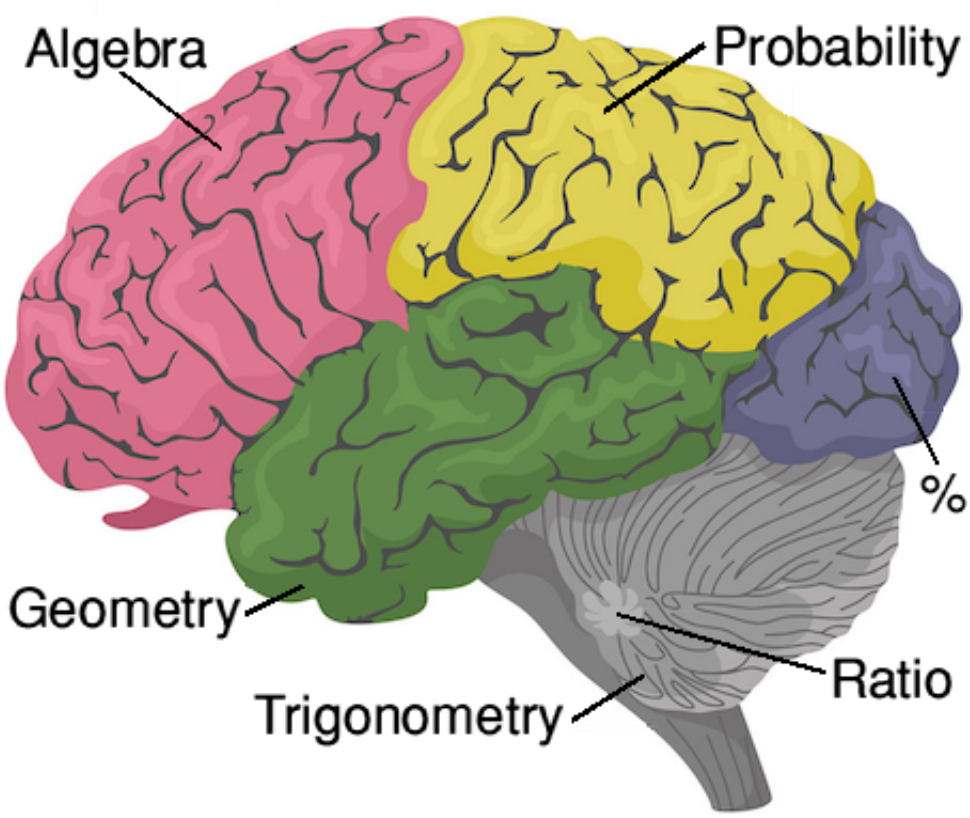
Mind Your Maths

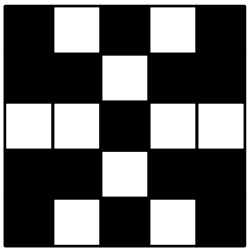


Year 10
Summer Exam Revision

“Mind Your Maths” Number 1
Year 10 Exam Revision

You may use a calculator
Marks Available : 60

Question 1
What percentage of the squares in this diagram are black ?



[2 mark]

Question 2
An ordinary fair dice with six faces numbered 1, 2, 3, 4, 5 and 6 is rolled.
State the probability of rolling,

(i) The number 4

[1 mark]

(ii) An odd number

[1 mark]

(iii) The number 0.5

[1 mark]

(iv) A number less than or equal to 2

[1 mark]

(v) A number greater than 2

[1 mark]

(vi) A number less than or equal to 6

[1 mark]

(vii) A factor of 6

[1 mark]

(viii) A square number

[1 mark]

Question 3

Twenty students were asked how they rated their *Effort at Exam Revision*.
Here are the results:

****	**	**	***	*
***	****	****	**	**
**	**	*****	***	***
*****	***	**	***	**

Number of stars	*	**	***	****	*****
Frequency					

(i) Fill in the frequency row of the table.

