**M3**

**OCR** RECOGNISING ACHIEVEMENT

**GENERAL CERTIFICATE OF SECONDARY EDUCATION**

**MATHEMATICS C (GRADUATED ASSESSMENT)**

**B273B**

MODULE M3 – SECTION B

Candidates answer on the Question Paper

**OCR Supplied Materials:**
None

**Other Materials Required:**
• Geometrical instruments
• Tracing paper (optional)
• Electronic calculator

**Monday 8 March 2010**
**Morning**

**Duration:** 30 minutes

| Candidate Forename | | Candidate Surname | |
|---|---|---|---|

| Centre Number | | | | | | Candidate Number | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|

**INSTRUCTIONS TO CANDIDATES**

• Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
• Use black ink. Pencil may be used for graphs and diagrams only.
• Read each question carefully and make sure that you know what you have to do before starting your answer.
• Show your working. Marks may be given for a correct method even if the answer is incorrect.
• Answer **all** the questions.
• Do **not** write in the bar codes.
• Write your answer to each question in the space provided, however additional paper may be used if necessary.

**INFORMATION FOR CANDIDATES**

• The number of marks is given in brackets **[  ]** at the end of each question or part question.
• Section B starts with question 8.
• You are expected to use a calculator in Section B of this paper.
• The total number of marks for this Section is **25**.
• This document consists of **12** pages. Any blank pages are indicated.

**Turn over**

**Formulae Sheet**

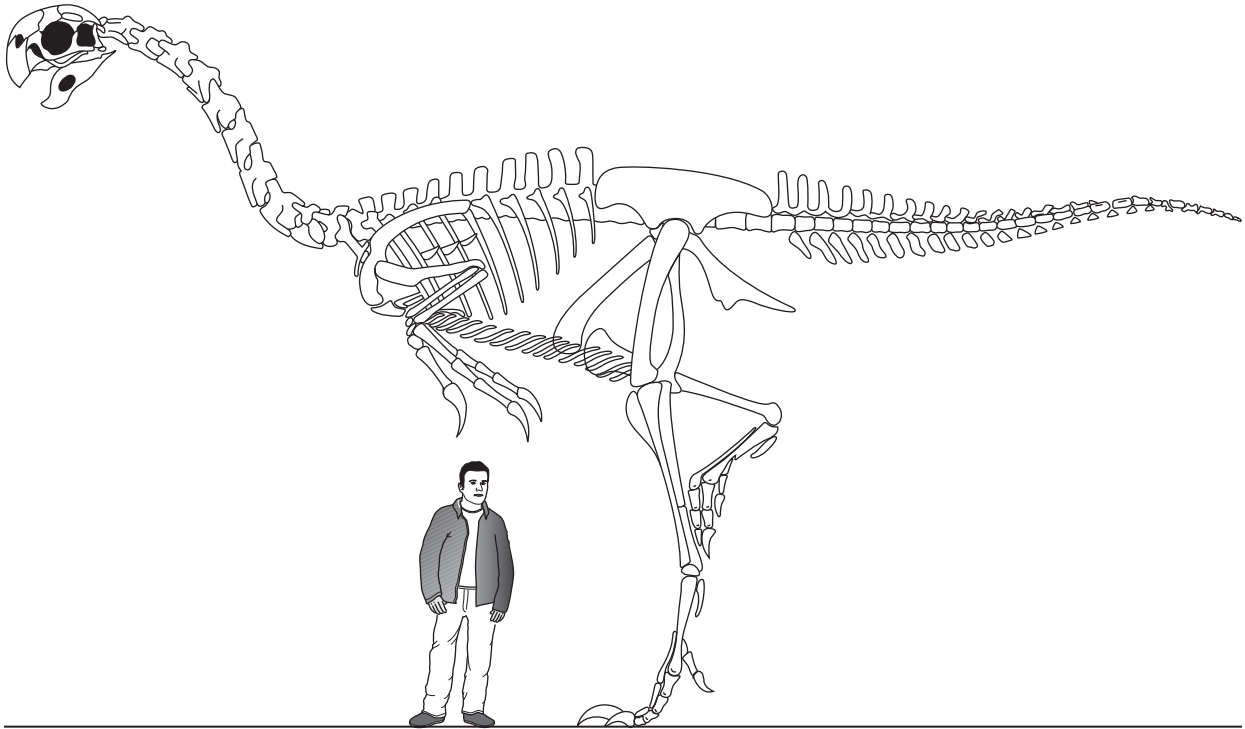**Area of trapezium** $= \frac{1}{2}(a+b)h$
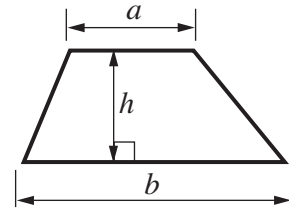
**Volume of prism** = (area of cross-section) × length
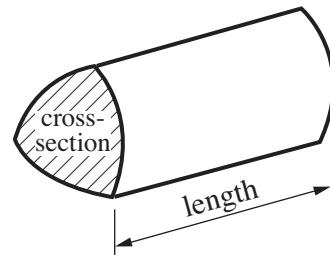
**PLEASE DO NOT WRITE ON THIS PAGE**

