Surname	Initial(s)
Signature	

Paper Reference(s)

5382H/08

Edexcel GCSE

Mathematics (Modular) – 2381

Paper 8 (Non-Calculator)

Higher Tier

Unit 2 Stage 1

Thursday 11 June 2009 – Afternoon

Time: 30 minutes

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

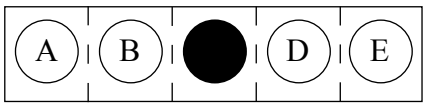
Items included with question papers
Nil

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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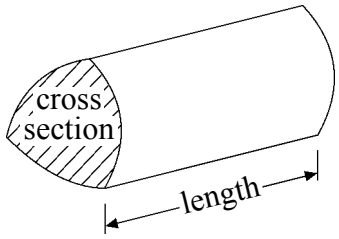
GCSE Mathematics

Formulae: Higher Tier

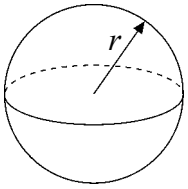
You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Volume of a prism = area of cross section × length



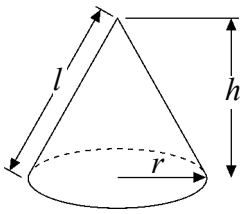
Volume of sphere $= \frac{4}{3}\pi r^3$

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

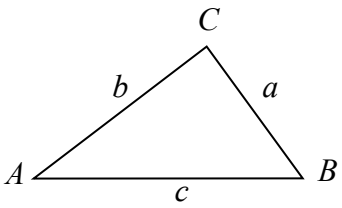


Volume of cone $= \frac{1}{3}\pi r^2 h$

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. What are the coordinates of the midpoint of the line joining $P(3, 4)$ to $Q(5, 8)$?

$(2, 4)$	$(8, 12)$	$\left(3\frac{1}{2}, 4\frac{1}{2}\right)$	$(4, 6)$	$(4, 12)$
A	**B**	**C**	**D**	**E**

---

2. Pens cost 10p each. Pencils cost 12p each.

What is an expression for the total cost, in pence, of x pens and y pencils?

$x + y$	$x = 10 + y = 12$	$12x + 10y$	$(10 + 12)xy$	$10x + 12y$
A	**B**	**C**	**D**	**E**

---

3. What is 72 written as a product of its prime factors?

8×9	$1 \times 2 \times 2 \times 2 \times 3 \times 3$	$2 \times 4 \times 9$	$2 + 2 + 2 + 3 + 3$	$2 \times 2 \times 2 \times 3 \times 3$
A	**B**	**C**	**D**	**E**

---

4. $0.64 \div 0.2 =$

3.2	0.032	0.32	12.8	1.28
A	**B**	**C**	**D**	**E**

---

5. The nth term of a sequence is $3n + 5$

What is the 6th term of the sequence?

5	14	41	23	33
A	**B**	**C**	**D**	**E**

6.

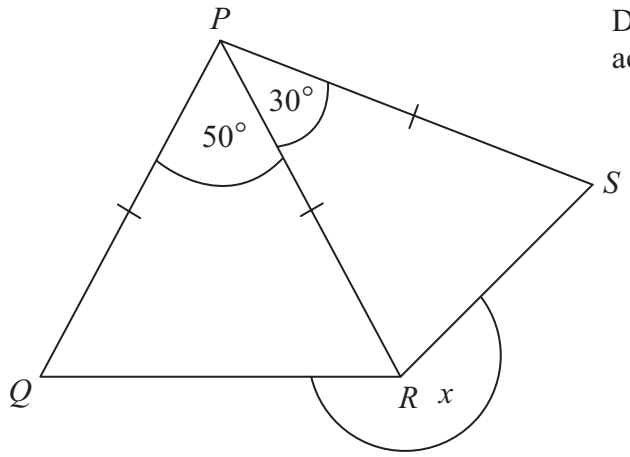


Diagram **NOT** accurately drawn

Triangle PQR and triangle PRS are both isosceles.
$PQ = PR = PS$.
Angle $QPR = 50°$.
Angle $RPS = 30°$.

