Centre No.						Paper Reference							Surname	Initial(s)
Candidate No.						5	5	3	8	/	1	8	Signature	

Paper Reference(s)

5538/18

Examiner's use only

Team Leader's use only

Edexcel GCSE

Mathematics B – 1388

Paper 18 (Non-Calculator)

Higher Tier

Monday 4 June 2007 – Afternoon

Time: 1 hour 15 minutes

Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser.
Tracing paper may be used.

Items included with question papers

Nil

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initials and signature.
Check that you have the correct question paper.
Answer ALL the questions. Write your answers in the spaces provided in this question paper.
You must NOT write on the formulae page. Anything you write on the formulae page will gain NO credit.
If you need more space to complete your answer to any question, use additional answer sheets.

Information for Candidates

The marks for individual questions and the parts of questions are shown in round brackets: e.g. **(2)**.
There are 19 questions in this question paper. The total mark for this paper is 62.
There are 16 pages in this question paper. Any blank pages are indicated.
Calculators must not be used.

Advice to Candidates

Show all stages in any calculations.
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.
N25775A
W850/R1388/57570 6/6/6/

N 2 5 7 7 5 A 0 1 1 6

Turn over

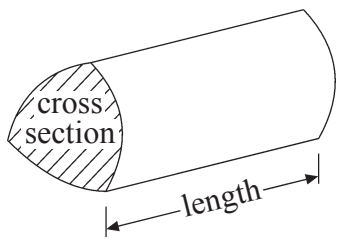
edexcel
advancing learning, changing lives

GCSE Mathematics 1387/8

Formulae: Higher Tier

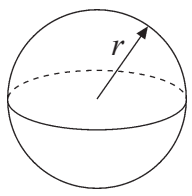
You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Volume of a prism = area of cross section × length



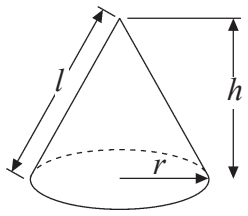
Volume of sphere $= \frac{4}{3}\pi r^3$

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

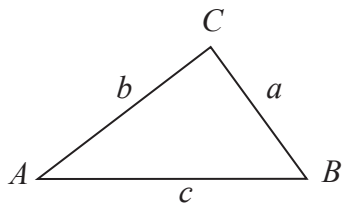


Volume of cone $= \frac{1}{3}\pi r^2 h$

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



In any triangle ABC



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

Leave blank

Answer ALL NINETEEN questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

You must NOT use a calculator.

1. A bag contains counters which are red or green or yellow or blue.

The table shows each of the probabilities that a counter taken at random from the bag will be red or green or blue.

Colour	**Red**	**Green**	**Yellow**	**Blue**
Probability	0.2	0.3		0.1

A counter is to be taken at random from the bag.

(a) Work out the probability that the counter will be yellow.

.....

(2)

The bag contains 200 counters.

(b) Work out the number of red counters in the bag.

.....

(2) **Q1**

(Total 4 marks)

Leave blank

2. Kate buys 2 lollies and 5 choc ices for £6.50
Pete buys 2 lollies and 3 choc ices for £4.30

Work out the cost of one lolly.
Give your answer in pence.

..... pence
(Total 3 marks)

Q2

Leave blank

3. Matthew wants to collect information about the time students take to travel to school.

Design a suitable question he could use on a questionnaire.

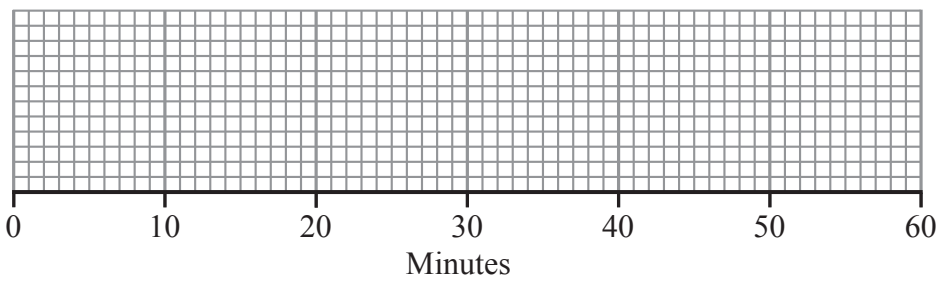
Q3

(Total 2 marks)

4. Mrs Raja set work for the students in her class.
She recorded the time taken, in minutes, for each student to do the work.
She used her results to work out the information in the table.

	Minutes
Shortest time	4
Lower quartile	14
Median	26
Upper quartile	30
Longest time	57

On the grid, draw a box plot to show the information in the table.