**8** **(a)** Brian is visiting a museum.



Brian thinks this dinosaur skeleton is 12 m tall.

Explain why Brian is wrong.

...................................................................................................................................................

...................................................................................................................................................

...................................................................................................................................................

............................................................................................................................... **[1]**

**(b)** Another dinosaur is 4·5 m tall.

Brian's height is $\frac{2}{5}$ of the height of this dinosaur.

Work out Brian's height in metres.

**(b)** ................................ m **[2]**

**9** Solve.

   **(a)** $3x = 27$

<div align="right">

**(a)** ...................................... **[1]**

</div>

   **(b)** $x - 2 = 5$

<div align="right">

**(b)** ...................................... **[1]**

</div>

   **(c)** $x + x = 5$

<div align="right">

**(c)** ...................................... **[1]**

</div>

**10** This graph shows the time it takes to drive from London to Liverpool at different average speeds.
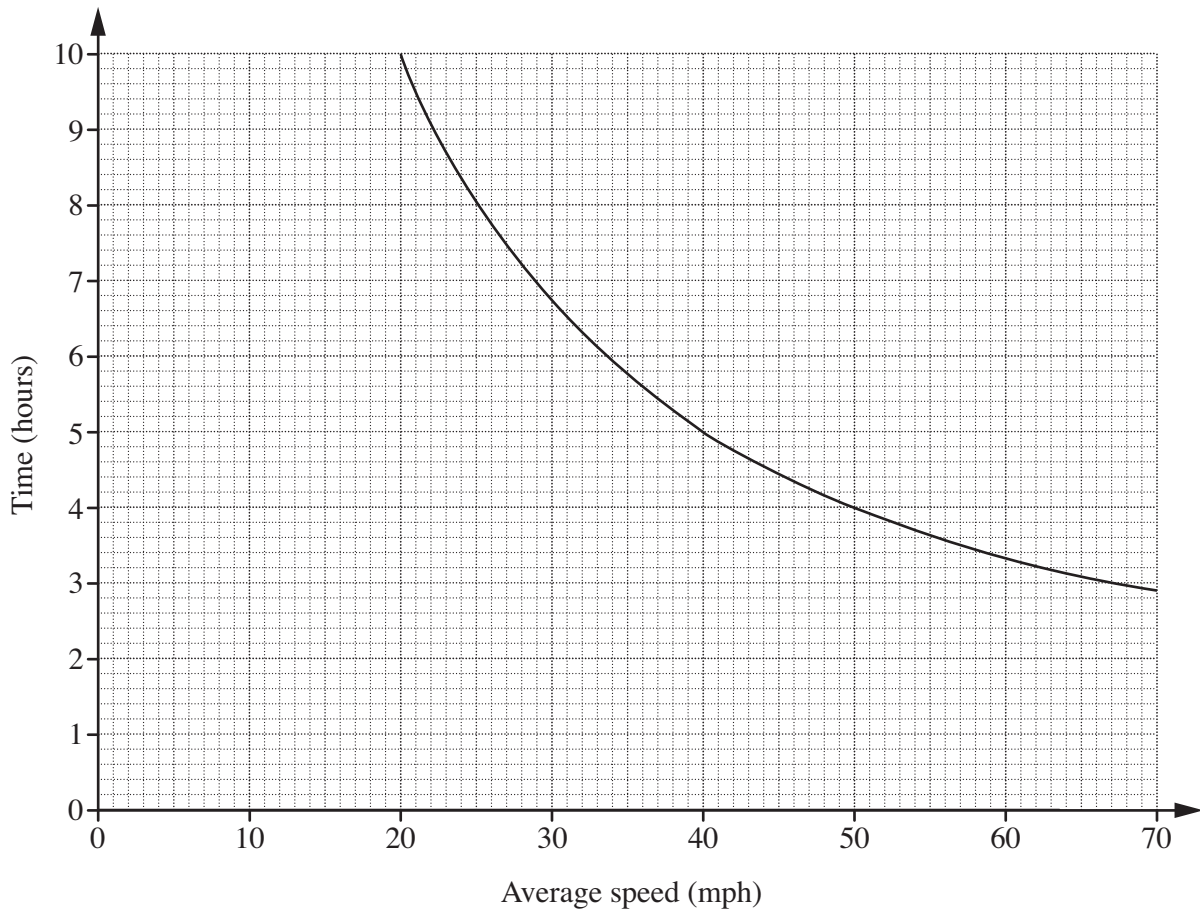


