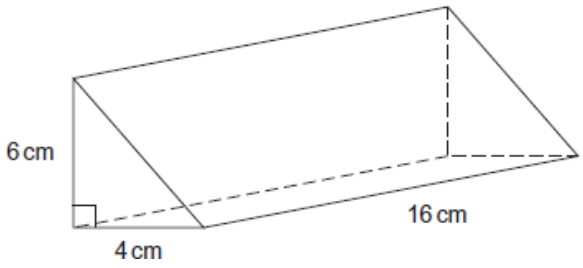
Q1.

Calculate the volume of the prism.
State the units of your answer.



(Total 4 marks)

Q2.

Solve $\frac{4x-1}{7} = 2x$

(Total 3 marks)

Q3.

The population of England in 2013 is approximately 53 million. It is predicted that:

- the population in 2018 will be 4% more than the population in 2013
- and the population in 2023 will be 4% more than the population in 2018.

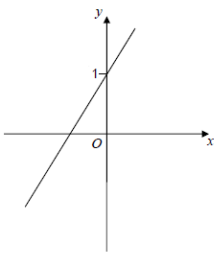
Work out the predicted population of England in 2023.

(Total 3 marks)

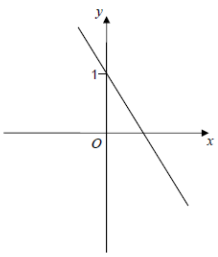
Q4.

One of these graphs is a sketch of $y = 1 - 2x$. Which one? Circle the correct letter.

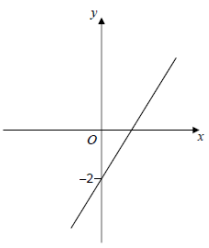
A



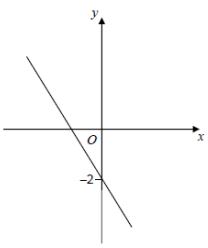
B



C



D



(Total 1 mark)

Q5.

(a) The length of a pipe is 6 metres to the nearest metre.

Complete the error interval for the length of the pipe.

Answer _____ m ≤ length < _____ m (2)

(b) The length of a different pipe is 4 metres to the nearest metre.

Olly says,

"The total length of the two pipes is 11 metres to the nearest metre."

Give an example to show that he could be correct.

(2)

(Total 4 marks)

Q6.

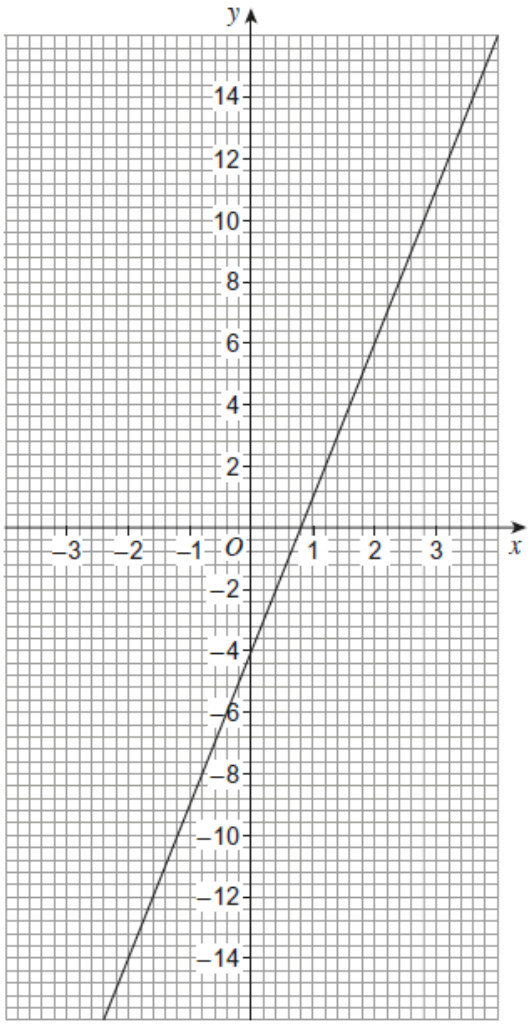
A price of a new car is usually £12 500.
The price is reduced to £11 750.

