Surname	Initial(s)
Signature	

Paper Reference(s)

5382H/08

Edexcel GCSE

Mathematics (Modular) – 2381

Paper 8 (Non-Calculator)

Higher Tier

Unit 2 Stage 1

Friday 13 November 2009 – Afternoon

Time: 30 minutes

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

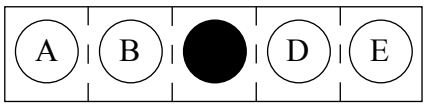
Items included with question papers
Nil

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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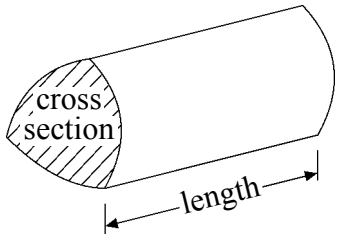
GCSE Mathematics 2381

Formulae: Higher Tier

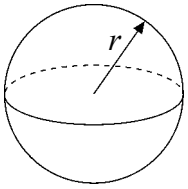
You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Volume of a prism = area of cross section × length



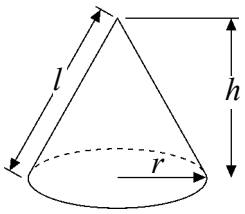
Volume of sphere $= \frac{4}{3}\pi r^3$

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

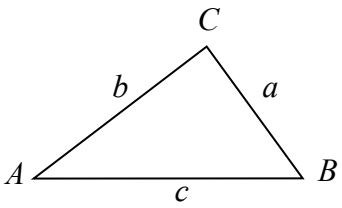


Volume of cone $= \frac{1}{3}\pi r^2 h$

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



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. $20 \div -5 =$

4	15	–15	0.25	–4
A	**B**	**C**	**D**	**E**

---

2. Here are the first four terms in a sequence of numbers.

9 16 25 36

What is the next term in the sequence?

52	64	40	49	45
A	**B**	**C**	**D**	**E**

---

3. Which is the best estimate for the value of $\frac{6.1 \times 9.6}{19.6}$?

5	2.5	30	4	3
A	**B**	**C**	**D**	**E**

---

4. Simplify $6a - 2m - 3a + 6m$

$3a + 8m$	$9a + 4m$	$3a + 4m$	$3a - 8m$	$7am$
A	**B**	**C**	**D**	**E**

---

5. Here is a prism.

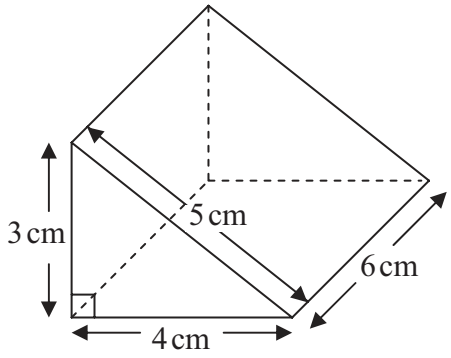


Diagram **NOT** accurately drawn

What is the total surface area of the prism?

$100\,cm^2$	$60\,cm^2$	$72\,cm^2$	$36\,cm^2$	$84\,cm^2$
A	**B**	**C**	**D**	**E**

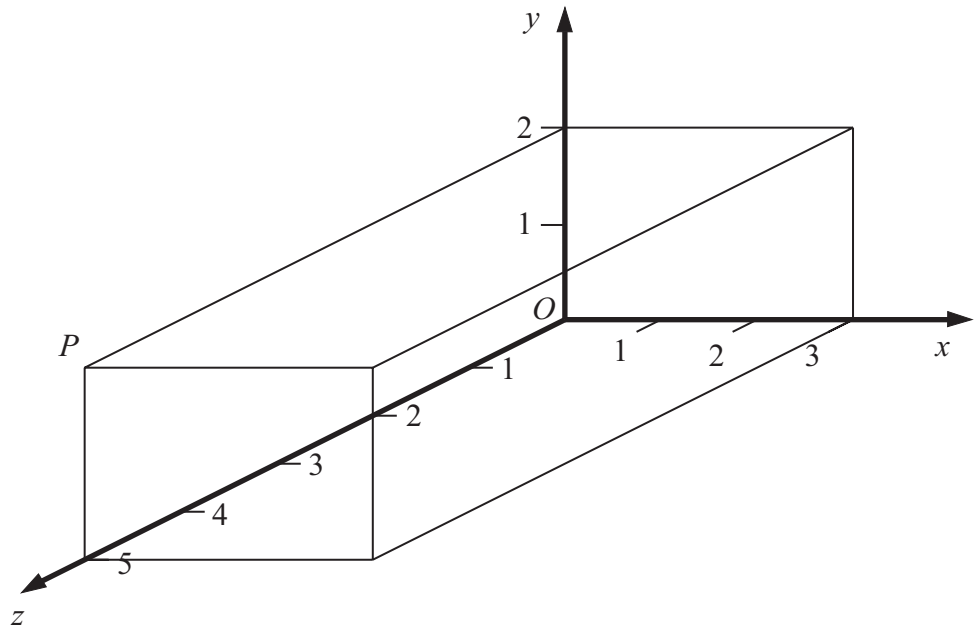
---

6. Factorise fully $6x + 12$

$6(x + 12)$	$3(2x + 4)$	$3(2x + 9)$	$6(x + 2)$	$2(3x + 6)$
A	**B**	**C**	**D**	**E**