Use the graph to answer these questions.

**(a)** Karen takes 5 hours to drive from London to Liverpool.

What is her average speed?

**(a)** .............................. mph **[1]**

**(b)** Luka drives from London to Liverpool at an average speed of 50 mph.

How long does this journey take?

**(b)** ......................... hours **[1]**

**Turn over**

**11**  This is the side view of a model car, drawn full size.
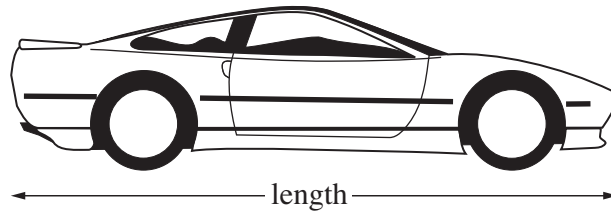


The scale of the model is 2 centimetres to 1 metre.

**(a)**  What is the length of the real car in metres?

**(a)** ............................... m **[2]**

**(b)**  The width of the real car is 1·6 metres.

What is the width of the model car?

**(b)** ............................. cm **[2]**

**12** Anna found the running speeds of these animals on a website.
The website gave the speeds in feet per second (fps).

| Animal | Speed (fps) |
|--------|-------------|
| Cheetah | 105 |
| Antelope | 90 |
| Lion | 75 |
| Horse | 70 |

**(a)** Use this word formula to change the speed of a cheetah from
feet per second into miles per hour (mph).

### Speed in miles per hour = speed in feet per second ÷ 1·5

**(a)** ........................... mph **[2]**

**(b)** Anna sees this road sign.
It shows that the speed limit is 50 mph.

**50**

Use this word formula to find what the road sign would show in feet per second.

