(c) Draw a **net** of the cube, as accurately as you can.

Question 10 **(Suggested maximum time: 15 minutes)**

The photograph shows a water tank in the shape of a cylinder.
The height (h) and diameter (d) of the tank are marked.



Source: www.watertowersofireland.com. Altered.

(a) Using your **ruler**, find the height and the diameter of the tank in the photograph.
Give each answer correct to the nearest centimetre.

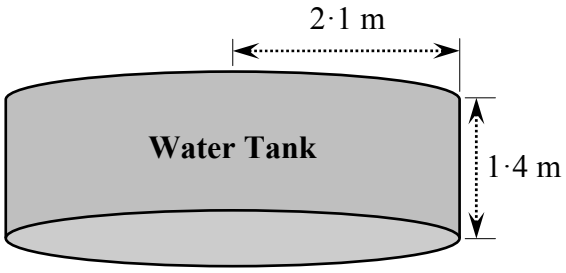
$h =$ ☐ cm $\qquad$ $d =$ ☐ cm

Jenny thinks that the **actual height** of the water tank is 1 m.

(b) Use Jenny's value to find the **actual diameter** and the **actual radius** of the tank.
Give each answer in metres.

Actual diameter = $\qquad$ Actual radius =

Colm finds other values for the actual height and the actual radius of the tank.
They are shown in the diagram below.



(c) Use Colm's values to find the **volume** of the tank.
Give your answer in m^3, correct to one decimal place.

Question 11 **(Suggested maximum time: 5 minutes)**

(a) Use your calculator to find the value of each of the following.
Give each answer correct to two decimal places.

(i) sin 20° = ☐ and cos 70° = ☐

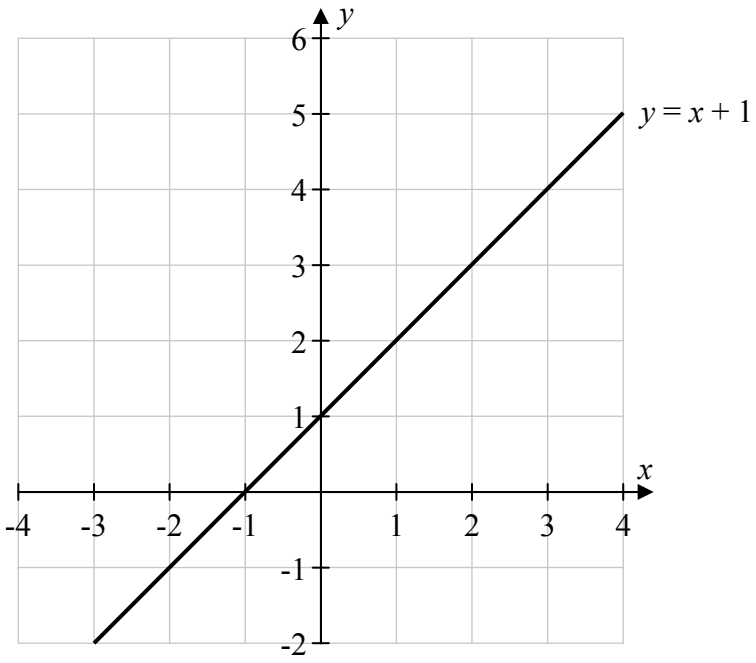
(ii) sin 50° = ☐ and cos 40° = ☐

(b) Hence, or otherwise, fill in the correct angle below.

sin 10° = cos ☐°

Question 12 **(Suggested maximum time: 10 minutes)**

The graph of the line $y = x + 1$ is shown on the co-ordinate grid below.



(a) Write down the co-ordinates of the point where this line crosses the ***y*-axis**. (,)

(b) Write down the co-ordinates of the point where the line $y = x + 4$ crosses the ***y*-axis**.

Answer: (,)

(c) Hence, or otherwise, **draw** the graph of the line $y = x + 4$ on the co-ordinate grid above.