[2 marks]

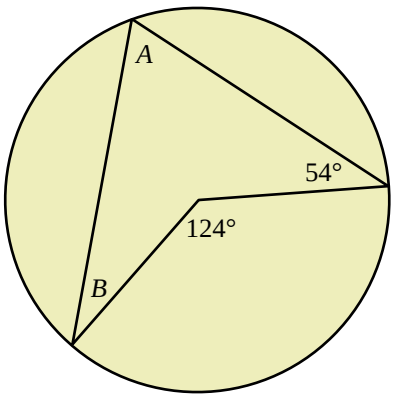
(ii) State the mode of the star rating of the *Effort at Exam Revision*.

[1 mark]

(iii) State the median of the star rating of the *Effort at Exam Revision*.

[2 marks]

Question 4



A Quadrilateral is shown with one vertex at the centre of a circle.

(i) Write down the size of angle *A*

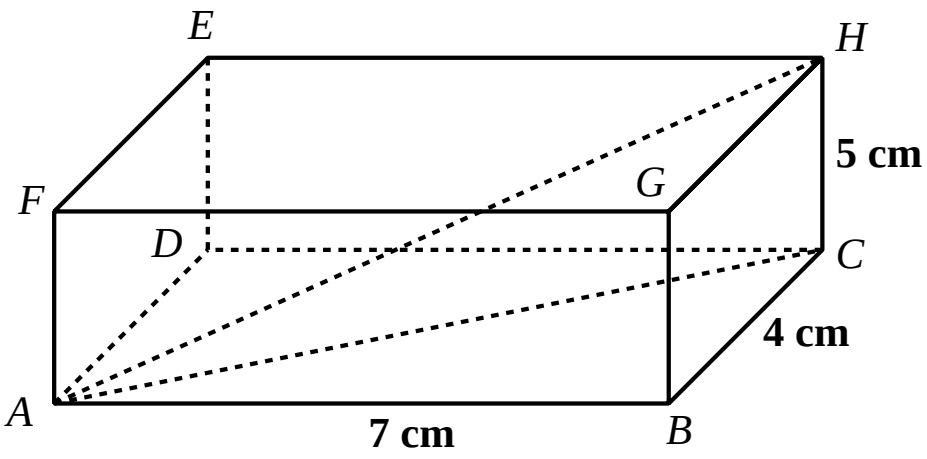
[1 mark]

(ii) Calculate the size of angle *B*

[2 marks]

Question 5

A cuboid *ABCDEFGH* measures 7 cm by 4 cm by 5 cm, as shown below.



(i) Calculate the length of the cuboid's diagonal, *AH*
Give your answer accurate to 3 decimal places.

[2 marks]

(ii) Calculate, in degrees, the angle *HAC*.
Give your answer accurate to 1 decimal place.

[4 marks]

Question 6

The number of commendations awarded to 4th form pupils in a week at Shrewsbury School is given in the table below.

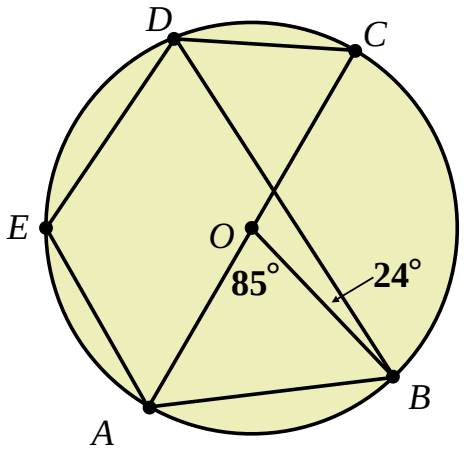
Number of Commendations	Number of Pupils		
$0 \leqslant x \leqslant 8$	60		
$9 \leqslant x \leqslant 15$	30		
$16 \leqslant x \leqslant 26$	18		
$27 \leqslant x \leqslant 45$	12		

Calculate an estimate of the mean number of commendations received by a pupil.
Give your answer correct to 3 significant figures.
Show your working.

[4 marks]

Question 7

In the diagram, *A*, *B*, *C*, *D* and *E* are points on the circumference of a circle centre *O*.
Angle *AOB* is equal to 85° and angle *DBO* is equal to 24°.



