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 2 March 2010 – Afternoon

Time: 30 minutes

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

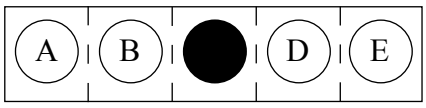
Items included with question papers
Nil

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 16 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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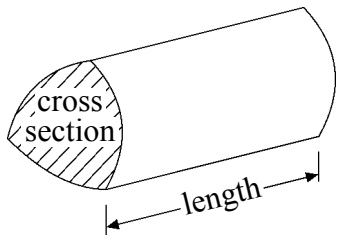
GCSE Mathematics 2381

Formulae: Higher Tier

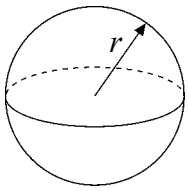
You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Volume of a prism = area of cross section × length



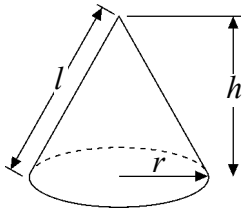
Volume of sphere $= \frac{4}{3}\pi r^3$

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

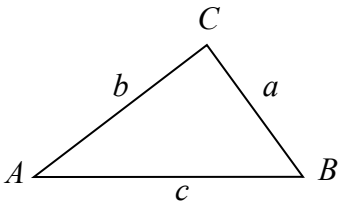


Volume of cone $= \frac{1}{3}\pi r^2 h$

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.

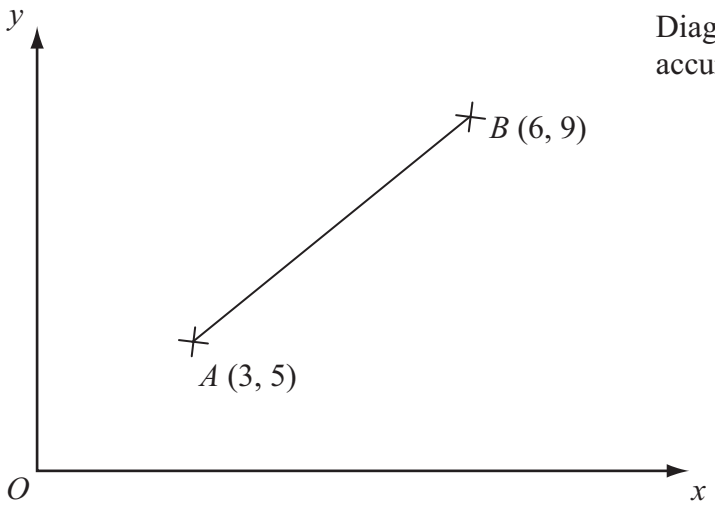


Diagram **NOT** accurately drawn

M is the midpoint of the line AB.

What are the coordinates of M?

(9, 7)	(1.5, 2)	(3, 4)	(9, 14)	(4.5, 7)
A	**B**	**C**	**D**	**E**

---

2. Sam buys x pencils at 12p each and y pens at 20p each.

What is the expression for the total cost in pence?

$x + y$	$12x + y$	$12x20y$	$12x = 20y$	$12x + 20y$
A	**B**	**C**	**D**	**E**

---

3. $3a - 4x + a - 3x =$

$4a - 7x$	$2a - 7x$	$4a + 7x$	$2a + 7x$	$4a - x$
A	**B**	**C**	**D**	**E**

4.

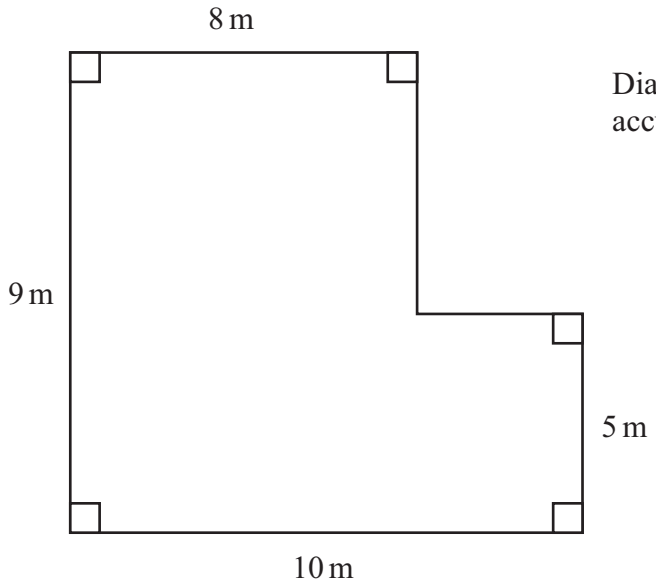


Diagram **NOT** accurately drawn

The area of this shape is

32 m^2	122 m^2	82 m^2	97 m^2	38 m^2
A	**B**	**C**	**D**	**E**

---

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

–3 7 17 27 37

What is the expression for the nth term of this sequence?