What is the size of the angle x?

230°	220°	260°	250°	210°
A	**B**	**C**	**D**	**E**

---

7. Which is the smallest fraction?

$\frac{6}{8}$	$\frac{2}{3}$	$\frac{5}{6}$	$\frac{17}{24}$	$\frac{1}{2}$
A	**B**	**C**	**D**	**E**

---

8. What is 23 860.868 written correct to two significant figures?

24 000	24	2 386.86	23 860.87	23 000
A	**B**	**C**	**D**	**E**

---

9. Here are the first 5 terms of an arithmetic sequence.

3 7 11 15 19

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

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

---

10. Expand and simplify $3(2x + y) - (x - 2y)$

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

---

11. The length of a line is 7 cm measured to the nearest cm.

What is the greatest length the line could be?

7 cm	7.05 cm	7.49 cm	7.4 cm	7.5 cm
A	**B**	**C**	**D**	**E**

---

12. The speed of an aeroplane is 480 kilometres per hour.

How far does the aeroplane fly in 2 hours 30 minutes?

960 km	1200 km	1104 km	192 km	11 040 km
A	**B**	**C**	**D**	**E**

---

13. $(x+3)(x+5) =$

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

---

14. What are the coordinates of the midpoint of the line joining P (−3, 2, 4) to Q (5, 1, 8) ?

(1, 1.5, 6)	(2, −1, 4)	(8, −1, 4)	(1, −0.5, 2)	(2, 3, 12)
A	**B**	**C**	**D**	**E**

15.

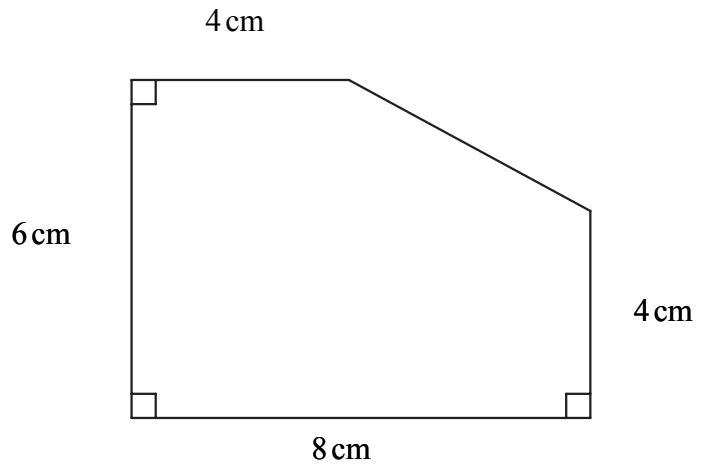


Diagram **NOT** accurately drawn

What is the area of the shape?

$44\,cm^2$	$22\,cm^2$	$40\,cm^2$	$56\,cm^2$	$768\,cm^2$
A	**B**	**C**	**D**	**E**

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16. What is 0.00643 in standard form?

6.43×10^{-1}	0.643×10^{-2}	6.4×10^{-3}	643×10^{-5}	6.43×10^{-3}
A	**B**	**C**	**D**	**E**

---

17. One of the factors of $6x^2 - 9xy$ is

$(2x - 3y)$	$(3x - 3y)$	$(2x + 3y)$	$(2x3y)$	$(2x - 3xy)$
A	**B**	**C**	**D**	**E**

18.

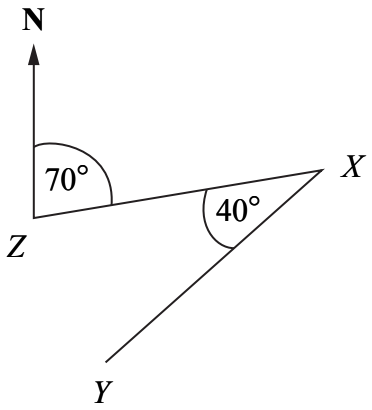

Diagram **NOT** accurately drawn

X, *Y* and *Z* are 3 points.

The bearing of *X* from *Z* is 070°.
Angle *YXZ* = 40°.

Work out the bearing of *Y* from *X*.