Q4

(Total 2 marks)

Turn over

Leave blank

5. (i) Solve the inequality $3x \geqslant x + 7$

.....

(ii) x is a whole number.
Write down the smallest value of x that satisfies $3x \geqslant x + 7$

.....
(Total 3 marks)

Q5

6. The table shows some expressions.
a, b, c and d represent lengths.
π and 3 are numbers that have no dimensions.

$\pi a^2 + ab$	$3a^3$	$a(3d+b)$	$3ab+c$	$\pi c^2 d$	$3(b+d)$	$\frac{\pi ab^2}{3d}$

Tick (✓) the boxes underneath the **three** expressions which could represent areas.

(Total 3 marks)

Q6

7. The volume of this cube is $8\,m^3$.

Change $8\,m^3$ to cm^3.

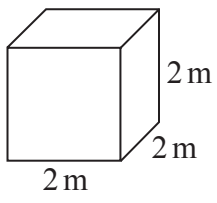


Diagram **NOT** accurately drawn

..... cm^3
(Total 2 marks)

Q7

Leave blank

8. Write 126 as a product of its prime factors.

Q8

.....

(Total 2 marks)

9. Write as a power of 7

(i) $7^8 \div 7^3$

.....

(ii) $\dfrac{7^2 \times 7^3}{7}$

Q9

.....

(Total 3 marks)

Leave blank

10.

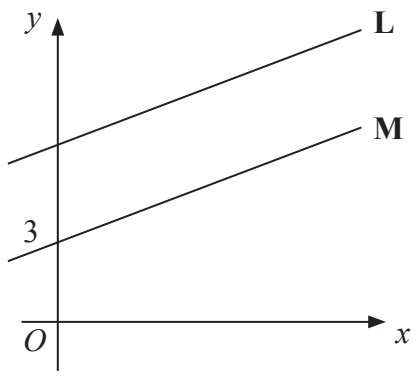


Diagram **NOT** accurately drawn

The straight line **L** has equation $y = \frac{1}{2}x + 7$

The straight line **M** is parallel to **L** and passes through the point (0, 3).

Write down an equation for the line **M**.

.....

(Total 2 marks)

Q10

11. Work out $2\frac{2}{3} \times 1\frac{1}{4}$

Give your answer in its simplest form.

.....

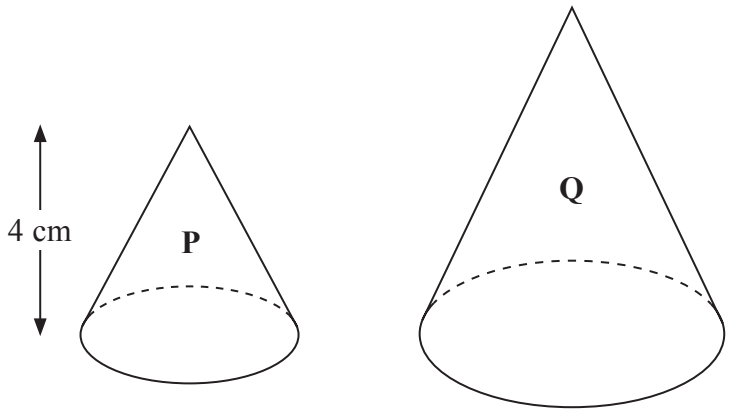
(Total 3 marks)

Q11

Leave blank

12.

Diagrams **NOT** accurately drawn



Two cones, **P** and **Q**, are mathematically similar.
The total surface area of cone **P** is 24 cm^2.
The total surface area of cone **Q** is 96 cm^2.
The height of cone **P** is 4 cm.

(a) Work out the height of cone **Q**.

..... cm
(3)

The volume of cone **P** is 12 cm^3.

(b) Work out the volume of cone **Q**.

..... cm^3
(2)

Q12

(Total 5 marks)

Turn over

Leave blank

13.

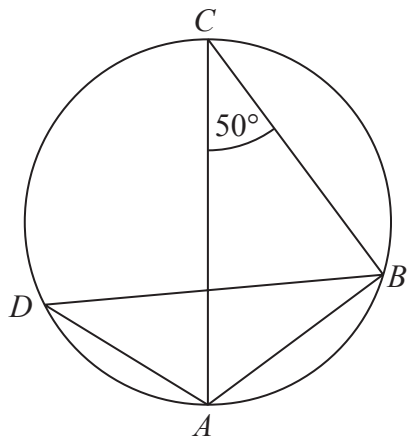


Diagram **NOT** accurately drawn

A, *B*, *C* and *D* are points on a circle.
AC is a diameter of the circle.
Angle *ACB* = 50°.

(a) (i) Write down the size of angle *ABC*.

