

Surname	Initial(s)
Signature	

Paper Reference(s)

5382H/08

Edexcel GCSE

Mathematics (Modular) – 2381

Paper 8 (Non-Calculator)

Higher Tier

Unit 2 Stage 1

Wednesday 30 June 2010 – Morning

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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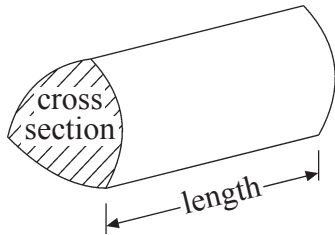
Turn over

GCSE Mathematics

Formulae: Higher Tier

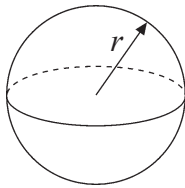
**You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.**

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



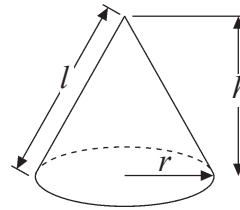
Volume of sphere = $\frac{4}{3}\pi r^3$

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

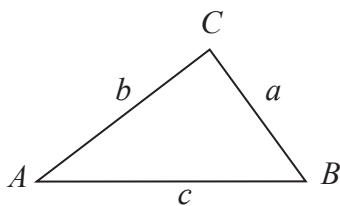


Volume of cone = $\frac{1}{3}\pi r^2 h$

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. $\frac{27}{8} =$

$2\frac{7}{8}$

$\frac{8}{27}$

$3\frac{1}{8}$

$2\frac{3}{8}$

$3\frac{3}{8}$

A

B

C

D

E

2.

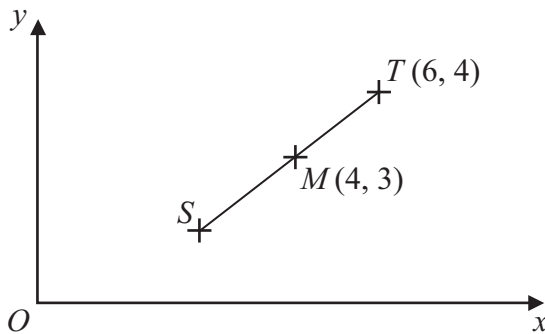


Diagram NOT accurately drawn

T is the point $(6, 4)$.

M is the point $(4, 3)$.

M is the midpoint of ST .

Which are the coordinates of the point S ?

$(2, 1)$

$(2, 2)$

$(5, 3\frac{1}{2})$

$(3, 2)$

$(3, 1)$

A

B

C

D

E

3. Simplify $6x - 2y + x + 5y$

$7x - 7y$

$5x - 7y$

$4x + 6y$

$7x + 3y$

$5x + 3y$

A

B

C

D

E

4. The Highest Common Factor (HCF) of 24 and 40 is

- | | | | | |
|----------|----------|----------|----------|----------|
| 2 | 8 | 120 | 4 | 960 |
| A | B | C | D | E |
-

5. Here are the first five terms of a sequence.

1 3 6 10 15

The next term of this sequence is

- | | | | | |
|----------|----------|----------|----------|----------|
| 20 | 21 | 24 | 18 | 22 |
| A | B | C | D | E |
-

6. n is an odd number.

One of these expressions **always** represents an even number.
Which expression?

- | | | | | |
|----------|----------|----------|----------|----------|
| $n + 2$ | $2n + 1$ | $2n - 1$ | $n + 1$ | $3n$ |
| A | B | C | D | E |
-

7. $36.8 \times 1.65 = 60.72$

The value of 3.68×165 is

- | | | | | |
|----------|----------|----------|----------|----------|
| 0.6072 | 60.72 | 607.2 | 6072 | 60720 |
| A | B | C | D | E |
-

8. Factorise $2m + 6$

- | | | | | |
|------------|------------|----------|----------|----------|
| $2(m + 6)$ | $2(m + 3)$ | $8m$ | $2m + 3$ | $m + 3$ |
| A | B | C | D | E |
-

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

-2 3 8 13 18

Which is the expression for the n th term of this sequence?

- | | | | | |
|----------|----------|----------|----------|----------|
| $n - 2$ | $5n - 2$ | $n + 5$ | $5n - 7$ | $5n$ |
| A | B | C | D | E |
-

10. $\frac{6}{15} \div \frac{9}{10} =$

- | | | | | |
|---------------|-----------------|------------------|---------------|---------------|
| $\frac{4}{9}$ | $\frac{15}{25}$ | $\frac{150}{54}$ | $\frac{3}{5}$ | $\frac{9}{4}$ |
| A | B | C | D | E |
-

11.

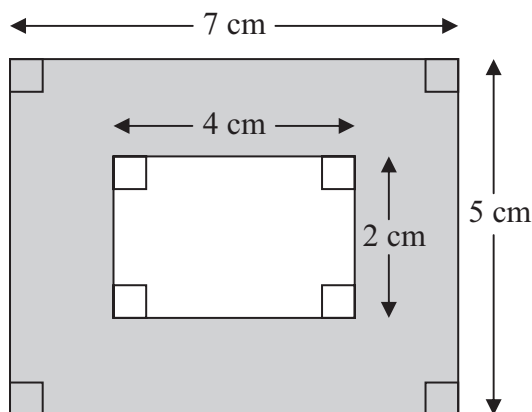


Diagram **NOT** accurately drawn

What is the shaded area?