Find : **(i)** angle *OAB*

[2 marks]

(ii) angle *BDC*

[1 mark]

(iii) angle *OCD*

[1 mark]

(iv) angle *AED*

[1 mark]

Question 8

B is directly proportional to the cube of t.

It is known that $B = 72$ when $t = 2$

(i) Find a formula for B in terms of t.

[3 marks]

(ii) Find the exact value of B when $t = 4$

[2 marks]

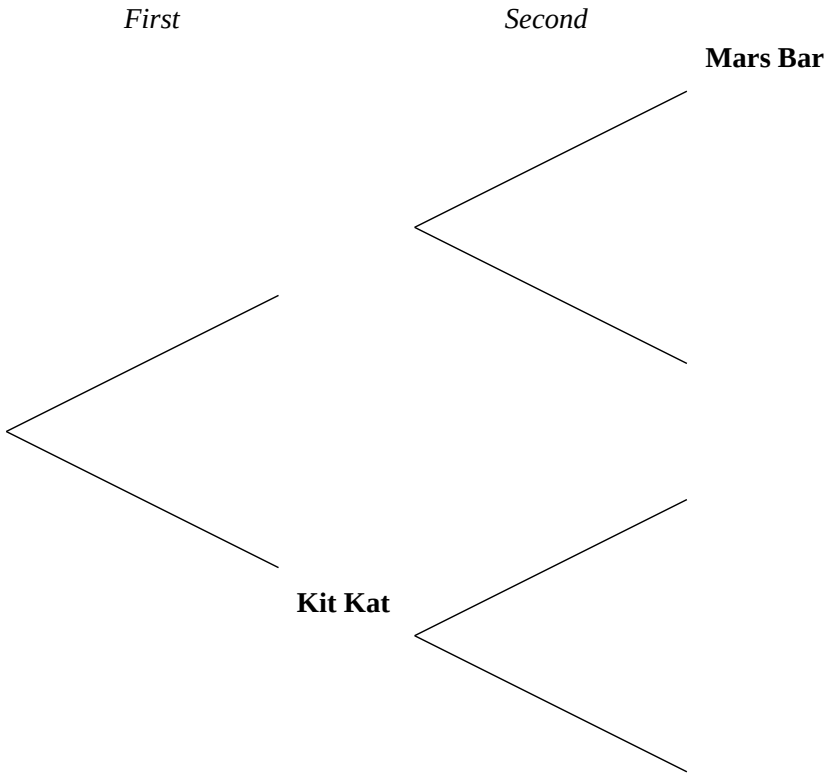
(iii) Find the exact value of t when $B = \frac{1}{3}$

[2 marks]

Question 9

Cartman buys nine chocolate bars.
Five of them are Mars Bars; the other four are Kit Kats.
He chooses one bar at random and eats it.
He then chooses a second bar at random and eats this too.

(a) Complete the tree diagram below, including all labels and probabilities.



[2 marks]

(b) Find the exact probability that Cartman eats:

(i) two Kit Kats
(Simplify your answer)

[2 marks]

(ii) exactly one Mars Bar
(Simplify your answer)

