Mock Grade 6

Maths Booklet 4

Paper 2H
Calculator

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1 (a) Simplify $\left(\frac{1}{m^3}\right)^1$

.....

(1)

(b) Simplify fully $\frac{x^2 + 5x}{x^2 + 7x + 10}$

.....

(1)

(c) Simplify $(2n^5w^3)^4$

.....

(2)

(Total for Question 1 is 4 marks)

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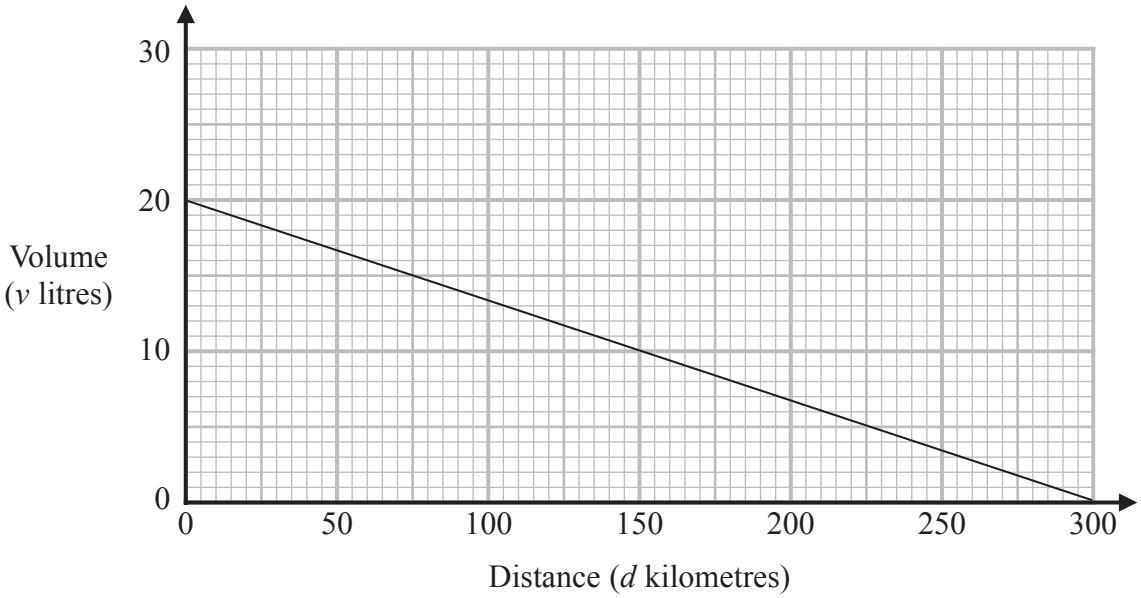
2 Jack is in a restaurant.
There are 9 starters,15 main courses and some desserts on the menu.

Jack is going to choose one starter, one main course and one dessert.
He says there are 810 ways that he can choose his starter, his main course and his dessert.

Could Jack be correct?
You must show how you get your answer.

(Total for Question 2 is 2 marks)

3 The graph gives information about the volume, v litres, of petrol in the tank of Jim's car after it has travelled a distance of d kilometres.



(a) Find the gradient of the graph.

.....

(2)

(b) Interpret what the gradient of the graph represents.

.....

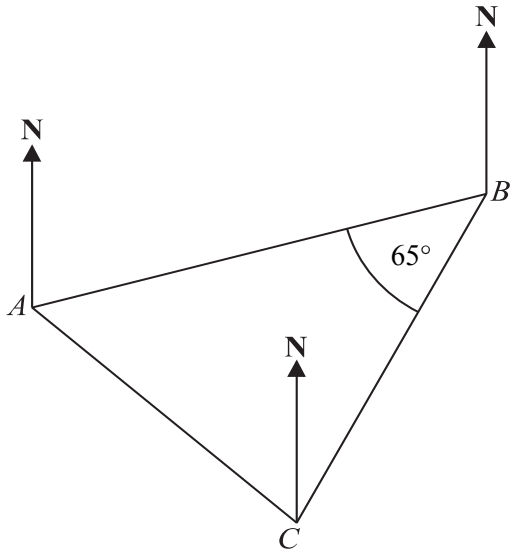
.....

.....

(1)

(Total for Question 3 is 3 marks)