110°	040°	030°	230°	210°
A	**B**	**C**	**D**	**E**

---

19. Factorise completely $6x^4 + 6x^2$

$x^2(6x^2 + 6)$	$6x^2(x^2 + 6)$	$6x^2(6x^2 + 1)$	$6x^2(x^2 + 1)$	$6x^4(6x^2 + 1)$
A	**B**	**C**	**D**	**E**

---

20. $(2x - 3y)(3x + 2y) =$

$6x^2 - 6y^2$	$6x^2 - 5xy - 6y^2$	$6x^2 - xy - 6y$	$6x^2 - 5xy - 6y$	$6x^2 + xy - 5y^2$
A	**B**	**C**	**D**	**E**

---

21. $5\frac{1}{4} \times 2\frac{1}{7} =$

$10\frac{1}{28}$	$10\frac{11}{28}$	$11\frac{1}{6}$	$10\frac{2}{11}$	$11\frac{1}{4}$
A	**B**	**C**	**D**	**E**

---

22. Which is a factor of $2x^2 - 7x - 4$?

$(2x+1)$	$(2x-1)$	$(x+4)$	$(2x+4)$	$(x-1)$
A	**B**	**C**	**D**	**E**

23.

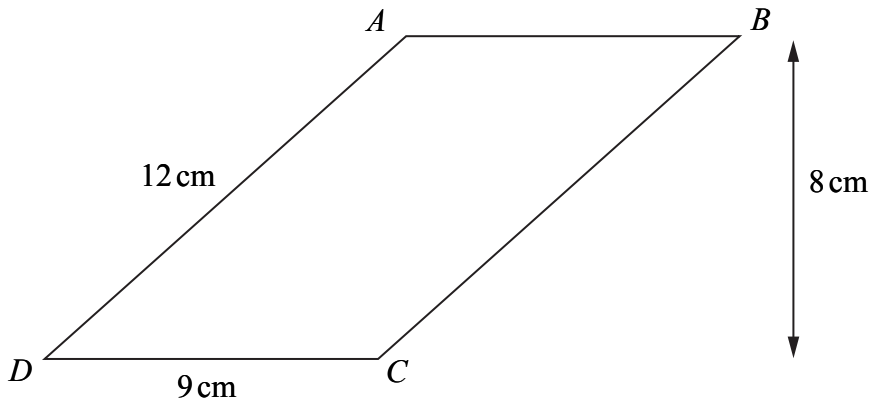

Diagram **NOT** accurately drawn

ABCD is a parallelogram.

AD = 12 cm.
DC = 9 cm.
The perpendicular distance of *AB* from *CD* is 8 cm.

What is the perpendicular distance of *AD* from *BC* ?

6 cm	7 cm	8 cm	9 cm	10 cm
A	**B**	**C**	**D**	**E**

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24. The diagram shows a cuboid drawn on a 3-D grid.

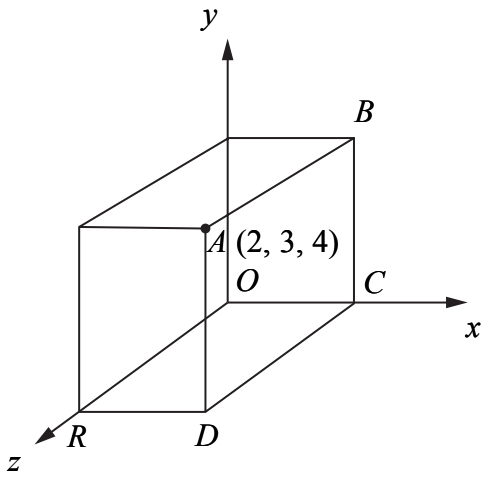

Diagram **NOT** accurately drawn

The base of the cuboid is *OCDR*.
The point *C* is on the *x*-axis.
The point *R* is on the *z*-axis.

A = (2, 3, 4).

What is the area of the face *ABCD* ?

9	6	8	24	12
A	**B**	**C**	**D**	**E**

---

25. $(2x + 3)^2 - (2x + 3)(x - 1) =$

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

TOTAL FOR PAPER: 25 MARKS

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