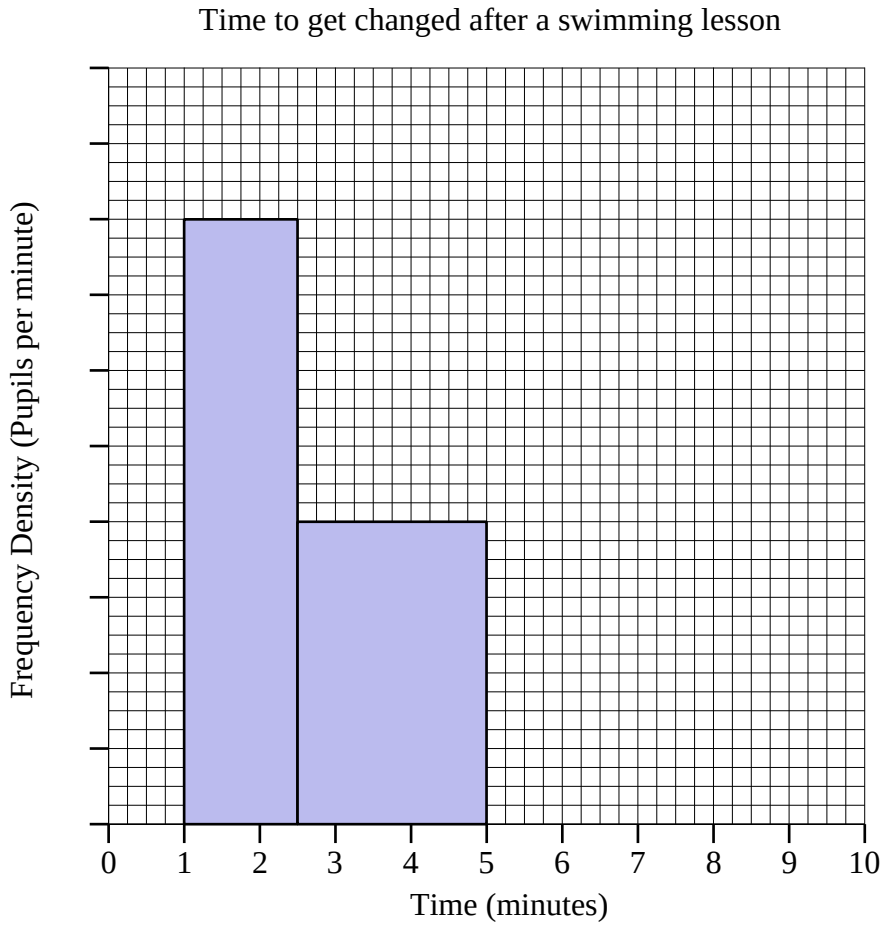
[2 marks]

Question 10

The times in minutes that some pupils take to get changed after a swimming lesson are summarised in the table and histogram below:

Time, t (minutes)	Frequency
$0 \leqslant t < 1$	7
$1 \leqslant t < 2.5$	
$2.5 \leqslant t < 5$	20
$5 \leqslant t < 9$	22

Complete the table and histogram.



[6 marks]

Question 11

ABCD and *APQR* are two similar quadrilaterals.

PQ = 9 cm

BC = 6 cm

AD = 5 cm

QR = 12 cm

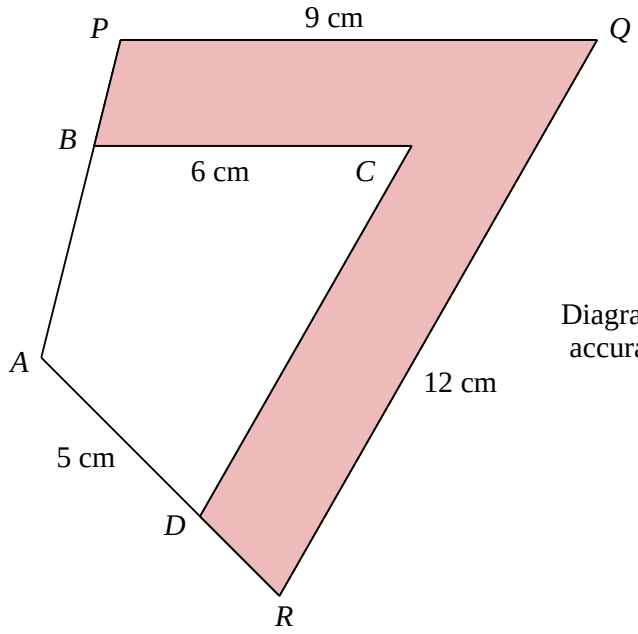


Diagram **NOT** accurately drawn

(i) Find the length of *DC*.

[2 marks]

(ii) Find the length of *AR*.

[2 marks]

The area of the quadrilateral *ABCD* is 32 cm^2

(iii) Calculate the area of the shaded region.

[4 marks]