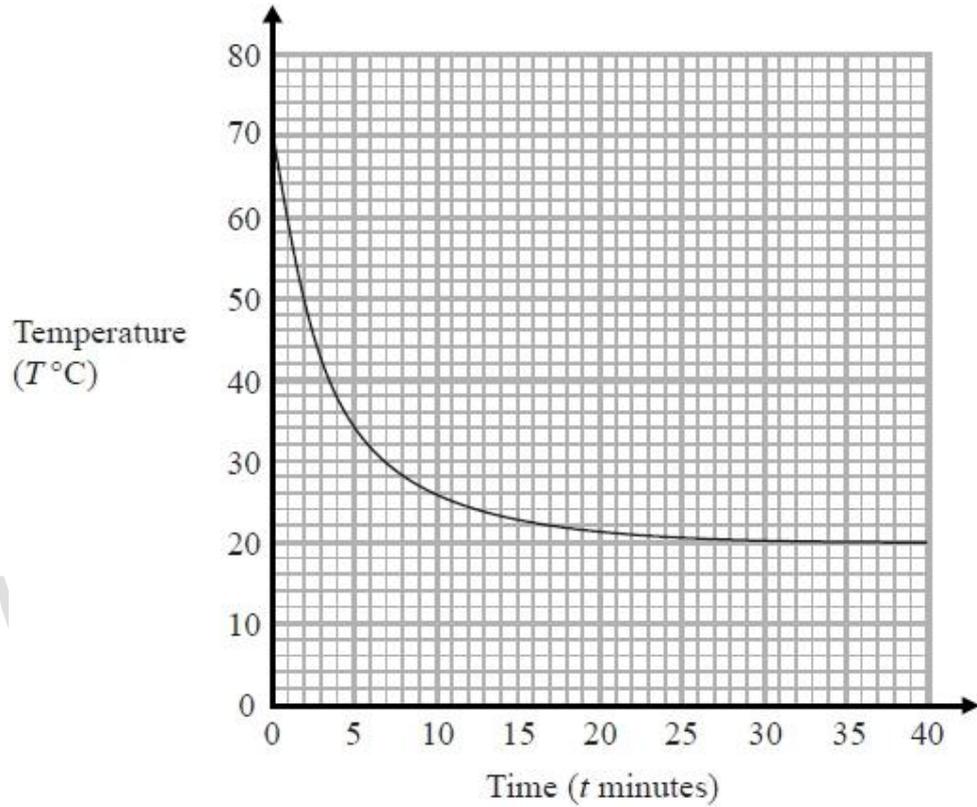


Grade 11 Practice Test

Q1.

The graph shows the temperature, T °C, of the coffee in a cup at a time t minutes.



(a) Find an estimate for the gradient of the graph at time 5 minutes.

.....
(2)

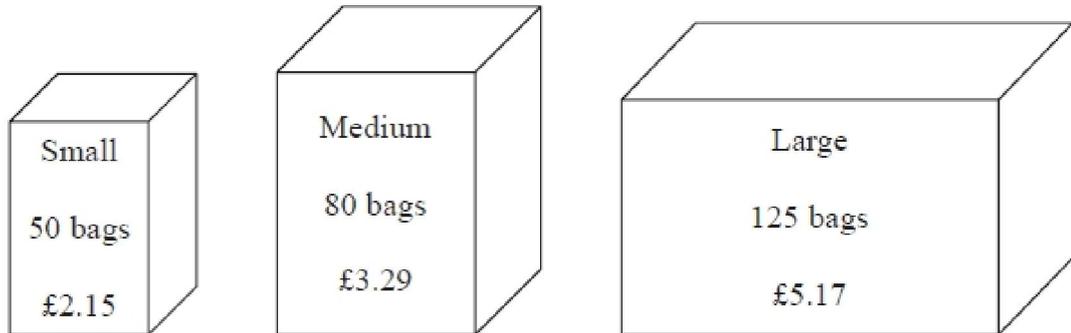
(b) Explain what this gradient represents.

.....
.....
(1)

(Total for question = 3 marks)

Q2.

* Tea bags are sold in three sizes of box.



A small box of 50 tea bags costs £2.15

A medium box of 80 tea bags costs £3.29

A large box of 125 tea bags costs £5.17

Which size of box is the best value for money?

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(Total for Question is 4 marks)

Q3.