Work out the percentage reduction.

(Total 3 marks)

Q7.

Here is a straight-line graph.



(a) Use the graph to work out the value of x

when y = 8

(1)

(b) Work out the equation of the line.

(3)

(Total 4 marks)

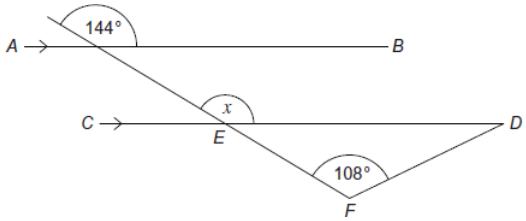
Q8.

Rearrange the formula $v^2 = u^2 + 2as$ to make u the subject.

(Total 3 marks)

Q9.

In this diagram, AB is parallel to CD.



(a) Circle the correct statement for the angles shown on the diagram.

Angle x is equal to 144° because they are alternate angles.

Angle x is equal to 144° because they are vertically opposite angles.

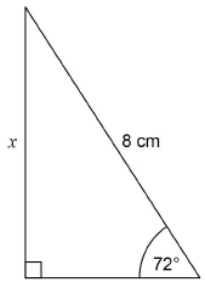
Angle x is equal to 144° because they are corresponding angles.

(1)

(b) Show that triangle EDF is isosceles. You must show your working including all geometrical reasons.(3)

Q10.

Use trigonometry to work out the length x.



(Total 2 marks)

Q11.

In an office there are twice as many females as males.

$\frac{1}{4}$ of the females wear glasses.

$\frac{3}{8}$ of the males wear glasses.

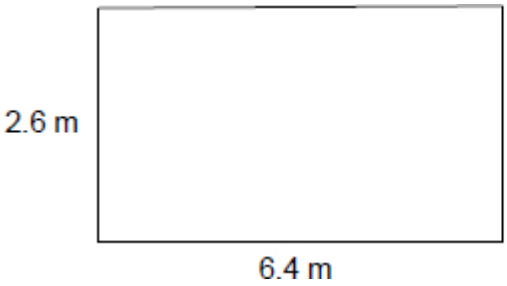
84 people in the office wear glasses.

Work out the number of people in the office.

(Total 4 marks)

Q12.

The dimensions of a rectangular floor are to the nearest 0.1 metres.



A force of 345 Newtons is applied to the floor.

The force is to the nearest 5 Newtons.

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

Work out the upper bound of the pressure.

Give your answer to 4 significant figures.

You must show your working.

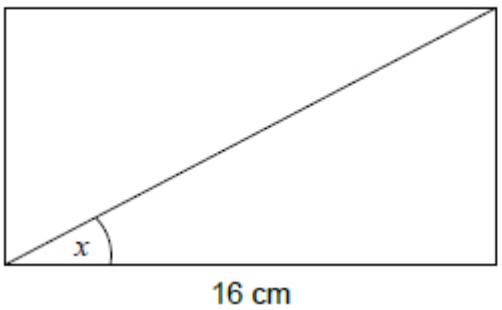
(Total 5 marks)

Q13.

The area of the rectangle is 68 cm^2

Work out the size of angle x.

(Total 3 marks)



Q14.

The speed of the International Space Station is 27 576 kilometres per hour.

(a) The station travels 42 600 kilometres in one orbit.

Work out the number of full orbits the station does in one day.

(3)

(b) Convert 27 576 kilometres per hour into metres per second.

(3)

(Total 6 marks)

Q15.

In human blood, the ratio of white blood cells to red blood cells is 1 : 700 where 700 is given to the nearest 100.

A man has 3×10^{13} red blood cells to one significant figure.

Calculate the minimum number of white blood cells in this man's blood.
Give your answer in standard form.

(Total 3 marks)

Q16.

This sign shows when a lift is safe to use.

Total mass of people must be 450 kg or less

Ben and some other people are in the lift.

Their total mass is 525 kg to the nearest 5 kg

Ben gets out.

He has a mass of 78 kg to the nearest kg

Is the lift now safe to use?

You must show your working.

(Total 4 marks

2021 Calculator