

Surname	Initial(s)
Signature	

Paper Reference(s)

**5382H/08**

# Edexcel GCSE

**Mathematics (Modular) – 2381**

Paper 8 (Non-Calculator)

## Higher Tier

Unit 2 Stage 1

Monday 3 March 2008 – 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 8 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.

Printer's Log. No.

**N33045A**



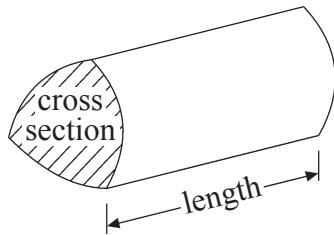
*Turn over*

## GCSE Mathematics

Formulae: Higher Tier

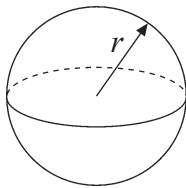
**You must not write on this formulae page.  
Anything you write on this formulae page will gain NO credit.**

**Volume of a prism** = area of cross section  $\times$  length



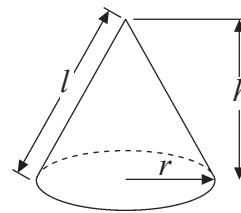
**Volume of sphere** =  $\frac{4}{3}\pi r^3$

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

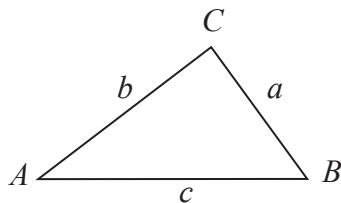


**Volume of cone** =  $\frac{1}{3}\pi r^2 h$

**Curved surface area of cone** =  $\pi r l$



**In any triangle ABC**



**The Quadratic Equation**

The solutions of  $ax^2 + bx + c = 0$

where  $a \neq 0$ , are given by

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

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

Answer ALL TWENTY FIVE questions using the answer sheet.

You must NOT use a calculator.

1. 487 is divided by 23

What is the remainder?

- |          |          |          |          |          |
|----------|----------|----------|----------|----------|
| 16       | 4        | 3        | 6        | 0        |
| <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> | <b>E</b> |

2. The Highest Common Factor (HCF) of 16 and 36 is

- |          |          |          |          |          |
|----------|----------|----------|----------|----------|
| 4        | 144      | 576      | 8        | 72       |
| <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> | <b>E</b> |

3. The diagram shows a rectangular floor.  
The length of the floor is 3 m.  
The width of the floor is 2 m.

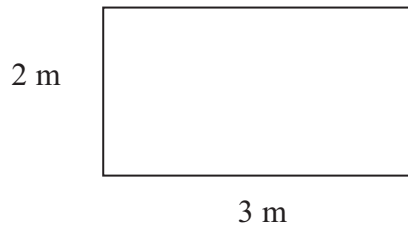


Diagram **NOT**  
accurately drawn

Jane is going to cover the floor with tiles.  
Each tile is a square of side 50 cm.  
Jane wants to cover the floor completely.

How many tiles does she need?

- |          |          |          |          |          |
|----------|----------|----------|----------|----------|
| 24       | 12       | 10       | 20       | 6        |
| <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> | <b>E</b> |

4. Simplify  $3a + 4c - a - 5c$

- |          |           |          |          |           |
|----------|-----------|----------|----------|-----------|
| $2a - c$ | $4a + 9c$ | $2a + c$ | $4a + c$ | $2a + 9c$ |
| <b>A</b> | <b>B</b>  | <b>C</b> | <b>D</b> | <b>E</b>  |

5. Factorise  $y^2 + 4y$

$5y$

**A**

$y(y + 4)$

**B**

$4y^3$

**C**

$y(y + 4y)$

**D**

$y + 4$

**E**

6.

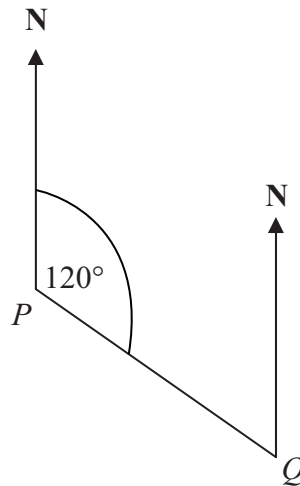


Diagram **NOT** accurately drawn

The bearing of  $Q$  from  $P$  is  $120^\circ$ .

