| Surname | Initial(s) |
|---|---|
| Signature | |

Paper Reference(s)

**5382H/08**

# Edexcel GCSE

## Mathematics (Modular) – 2381

Paper 8 (Non-Calculator)

# Higher Tier

Unit 2 Stage 1

Tuesday 1 March 2011 – Afternoon

Time: 30 minutes

**Materials required for examination**
Multiple Choice Answer Sheet
Ruler graduated in centimetres and millimetres, protractor, compasses, HB pencil, eraser.

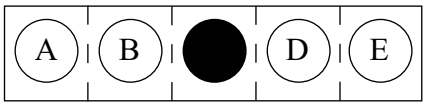
**Items included with question papers**
Nil

### Instructions to Candidates

Use a HB pencil. Do not open this booklet until you are told to do so.

**Before the test begins:**
Check that the answer sheet is for the correct test and that it contains your candidate details.

**How to answer the test:**
For each question, choose the right answer, A, B, C, D or E and mark it in HB pencil on the answer sheet.
For example, the answer C would be marked as shown.




Mark only **one** answer for each question. If you change your mind about an answer, rub out the first mark **completely**, then mark your new answer.

Answer **all** the questions.
Do any necessary calculations and rough work in this booklet. **Calculators must not be used.**
**You must not take this booklet or the answer sheet out of the examination room.**

### Information for Candidates

There are 25 questions in this question paper. The total mark for this paper is 25.
There are 12 pages in this question paper. Any blank pages are indicated.

### Advice to Candidates

Work steadily through the paper. Do not spend too long on one question.
If you cannot answer a question, leave it and attempt the next one.
Return at the end to those you have left out.

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***Turn over***

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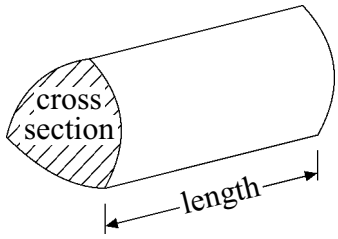
**GCSE Mathematics 2381**

Formulae: Higher Tier

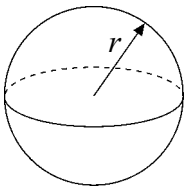
**You must not write on this formulae page.**
**Anything you write on this formulae page will gain NO credit.**

**Volume of a prism** = area of cross section × length



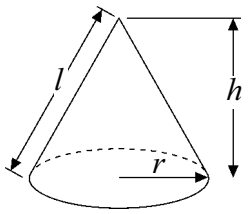

**Volume of sphere** $= \frac{4}{3}\pi r^3$

**Surface area of sphere** $= 4\pi r^2$

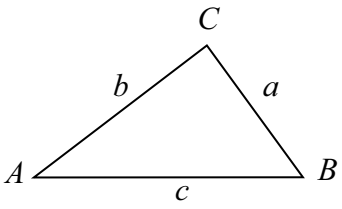



**Volume of cone** $= \frac{1}{3}\pi r^2 h$

**Curved surface area of cone** $= \pi rl$




**In any triangle ABC**




**Sine Rule** $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

**Cosine Rule** $a^2 = b^2 + c^2 - 2bc\cos A$

**Area of triangle** $= \frac{1}{2}ab\sin C$

**The Quadratic Equation**

The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$, are given by

$$x = \frac{-b \pm \sqrt{(b^2 - 4ac)}}{2a}$$

**Answer ALL TWENTY FIVE questions using the answer sheet.**

**You must NOT use a calculator.**

**1.** What is 23 760 written correct to **three** significant figures?

| | | | | |
|---|---|---|---|---|
| 23 700 | 238 | 237 | 23 800 | 23 600 |
| **A** | **B** | **C** | **D** | **E** |

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**2.** Jade measured the length of her pencil case as 31 cm correct to the nearest cm.