- | | | | | |
|------------------|-------------------|-------------------|-------------------|-------------------|
| 8 cm^2 | 27 cm^2 | 35 cm^2 | 12 cm^2 | 43 cm^2 |
| A | B | C | D | E |
-

12.

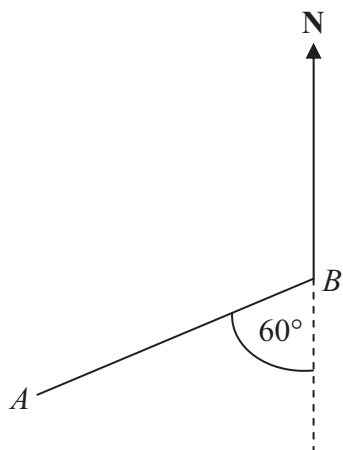


Diagram **NOT**
accurately drawn

What is the bearing of A from B ?

060°

A

120°

B

300°

C

240°

D

210°

E

13. What is 300 when written as a product of its prime factors?

$2^3 \times 3 \times 5$

A

$2 \times 3 \times 5^2$

B

$2 \times 3^2 \times 5^2$

C

$2^2 \times 3^2 \times 5^2$

D

$2^2 \times 3 \times 5^2$

E

14. $2(x - 4) - (x + 3) =$

$x - 5$

A

$x - 7$

B

$x - 1$

C

-14

D

$x - 11$

E

15. What is 23.0651 when written correct to 3 significant figures?

23.0

A

23.065

B

23.1

C

23.07

D

2.31

E

16. Factorise completely $4x^2 + 12xy$

A $4(x + 3y)$

B $2x(2x + 6y)$

C $4(x^2 + 3xy)$

D $4x(x + 3y)$

E $4x(x + 12y)$

17. The diagram shows a solid triangular prism.

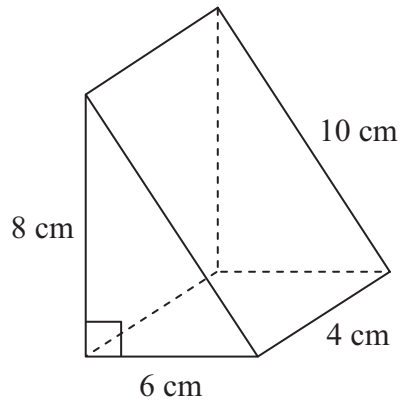


Diagram **NOT**
accurately drawn

What is the total surface area of this prism?

A 60 cm^2

B 96 cm^2

C 104 cm^2

D 112 cm^2

E 144 cm^2

18. Factorise $y^2 + 9y + 18$

A $(y + 2)(y + 9)$

B $(y + 1)(y + 18)$

C $(y + 1)(y + 8)$

D $y(y + 9) + 18$

E $(y + 3)(y + 6)$

19. What is 0.00185 when written in standard form?

A 1.85×10^3

B 1.85×10^{-2}

C 1.85×10^{-3}

D 185×10^{-3}

E 1.85^{-3}

20. $(p - 5)^2 =$

- | | | | | |
|------------|------------------|------------|------------------|------------------|
| $p^2 + 25$ | $p^2 - 10p + 25$ | $p^2 - 25$ | $p^2 - 10p - 25$ | $p^2 - 10p + 10$ |
| A | B | C | D | E |
-

21. The height of a door is 1.90 metres correct to the nearest centimetre.

What is the **least** possible height of the door?

- | | | | | |
|----------|----------|----------|----------|----------|
| 1.85 m | 1.849 m | 1.89 m | 1.845 m | 1.895 m |
| A | B | C | D | E |
-

22. L is the point with coordinates $(0, 3, -4)$.
 N is the point with coordinates $(5, -1, -2)$.

What are the coordinates of the midpoint of the line LN ?

- | | | | | |
|--------------|-------------------------|-------------------------|--------------|--------------|
| $(5, 4, -2)$ | $(2\frac{1}{2}, 1, -3)$ | $(2\frac{1}{2}, 2, -1)$ | $(2, 1, -3)$ | $(5, 2, -6)$ |
| A | B | C | D | E |
-

23. Expand $(3c - 4d)(2c + 5d)$

- | | | | | |
|---------------------|-----------------------|----------------------|----------------------|----------------------|
| $5c^2 + 7cd - 9d^2$ | $6c^2 - 22cd - 20d^2$ | $6c^2 + 7cd - 20d^2$ | $5c^2 + 7cd - 20d^2$ | $6c^2 - 7cd + 20d^2$ |
| A | B | C | D | E |
-

24. A tank is filled with oil at a constant rate.
It takes 1 hour and 20 minutes to fill the tank with 1200 litres of oil.

At what rate, in cm^3 per second, is the tank filled?

15000

250

0.25

166.7

1600

A

B

C

D

E

25. One of these expressions is a factor of $8x^2 + 2x - 3$
Which expression?

$2x - 1$

$4x - 3$

$x - 3$

$4x - 1$

$2x + 1$

A

B

C

D

E

TOTAL FOR PAPER: 25 MARKS

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