The diagram shows a triangular prism with a horizontal base $ABCD$.

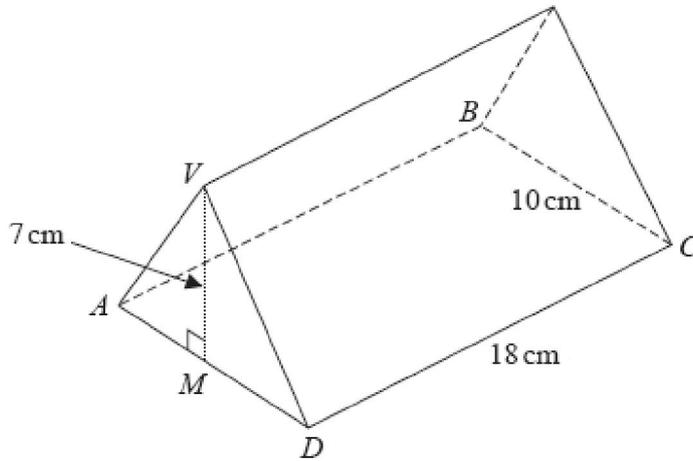


Diagram **NOT**
accurately drawn

M is the midpoint of AD .

The vertex V is vertically above M .

$DC = 18$ cm, $BC = 10$ cm, $MV = 7$ cm.

Calculate the size of the angle between VC and the plane $ABCD$.

Give your answer correct to 3 significant figures.

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.....°

(Total for question = 4 marks)

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Q4

Prove that the product of any two even numbers is divisible by 4.

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Q5.

Li throws a 6-sided biased dice once.

The table shows the probability that the dice will land on 1, 2, 3, 5 or 6

Number	1	2	3	4	5	6
Probability	0.15	0.1	0.05		0.2	0.15

(a) Work out the probability that the dice will land on 4

.....

(2)

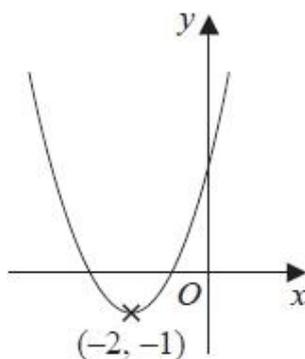
(b) Work out the probability that the dice will land on an odd number.

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.....

(2)

(Total for question = 4 marks)

Q6.



The diagram shows the curve with equation $y = f(x)$

The coordinates of the minimum point of the curve are $(-2, -1)$

(a) Write down the coordinates of the minimum point of the curve with equation

(i) $y = f(x - 5)$

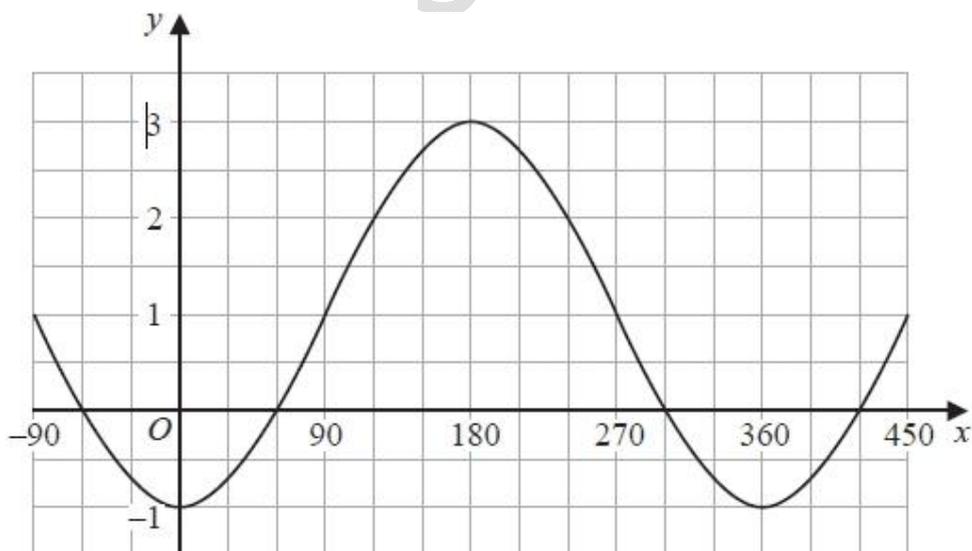
(..... ,)

(ii) $y = \frac{1}{2}f(x)$

(..... ,)

EMG High School (2)

The graph of $y = a \sin(x - b)^\circ + c$ for $-90 \leq x \leq 450$ is drawn on the grid below.