What is the greatest length her pencil case could be?

| | | | | |
|---|---|---|---|---|
| 31.5 cm | 30.5 cm | 31.49 cm | 31.4 cm | 32 cm |
| **A** | **B** | **C** | **D** | **E** |

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**3.** Factorise $y^2 + 8y$

| | | | | |
|---|---|---|---|---|
| $y(y + 8y)$ | $10y$ | $y(y + 8)$ | $y^2(y + 8)$ | $9y^2$ |
| **A** | **B** | **C** | **D** | **E** |

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**4.** $0.048 \div 0.3 =$

| 16 | 1.6 | 0.16 | 0.016 | 0.0016 |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**5.** There are 6 pens in a box of pens.
There are 12 pencils in a box of pencils.

Ray buys $x$ boxes of pens and $y$ boxes of pencils.

An expression for the total number of pens and pencils that Ray buys is

| $12x + 6y$ | $6x + 12y$ | $x + y$ | $18xy$ | $18(x + y)$ |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**6.**

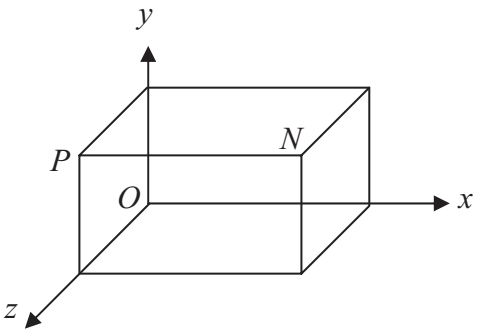


Diagram **NOT** accurately drawn

The point $N$ has coordinates (4, 2, 3).

The coordinates of the point $P$ are

| (4, 2, 0) | (4, 0, 3) | (0, 2, 3) | (2, 2, 3) | (0, 0, 3) |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**7.** Here are the first five terms of an arithmetic sequence.

7 11 15 19 23

The $n$th term of this sequence is

| $4n + 7$ | $4n + 3$ | $n + 4$ | $4n$ | $n - 4$ |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**8.**

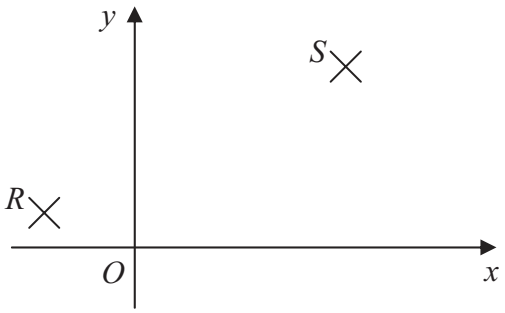


Diagram **NOT** accurately drawn

*R* is the point (–3, 1).
*S* is the point (7, 5).

Which are the coordinates of the midpoint of the line *RS*?

| (4, 6) | (10, 4) | (2, 3) | (4, 4) | (–4, 3) |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**9.** The Lowest Common Multiple (LCM) of 24 and 36 is

| 6 | 96 | 144 | 12 | 72 |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**10.** Sandy drove 150 miles in 2 hours 30 minutes.

What was her average speed in miles per hour (mph)?

| 65.2 mph | 60 mph | 37.5 mph | 34.5 mph | 6 mph |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**11.**

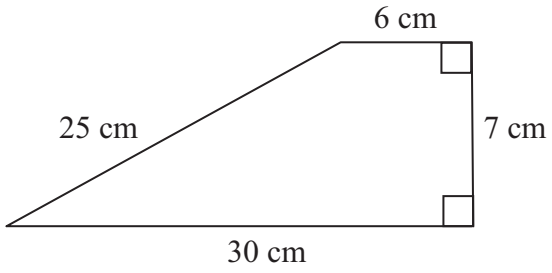


Diagram **NOT** accurately drawn

The area of this shape is

| 68 cm² | 450 cm² | 105 cm² | 126 cm² | 210 cm² |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**12.** Which is the **best** estimate for the value of $\dfrac{21.9 \times 5.13}{4.19 - 1.98}$ ?