4 The diagram shows the positions of three points, A, B and C, on a map.



The bearing of B from A is 075°

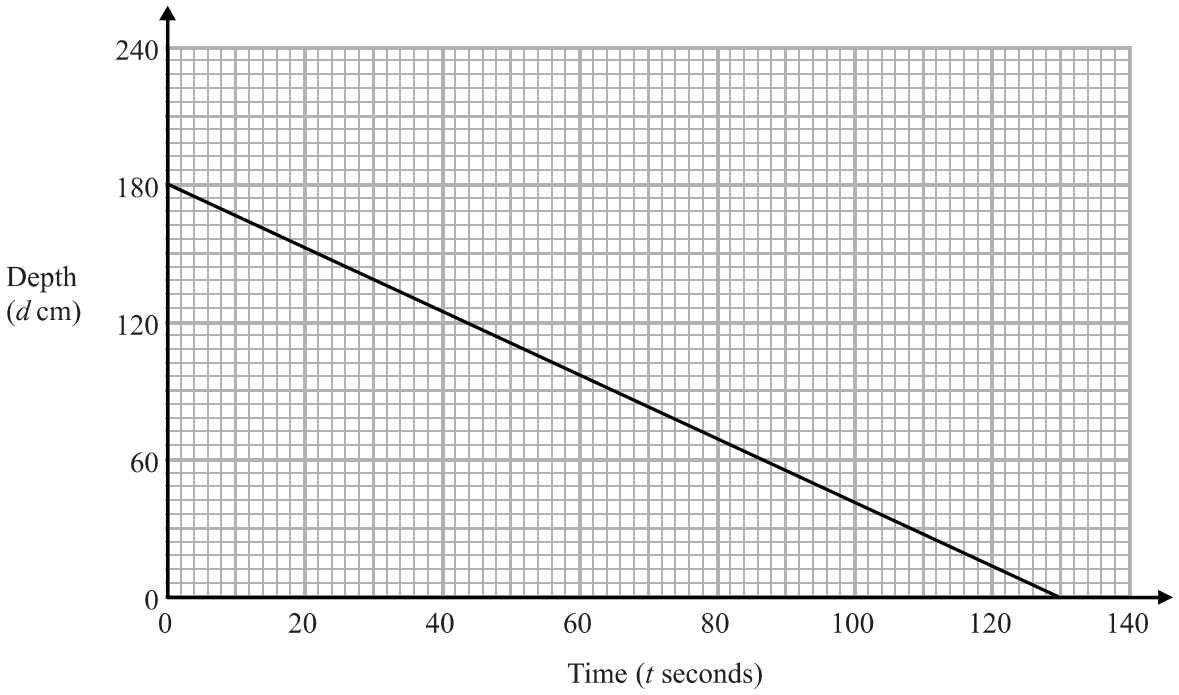
Angle ABC is 65°
$AB = CB$

Work out the bearing of C from A.

.....°

(Total for Question 4 is 3 marks)

5 The graph shows the depth, d cm, of water in a tank after t seconds.



(a) Find the gradient of this graph.

.....

(2)

(b) Explain what this gradient represents.

.....

.....

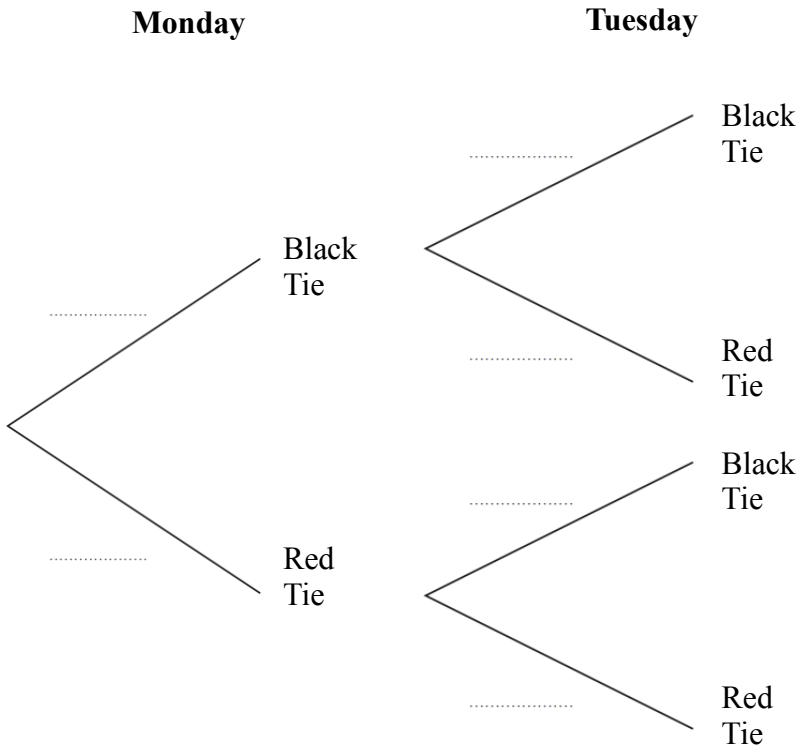
(1)

(Total for Question 5 is 3 marks)

6 Each day Paul wears either a black tie or a red tie to work.

On any day the probability he wears a black tie is $\frac{5}{9}$

(a) Complete the probability tree diagram for Monday and Tuesday.



(2)

(b) Work out the probability Paul wears different coloured ties on Monday and Tuesday .

.....

(2)

(Total for question 6 is 4 marks)

7 (a) Find the reciprocal of 5.5

.....

(1)

(b) Work out $\sqrt{12^2 + 15^2 - 54\cos(80)}$

Write down all the figures on your calculator display.

.....

(2)

(Total for Question 7 is 3 marks)

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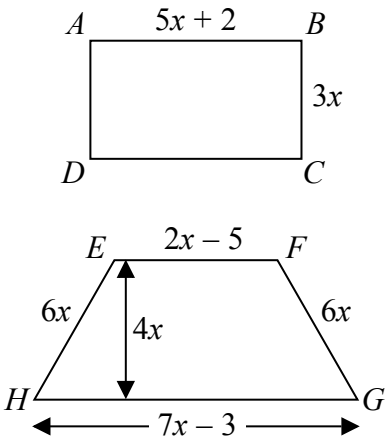
8 Show that $(2x + 3)(5x + 2)(x - 5) = 10x^3 - 31x^2 - 89x - 30$

for all values of x.

(Total of Question 8 is 3 marks)

9 *ABCD* is a rectangle.
EFGH is a trapezium.



All measurements are in centimetres.
The perimeters of these two shapes are the same.

Work out the area of the rectangle.

..... cm^2

(Total for Question 9 is 5 marks)