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

$240^\circ$

**A**

$120^\circ$

**B**

$030^\circ$

**C**

$060^\circ$

**D**

$300^\circ$

**E**

7. Peter cycles 20 miles in  $2\frac{1}{2}$  hours.

What is his average speed in miles per hour?

5 miles per hour

**A**

8 miles per hour

**B**

10 miles per hour

**C**

12 miles per hour

**D**

50 miles per hour

**E**

8. Here are the first five terms of an arithmetic sequence.

2

5

8

11

14

What is the expression, in terms of  $n$ , for the  $n$ th term of the sequence?

$n + 3$

**A**

$3n$

**B**

$n - 3$

**C**

$3n + 1$

**D**

$3n - 1$

**E**

9. Given that  $37 \times 234 = 8658$

what is the value of  $3.7 \times 23.4$ ?

865.8

**A**

86.58

**B**

8.658

**C**

0.8658

**D**

86580

**E**

10.

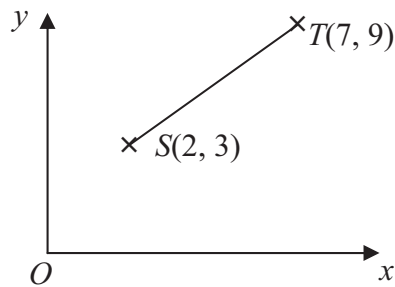


Diagram **NOT**  
accurately drawn

Which are the coordinates of the midpoint of the line  $ST$ ?

$(3\frac{1}{2}, 4\frac{1}{2})$

**A**

$(4\frac{1}{2}, 6)$

**B**

$(5, 6)$

**C**

$(6, 2\frac{1}{2})$

**D**

$(6, 4\frac{1}{2})$

**E**

11.

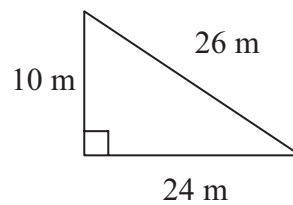


Diagram **NOT**  
accurately drawn

What is the area of this triangle?

$240 \text{ m}^2$

**A**

$65 \text{ m}^2$

**B**

$120 \text{ m}^2$

**C**

$60 \text{ m}^2$

**D**

$6240 \text{ m}^2$

**E**

12. What is 225 written as a product of its prime factors?

$9 \times 25$

**A**

$3^3 \times 5^3$

**B**

$5 \times 45$

**C**

$3 \times 5 \times 15$

**D**

$3 \times 3 \times 5 \times 5$

**E**

13. Which is the best estimate for the value of  $\frac{410 \times 6.9}{0.23}$  ?

- |          |          |          |          |          |
|----------|----------|----------|----------|----------|
| 14000    | 7000     | 1230     | 1400     | 2800     |
| <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> | <b>E</b> |

14.  $(x + 2)(x - 4) =$

- |            |            |            |            |            |
|------------|------------|------------|------------|------------|
| $x^2+2x-8$ | $x^2+6x-8$ | $x^2+2x-2$ | $x^2+2x+2$ | $x^2-2x-8$ |
| <b>A</b>   | <b>B</b>   | <b>C</b>   | <b>D</b>   | <b>E</b>   |

15. Factorise  $x^2 - x - 6$

- |              |              |              |              |              |
|--------------|--------------|--------------|--------------|--------------|
| $(x-3)(x-2)$ | $(x+1)(x-6)$ | $(x+3)(x-2)$ | $(x-3)(x+2)$ | $(x-1)(x-5)$ |
| <b>A</b>     | <b>B</b>     | <b>C</b>     | <b>D</b>     | <b>E</b>     |

16.

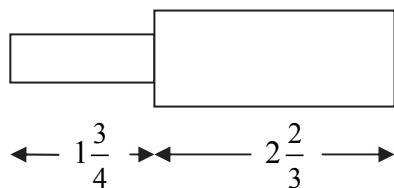


Diagram **NOT** accurately drawn

A machine tool is made from two parts.

One part has a length of  $1\frac{3}{4}$  inches.

The other part has a length of  $2\frac{2}{3}$  inches.

What is the total length, in inches, of the machine tool?