### Speed in feet per second = speed in miles per hour × 1·5

**(b)** ............... **[2]**

**Turn over**

**13 (a)** Igor makes this shape by joining **four** centimetre cubes, face to face.
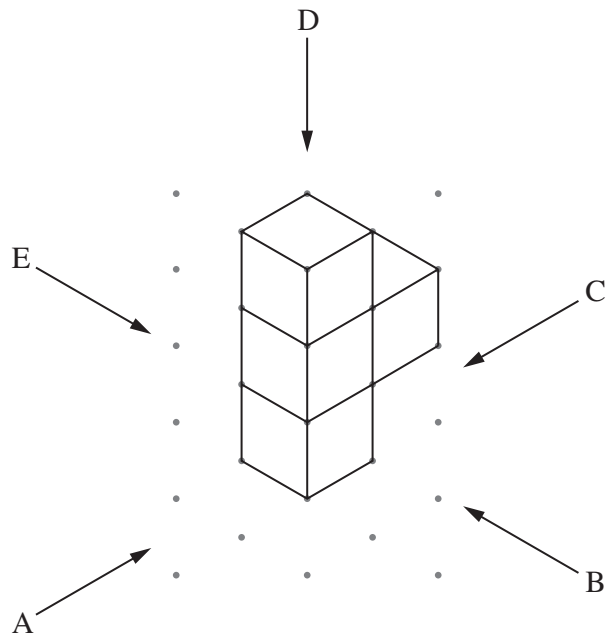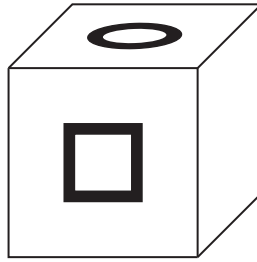


**(i)** He draws this view of the shape.
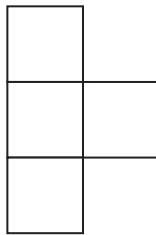


Complete this sentence.
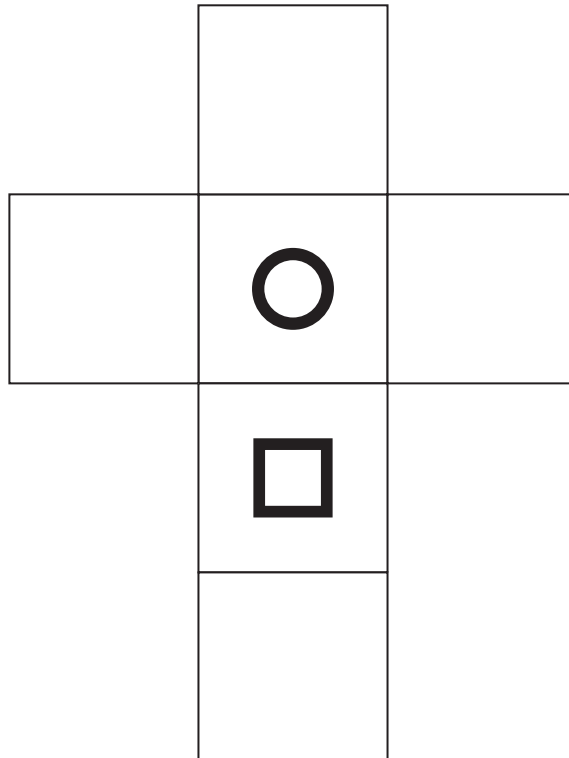
This is the view from position .................................. **[1]**

**(ii)** How many cubes can be seen from position A?

**(a)(ii)** ............................. **[1]**

**(b)** This cube has a square (■) on its front and back faces.
It has a circle (○) on its top and bottom faces.

Draw one ■ and one ○ on the correct faces on the net.

**[2]**

**14** George asks 30 students which name, from a list of five names, they like best.
These are their answers.

| | | | | | |
|---|---|---|---|---|---|
| Emily | Olivia | Katie | Grace | Charlotte | Katie |
| Grace | Charlotte | Olivia | Charlotte | Grace | Olivia |
| Grace | Emily | Charlotte | Grace | Charlotte | Emily |
| Charlotte | Grace | Olivia | Charlotte | Emily | Charlotte |
| Grace | Charlotte | Emily | Olivia | Olivia | Grace |

**(a)** Complete this table.

| Name | Tally | Frequency |
|---|---|---|
| Charlotte | | |
| Emily | | |
| Grace | | |
| Katie | | |
| Olivia | | |

[2]

**(b)** Use your table to draw a bar chart for George's results.

Frequency (y-axis: 0 to 12)