$n + 10$	$10n - 3$	$10n - 13$	$-3n + 10$	$n = n + 10$
A	**B**	**C**	**D**	**E**

---

6. $6.4 \div 0.2 =$

0.32	3.2	12.8	32	128
A	**B**	**C**	**D**	**E**

---

7. $2\frac{3}{4} =$

$\frac{23}{4}$	$\frac{7}{4}$	$\frac{11}{4}$	$\frac{10}{4}$	$\frac{5}{4}$
A	**B**	**C**	**D**	**E**

---

8. The Highest Common Factor (HCF) of 60 and 96 is

2	12	6	5760	480
A	**B**	**C**	**D**	**E**

---

9. An aeroplane flies at a constant speed of 660 kilometres per hour.

How far does it fly in 2 hours 30 minutes?

264 kilometres	1320 kilometres	1650 kilometres
A	**B**	**C**

1350 kilometres	1500 kilometres
D	**E**

---

10. What is 32 800 when written in standard form?

3.3×10^4	3.28×10^4	32.8×10^4	3.28×10^2	328×10^2
A	**B**	**C**	**D**	**E**

11.

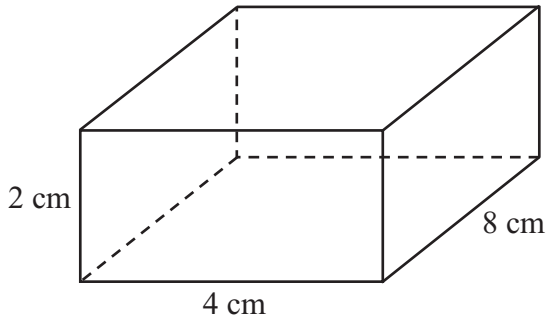


Diagram **NOT** accurately drawn

The diagram shows a solid cuboid.

What is the total surface area of this cuboid?

14 cm^2	32 cm^2	64 cm^2	80 cm^2	112 cm^2
A	**B**	**C**	**D**	**E**

12.

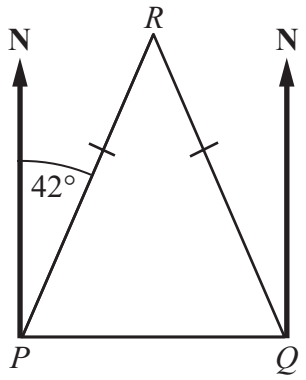


Diagram **NOT** accurately drawn

P, *Q* and *R* are 3 villages.
RP = *RQ*.
The bearing of *R* from *P* is 042°.
Q is due East of *P*.

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

042°	048°	132°	312°	318°
A	**B**	**C**	**D**	**E**

---

13. The mass of a block of wood is 14 kg correct to the nearest kg.

What is the greatest possible mass of the block?

14.0 kg	14.4 kg	14.449 kg	14.5 kg	14.9 kg
A	**B**	**C**	**D**	**E**

---

14. What is 328.647 when rounded correct to 2 significant figures?

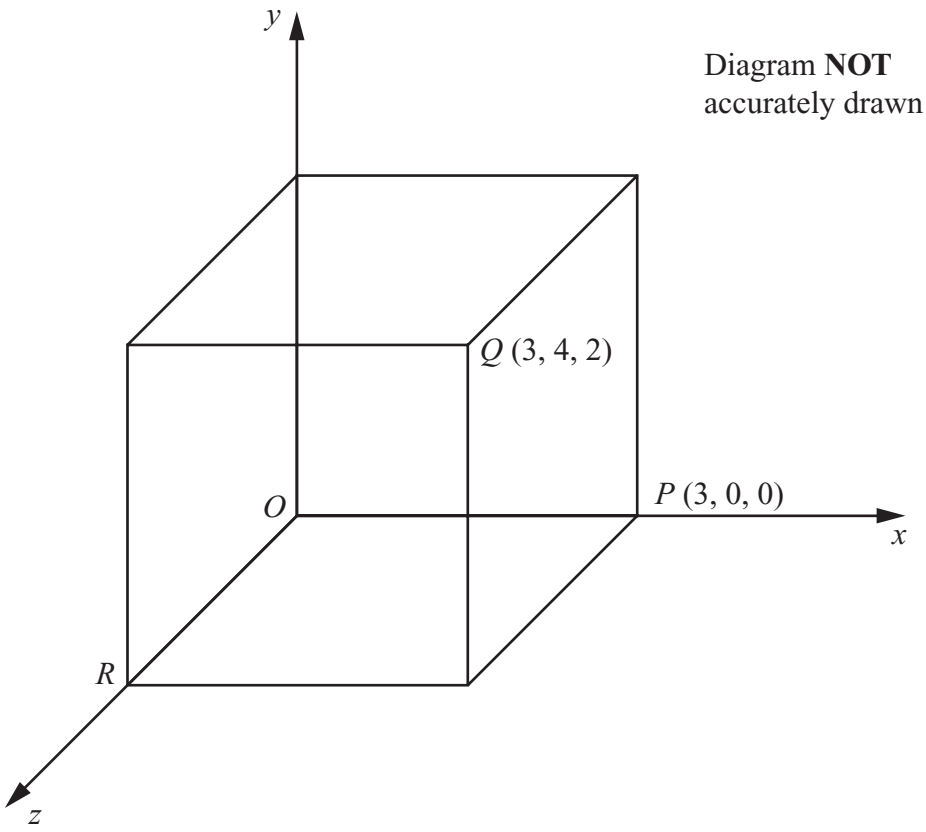
33	320	330	328.65	330.65
A	**B**	**C**	**D**	**E**