---

7. Here is a cuboid drawn on a 3-D grid.
The point P is a vertex of the cuboid.



What are the coordinates of the point P?

(2, 5, 0)	(2, 0, 5)	(0, 3, 2)	(3, 0, 2)	(0, 2, 5)
A	**B**	**C**	**D**	**E**

---

8. $\sqrt{(5^2 + 12^2)} =$

13	14	15	16	17
A	**B**	**C**	**D**	**E**

---

9. The coordinates of the point A are (–3, 9).

The coordinates of the point B are (5, 1).

M is the midpoint of the line AB.

What are the coordinates of the point M?

(2, 8)	(1, 5)	(2, 5)	(4, 5)	(1, 4)
A	**B**	**C**	**D**	**E**

---

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

7 11 15 19 23

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

$n+4$	$7n+4$	$4n-1$	$4n+3$	$4n$
A	**B**	**C**	**D**	**E**

---

11. $2\frac{2}{5} + 1\frac{1}{2} =$

$3\frac{3}{10}$	$3\frac{3}{5}$	$3\frac{3}{7}$	$3\frac{7}{10}$	$3\frac{9}{10}$
A	**B**	**C**	**D**	**E**

12.

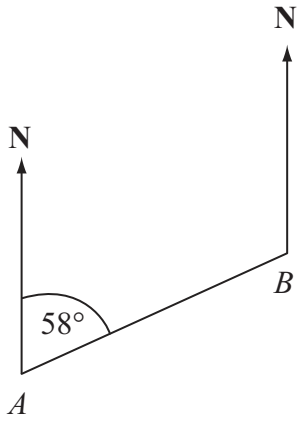


Diagram **NOT** accurately drawn

The bearing of B from A is 058°.

What is the bearing of A from B?

148°	302°	058°	238°	122°
A	**B**	**C**	**D**	**E**

---

13. Expand and simplify $3(x + 4) + 2(x - 5)$

$5x + 2$	$5x - 1$	$5x + 7$	$7x$	$5x + 22$
A	**B**	**C**	**D**	**E**

---

14. What is 3.42×10^{-3} when written as an ordinary number?

342	0.0342	0.00342	0.000342	3420
A	**B**	**C**	**D**	**E**

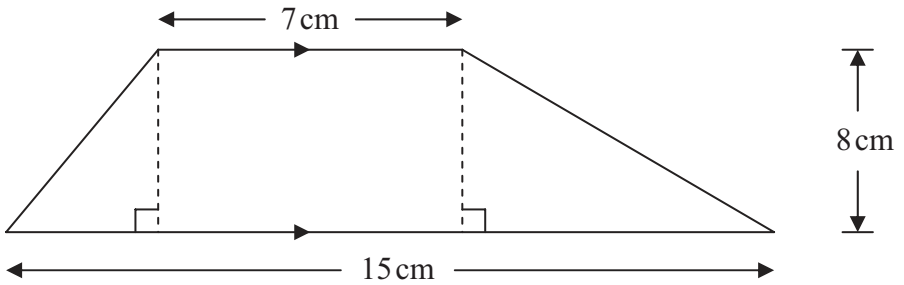
---

15. Expand and simplify $(x + 3)(x - 5)$

$x^2 + 2x - 15$	$x^2 - 8x - 15$	$x^2 - 2x - 8$	$x^2 + 3x - 2$	$x^2 - 2x - 15$
A	**B**	**C**	**D**	**E**

16.

Diagram **NOT** accurately drawn



The area of this shape is

$88\,cm^2$	$30\,cm^2$	$176\,cm^2$	$225\,cm^2$	$100\,cm^2$
A	**B**	**C**	**D**	**E**

---

17. What is 450 000 when written in standard form?

4.5×10^4	4.5×10^5	45×10^4	4.5×10^3	0.45×10^6
A	**B**	**C**	**D**	**E**

---

18. The length of a pen is 14 cm to the nearest cm.

What is the maximum possible length of the pen?