- |                |                 |                |                |                 |
|----------------|-----------------|----------------|----------------|-----------------|
| $3\frac{5}{7}$ | $4\frac{5}{12}$ | $4\frac{2}{3}$ | $\frac{15}{7}$ | $3\frac{5}{12}$ |
| <b>A</b>       | <b>B</b>        | <b>C</b>       | <b>D</b>       | <b>E</b>        |

17. The Lowest Common Multiple (LCM) of 30 and 48 is

- |          |          |          |          |          |
|----------|----------|----------|----------|----------|
| 720      | 8        | 240      | 6        | 1440     |
| <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> | <b>E</b> |

18. The length of a piece of wood is 123 mm, correct to the nearest mm.

What is the greatest length that the piece of wood could be?

- |          |          |           |          |          |
|----------|----------|-----------|----------|----------|
| 123.4 mm | 122.5 mm | 123.48 mm | 124 mm   | 123.5 mm |
| <b>A</b> | <b>B</b> | <b>C</b>  | <b>D</b> | <b>E</b> |

19. Factorise completely  $6x^2 - 9xy$

- |              |               |                |              |           |
|--------------|---------------|----------------|--------------|-----------|
| $3x(2 - 3y)$ | $3x(2x - 3y)$ | $3(x^2 - 3xy)$ | $x(6x - 9y)$ | $2x - 3y$ |
| <b>A</b>     | <b>B</b>      | <b>C</b>       | <b>D</b>     | <b>E</b>  |

20. What is the number 23 500 in standard form?

- |                    |                   |                    |                       |                   |
|--------------------|-------------------|--------------------|-----------------------|-------------------|
| $2.35 \times 10^2$ | $2.3 \times 10^4$ | $2.35 \times 10^4$ | $2.35 \times 10^{-4}$ | $235 \times 10^4$ |
| <b>A</b>           | <b>B</b>          | <b>C</b>           | <b>D</b>              | <b>E</b>          |

21.  $F$  and  $G$  are two points on a 3-D coordinate grid.

Point  $F$  is  $(2, 3, 3)$ .

Point  $G$  is  $(6, -1, -4)$ .

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

- |                        |                       |                        |                       |                       |
|------------------------|-----------------------|------------------------|-----------------------|-----------------------|
| $(4, 2, 3\frac{1}{2})$ | $(2, 1, \frac{1}{2})$ | $(4, 1, -\frac{1}{2})$ | $(4, 2, \frac{1}{2})$ | $(4, 1, \frac{1}{2})$ |
| <b>A</b>               | <b>B</b>              | <b>C</b>               | <b>D</b>              | <b>E</b>              |

22. Expand and simplify  $(3x - 2y)^2$

- |               |               |                      |                      |                      |
|---------------|---------------|----------------------|----------------------|----------------------|
| $9x^2 - 4y^2$ | $9x^2 + 4y^2$ | $9x^2 - 12xy + 4y^2$ | $9x^2 + 12xy - 4y^2$ | $9x^2 - 12xy + 4y^2$ |
| <b>A</b>      | <b>B</b>      | <b>C</b>             | <b>D</b>             | <b>E</b>             |

23.  $(2x + 1)(x - 3) =$

- |                 |                 |                 |                 |                 |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| $2x^2 + 5x - 3$ | $2x^2 - 2x - 3$ | $2x^2 + 2x - 3$ | $2x^2 - 5x - 3$ | $2x^2 - 5x + 3$ |
| <b>A</b>        | <b>B</b>        | <b>C</b>        | <b>D</b>        | <b>E</b>        |

24. Factorise  $6x^2 + x - 12$

- |                |                |               |                |               |
|----------------|----------------|---------------|----------------|---------------|
| $(2x-3)(3x+4)$ | $(2x-3)(3x-4)$ | $(6x-3)(x+4)$ | $(2x+3)(3x-4)$ | $(6x+3)(x-4)$ |
| <b>A</b>       | <b>B</b>       | <b>C</b>      | <b>D</b>       | <b>E</b>      |

25. A tank contained  $48\,000\text{ cm}^3$  of salt.  
The salt was removed from the tank at a constant rate.  
It took 2 hours and 40 minutes to empty the tank completely.

At what rate, in  $\text{cm}^3$  per second, was the salt removed from the tank?

5	6	13	36	300
<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>

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**TOTAL FOR PAPER: 25 MARKS**

**END**