---

15. Expand $2x(2x+3y)$

$2x^2 + 2xy$	$4x^2 + 3y$	$4x^2 + 2xy$	$2x^2 + 6xy$	$4x^2 + 6xy$
A	**B**	**C**	**D**	**E**

16.



The diagram shows a cuboid.
O, *P*, *Q* and *R* are vertices of the cuboid.

The point *P* has coordinates (3, 0, 0)
The point *Q* has coordinates (3, 4, 2)

What are the coordinates of the point *R*?

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

---

17. Expand $(x+3)(x+7)$

$2x+10$	$2x+21$	x^2+21	$x^2+10x+10$	$x^2+10x+21$
A	**B**	**C**	**D**	**E**

---

18. $4t + 2t(t+1) =$

$6t^2 + 6t$	$2t^2 + 4t + 1$	$2t^2 + 6t$	$8t + 1$	$6t^3 + 2t$
A	**B**	**C**	**D**	**E**

---

19. Which expression is a factor of $y^2 - 7y - 8$?

$(y+1)$	$(y-1)$	$(y+2)$	$(y-2)$	$(y+8)$
A	**B**	**C**	**D**	**E**

---

20. *P* has coordinates (–3, 8, 3)
Q has coordinates (–1, 2, –5)

What are the coordinates of the midpoint of the line *PQ*?

(–2, 5, –1)	(–2, 5, –2)	(–4, 10, –2)	(2, 5, 1)	(2, –5, 1)
A	**B**	**C**	**D**	**E**

---

21. Expand $(2x - 3y)(3x - 6y)$

$6x - 18y$	$6x^2 + 18y^2$	$6x^2 - 21xy + 18y^2$	$5x^2 + 21xy - 18y^2$	$6x^2 - 21xy + 18y$
A	**B**	**C**	**D**	**E**

22.

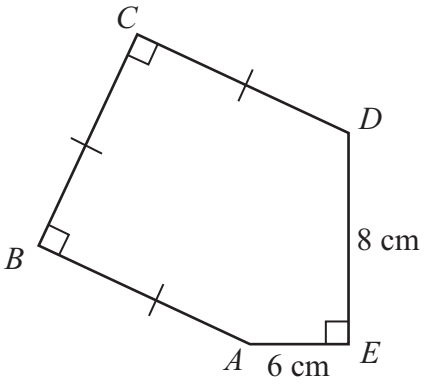


Diagram **NOT** accurately drawn

AB = *BC* = *CD*.
The perimeter of *ABCDE* is 44 cm.

The area of *ABCDE* is

148 cm^2	124 cm^2	114 cm^2	100 cm^2	58 cm^2
A	**B**	**C**	**D**	**E**

---

23. Factorise $3t^2 + 2t - 8$

$(3t-4)(t+2)$ **A**

$(3t-4)(t-2)$ **B**

$(3t+4)(t-2)$ **C**

$(3t-8)(t+1)$ **D**

$(3t+8)(t-1)$ **E**

---

24. $x = 2\times3^2\times5^2\times7$

$y = 2^2\times3\times5^2\times7^2$

What is the Lowest Common Multiple (LCM) of x and y?

$2^2\times3^2\times5^2\times7^2$ **A**

$2^3\times3^3\times5^4\times7^3$ **B**

$2\times3\times5\times7$ **C**

$1\times2\times3\times5\times7$ **D**

$2\times3\times5^2\times7$ **E**

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25. The capacity of a water tank is 4500 litres.
Water can be pumped into the tank using two pumps, A and B.
Both A and B pump water at a constant rate.

It takes 50 minutes to fill the empty tank using only A.
It takes 75 minutes to fill the empty tank using only B.

How many minutes does it take to fill the empty tank using both A and B together?

25 minutes	30 minutes	45 minutes	60 minutes	125 minutes
A	**B**	**C**	**D**	**E**

TOTAL FOR PAPER: 25 MARKS

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