| 50 | 5 | 500 | 75 | 20 |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**13.** $5a + 3b - a - 6b =$

| $4a + 9b$ | $8a - 7b$ | $15ab$ | $4a - 3b$ | $5 - 3b$ |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**14.** Factorise completely $2x^3 - 6x^2$

| $2x^2(x - 3)$ | $x(2x^2 - 6x)$ | $2x(x^2 - 3x)$ | $2(x^3 - 3x^2)$ | $2x(x - 3)$ |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**15.** $(x + 3)(x - 4) =$

| $x^2 + 7x - 12$ | $x^2 - 12$ | $2x - 1$ | $x^2 - 7x + 12$ | $x^2 - x - 12$ |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**16.** What is $8.26 \times 10^5$ as an ordinary number?

| 8.26000 | 82 600 000 | 82 600 | 826 000 | 0.0000826 |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**17.** A train travels at a speed of 150 miles per hour.

How long, in seconds, does it take to travel a distance of 1 mile?

| 2.5 | 24 | 25 | 2.4 | 90 |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**18.** What is 0.035 when written in standard form?

| $3.5 \times \frac{1}{100}$ | $3.5 \times 10^{-2}$ | $3.5 \times 10^{-3}$ | $3.5 \times 10^{2}$ | $3.5 \times 10^{-1}$ |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**19.**

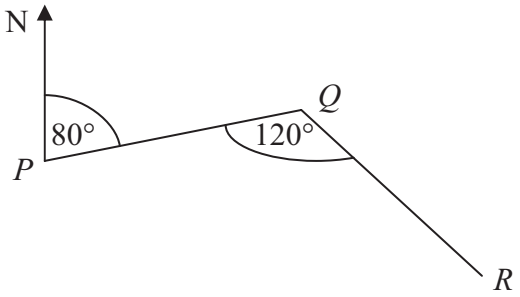


Diagram **NOT** accurately drawn

The bearing of $Q$ from $P$ is 080°
Angle $PQR$ is 120°

What is the bearing of $R$ from $Q$?

| 160° | 120° | 200° | 320° | 140° |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**20.** Work out $3\frac{1}{3} \div 1\frac{1}{5}$

| $1\frac{1}{9}$ | 4 | $2\frac{7}{9}$ | $\frac{1}{4}$ | $\frac{15}{9}$ |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**21.** A cuboid is shown on a 3-D grid.

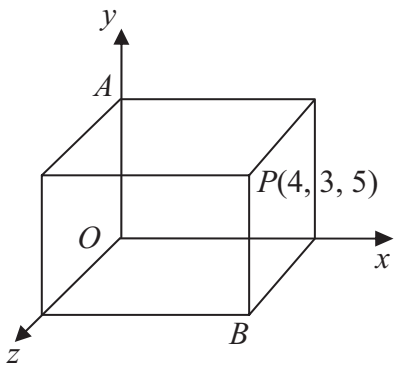


Diagram **NOT** accurately drawn

The point P has coordinates (4, 3, 5)

Which are the coordinates of the midpoint of the line segment $AB$?

| (4, 0, 0) | (0, 3, 5) | (2, 1½, 2½) | (8, 6, 10) | (5, 1½, 2) |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**22.** Factorise $2x^2 - 13x + 20$

| $(2x - 5)(x + 4)$ | $(2x - 4)(x - 5)$ | $(2x - 10)(x - 2)$ | $(2x + 5)(x - 4)$ | $(2x - 5)(x - 4)$ |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**23.** There is 10 m³ of concrete in a lorry.

The lorry pumps out the concrete at a constant rate.

It takes 3 minutes 20 seconds to pump out all the concrete.

At what rate, in m³ per second, is the lorry pumping out the concrete?

| 0.005 | 2 | 0.05 | 0.5 | 3 |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**24.** Expand and simplify $(3x-4y)^2$

| $49x^2y^2$ | $9x^2 - 16y^2$ | $9x^2 + 16y^2$ | $9x^2 - 24xy + 16y^2$ | $9x^2 + 24xy + 16y^2$ |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**25.** Which of these is a factor of $6x^2 - 13x + 6$?

| $(3x + 2)$ | $(3x - 2)$ | $3(x + 3)$ | $(x - 2)$ | $(3x - 3)$ |
|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** |

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**TOTAL FOR PAPER: 25 MARKS**

**END**