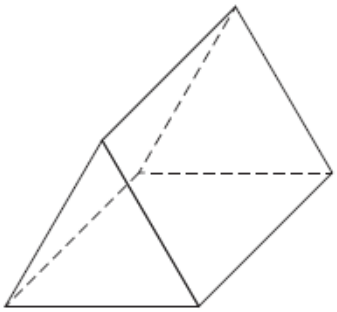
Questions

Q1.

(i) Write down the mathematical name of this 3-D shape.



.....

(ii) How many faces does the shape have?

.....

(iii) How many vertices does the shape have?

.....

(Total for question = 3 marks)

Q2.

The diagram shows cuboid *ABCDEFGH*.

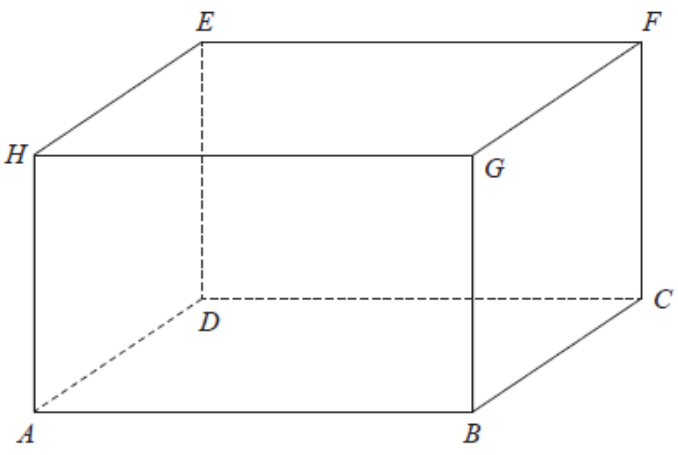


Diagram **NOT** accurately drawn

For this cuboid

the length of AB : the length of BC : the length of CF = 4 : 2 : 3

Calculate the size of the angle between AF and the plane $ABCD$.
Give your answer correct to one decimal place.

..... °

(Total for question = 3 marks)

Q3.

(a) Simplify $y^5 \times y^9$

.....

(1)

(b) Simplify $(2m^3)^4$

.....

(2)

(c) Solve $5(x + 3) = 3x - 4$

Show clear algebraic working.

x = ...

(3)

(d) (i) Factorise $x^2 + 2x - 24$

.....

(2)

(ii) Hence, solve $x^2 + 2x - 24 = 0$

.....

(1)

(Total for question = 9 marks)

Q4.

(a) Simplify $6e \times 2f$

.....

(1)

(b) Simplify $5m + 7k - 2m + k$

.....

(2)

(c) Solve $5y + 3 = 14$

$y =$ .....

(2)

(Total for question = 5 marks)

Q5.

Express $\frac{5}{3} - \frac{x+2}{2x}$ as a single fraction in its simplest terms.

(Total for question = 3 marks)

Q6.

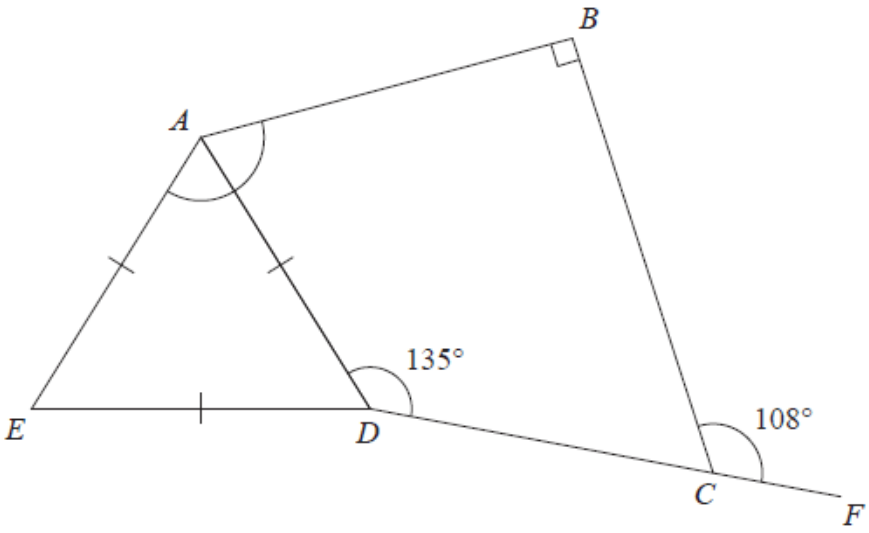


Diagram **NOT** accurately drawn

ABCD is a quadrilateral.
ADE is an equilateral triangle.
DCF is a straight line.