Name (x-axis): Charlotte, Emily, Grace, Katie, Olivia
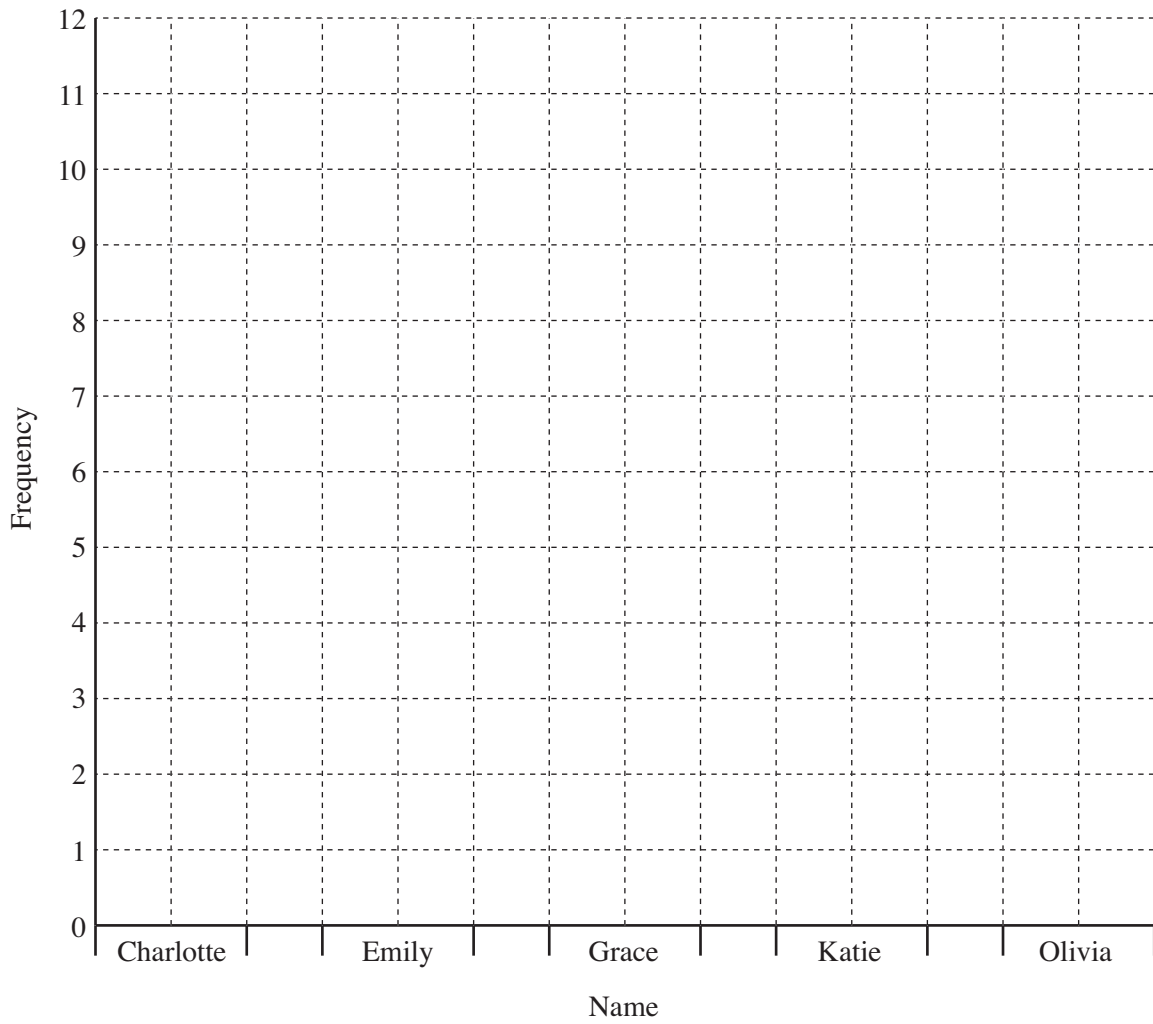
**[2]**

**(c)** George thought that Charlotte was the favourite name.

Was George correct?
Explain your answer.

*Write yes or no.*
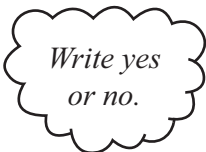
..................... because ..................................................................................................................................

.......................................................................................................................................................... **[1]**

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