(b) Find the value of a , the value of b and the value of c .

$a =$

$b =$

$c =$ (3)

Total for question = 5 marks)

Q7.

Jalin lives in England.

He does a search on the internet and sees the same type of camera on sale in France and in America.

In France, the camera costs 126 euros.

In America, the camera costs \$165.24

Jalin finds out these exchange rates.

<p>Exchange rates 1 euro = £0.89 £1 = \$1.62</p>

How much cheaper is the camera in America than in France?

Give your answer in pounds (£).

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£

(Total for Question is 4 marks)

Q8.

Two bags contain discs.

Bag **A** contains 12 discs.

5 of the discs are red, 6 are blue and 1 is white.

Bag **B** contains 25 discs.

n of the discs are red and the rest are blue.

James takes at random a disc from Bag **A**.

Lucy takes at random a disc from Bag **B**.

Given that the probability that James and Lucy both take a red disc is $\frac{2}{15}$

(i) find the value of n , the number of red discs in Bag **B**.

$n = \dots\dots\dots$

(ii) Hence calculate the probability that James and Lucy take discs of different colours.

.....

(Total for question = 5 marks)

Q9.

Solve the simultaneous equations

$$2x - y = 7$$

$$x^2 + y^2 = 34$$

Show clear algebraic working.

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.....
(Total for Question is 7 marks)

Q10.

Bill and Jo play some games of table tennis.

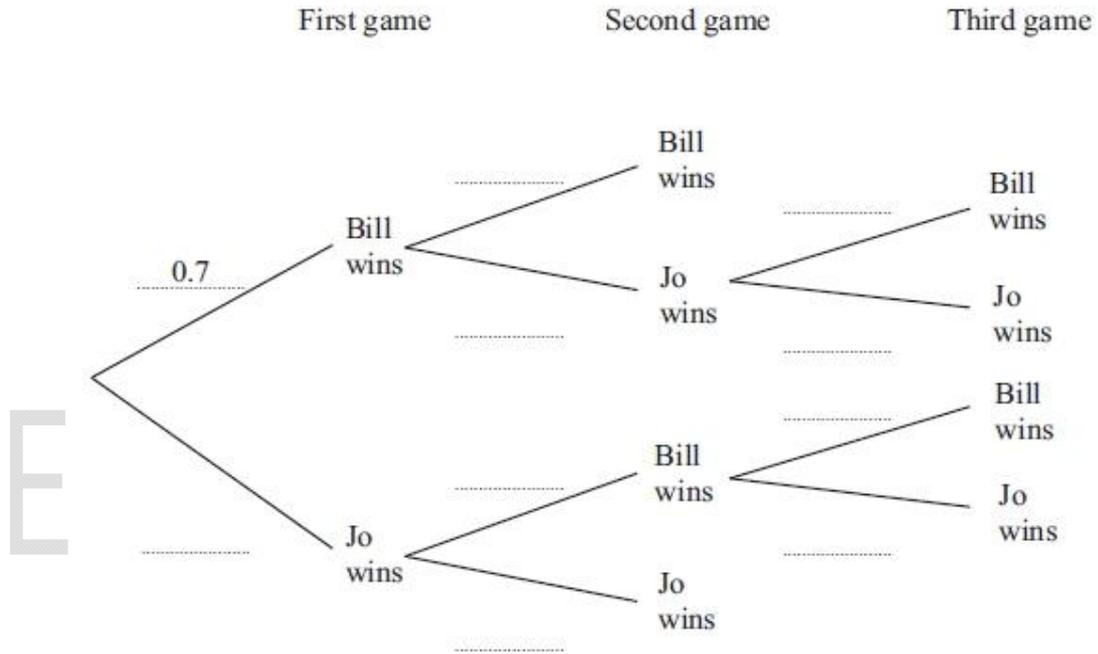
The probability that Bill wins the first game is 0.7

When Bill wins a game, the probability that he wins the next game is 0.8

When Jo wins a game, the probability that she wins the next game is 0.5

The first person to win two games wins the match.

(a) Complete the probability tree diagram.



(3)

(b) Calculate the probability that Bill wins the match.

.....

(3)

(Total for question = 6 marks)

-----End of Test-----