Work out the size of angle *EAB*.
Give a reason for each stage of your working.

..... °

(Total for question = 5 marks)

Q7.

Write your answers in the spaces provided.

You must write down all the stages in your working.

(a) Expand and simplify $(e + 3)(e – 5)$

(2)

(b) Solve $y = \frac{2y + 1}{5}$

Show clear algebraic working.

$y =$

(3)

(c) Solve $x^2 + 3x – 18 = 0$

Show your working clearly.

(3)

(Total for question = 8 marks)

Q8.

(a) Simplify $4m + 2m - m$

(1)

(b) Simplify $5p \times 7$

(1)

(c) Solve $8g = 40$

$g =$

(1)

(d) Solve $19 - k = 4$

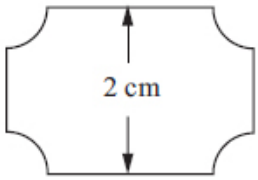
$k =$

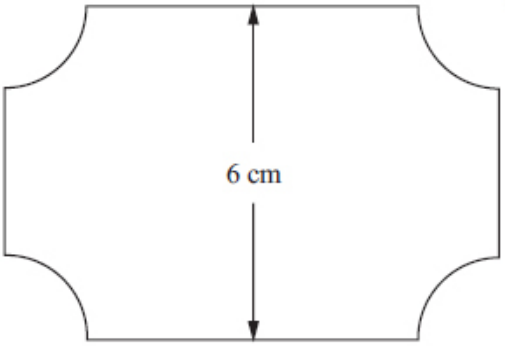
(1)

(Total for question = 4 marks)

Q9.

Here are two supermarket price tickets.





Diagrams **NOT** accurately drawn

The two supermarket price tickets are mathematically similar.

The area of the smaller ticket is 7 cm^2.
Calculate the area of the larger ticket.

..... cm^2

(Total for question = 2 marks)

Q10.

Wendy travelled on the Eurostar train from St Pancras station to the Gare du Nord station.
The Eurostar train travelled a distance of 495 km.
The journey time was 2 hours 15 minutes.

Work out the average speed of the Eurostar train in kilometres per hour.

.....km/h

(Total for question = 3 marks)

Q11.

Yoko flew on a plane from Tokyo to Sydney.
The plane flew a distance of 7800 km.
The flight time was 9 hours 45 minutes.

Work out the average speed of the plane in kilometres per hour.

.....km/h

(Total for question = 3 marks)

Q12.

(a) Simplify $c^4 \times c^3$

.....

(1)

(b) $\frac{y^3 \times y^n}{y} = y^6$

Find the value of n.

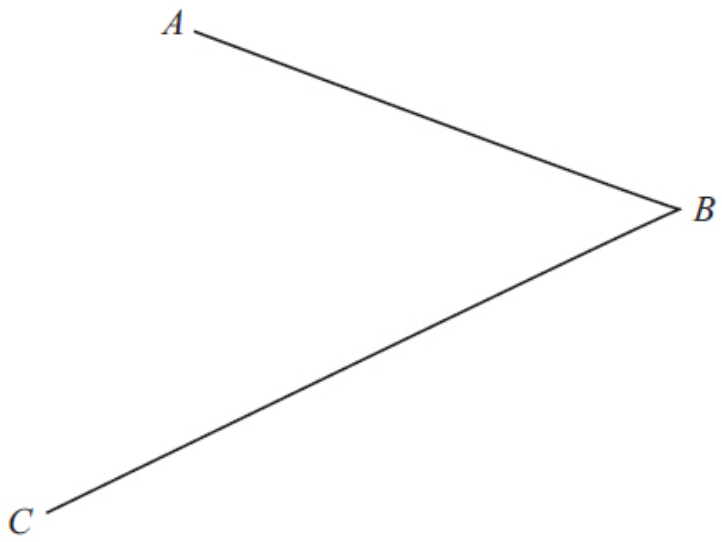
n = ...

(2)

(Total for question is 3 marks)

Q13.

Use ruler and compasses to construct the bisector of angle ABC.
You must show all your construction lines.



(Total for question = 2 marks)

Q14.

Nikos buys

4 cans of cola at 1.25 euros each

and 2 sandwiches at 2.90 euros each.

He pays with a 20 euro note.

Work out how much change Nikos should get.

..... euros

(Total for question = 3 marks)