15 cm	14.99 cm	14.9 cm	14.45 cm	14.5 cm
A	**B**	**C**	**D**	**E**

---

19. Factorise the expression $x^2 + 8x + 12$

$x(x + 8) + 12$	$(x + 1)(x + 12)$	$(x + 2)(x + 6)$	$(x + 3)(x + 4)$	$(x + 5)(x + 7)$
A	**B**	**C**	**D**	**E**

---

20. What is 108 km/h in m/s?

36 m/s	30 m/s	300 m/s	24 m/s	240 m/s
A	**B**	**C**	**D**	**E**

---

21. What is the number 0.05997 correct to 3 significant figures?

0.06	0.060	0.599	0.06000	0.0600
A	**B**	**C**	**D**	**E**

---

22. $(4x - 3)(3x + 7) = 12x^2 + ax + b$, for all values of x.

What is the value of a and the value of b?

A	B	C	D	E
$a = 7, \quad b = -21$	$a = 7, \quad b = -4$	$a = -7, \quad b = 4$	$a = 37, \quad b = -21$	$a = 19, \quad b = -21$

---

23. Which expression is a factor of $6x^2 - 11x + 4$?

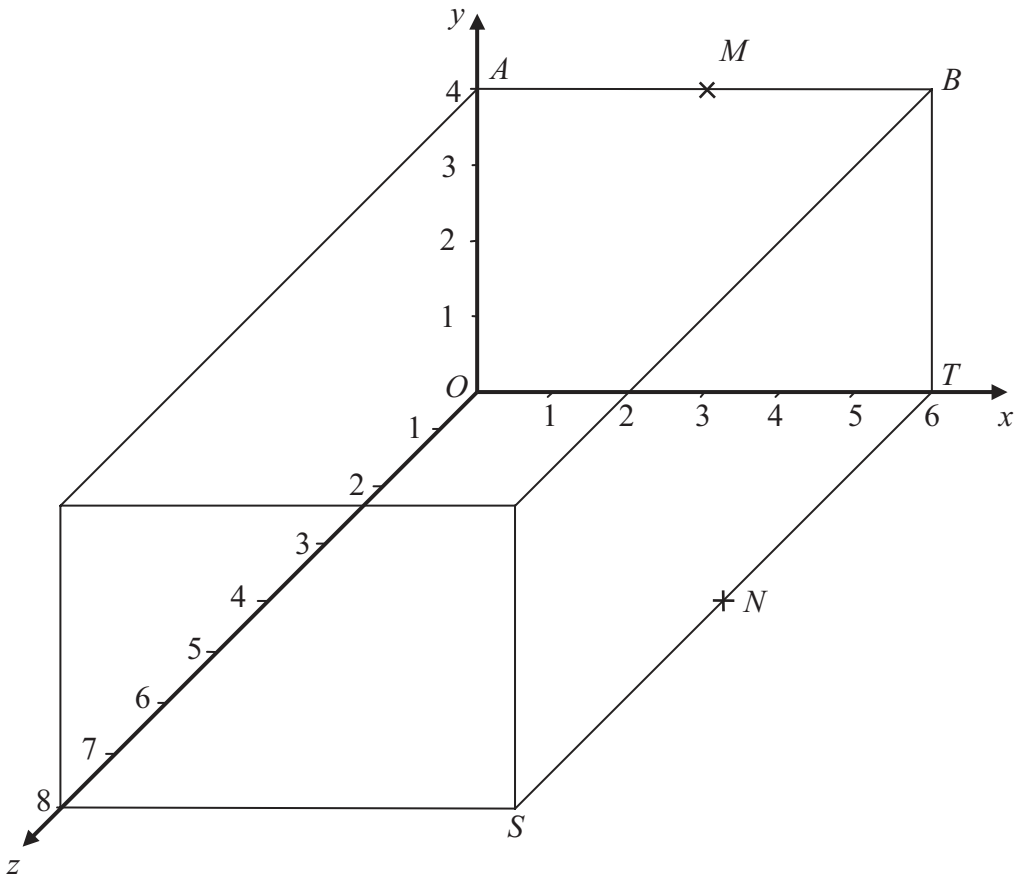
A	B	C	D	E
$6x - 1$	$2x + 1$	$3x - 2$	$3x - 4$	$x - 1$

---

24. Expand $(3x - y)(2x + 3y)$

A	B	C	D	E
$6x^2 + 7xy - 3y^2$	$5x^2 + 7xy + 2y^2$	$6x^2 + 9xy - 3y^2$	$6x^2 - 2xy - 3y^2$	$6x^2 - 3y^2$

25.



The cuboid is drawn on a 3-D grid.
The points A, B, S and T are vertices of the cuboid.

M is the midpoint of AB.
N is the midpoint of ST.

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

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

TOTAL FOR PAPER: 25 MARKS

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