.....°

(ii) Write down the size of angle *ADB*.

.....°

(2)

Leave blank

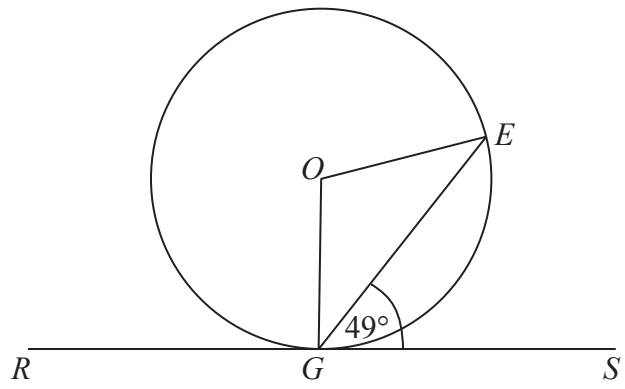


Diagram **NOT** accurately drawn

E and *G* are points on a circle, centre *O*.
RGS is a tangent to the circle.
Angle *EGS* = 49°

(b) Work out the size of angle *GOE*.
You must give reasons for your answer.

.....°

(3) **Q13**

(Total 5 marks)

Leave blank

14. (a) Expand $x(3 - 2x^2)$

.....

(2)

(b) Factorise completely $12xy + 4x^2$

.....

(2)

(c) Simplify $\dfrac{x-3}{x^2-9}$

.....

(2)

Q14

(Total 6 marks)

15. (i) Expand and simplify

$$n^2 + (n + 1)^2$$

.....

n is a whole number.

(ii) Prove that $n^2 + (n + 1)^2$ is always an odd number.

Q15

(Total 4 marks)

Leave blank

16. $\dfrac{\sqrt{12}+15}{\sqrt{3}}$ can be written in the form $p+q\sqrt{3}$ where p and q are integers.

Find the value of p and the value of q.

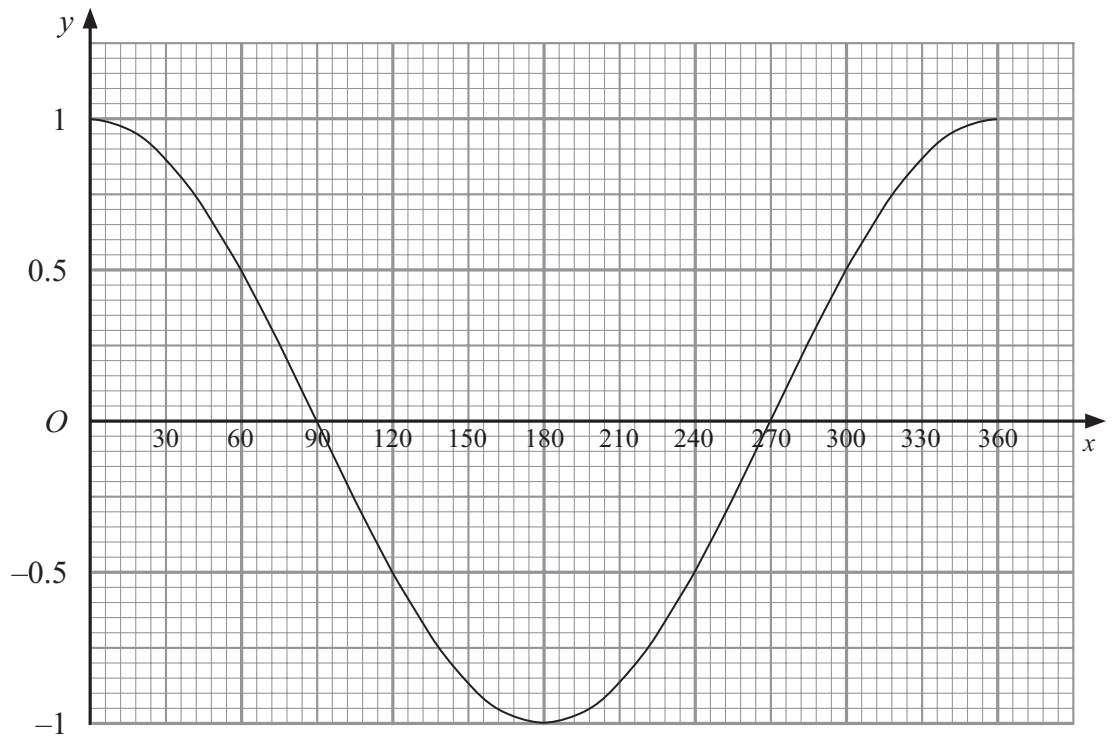
$p =$ .....

$q =$ .....

Q16

(Total 2 marks)

17. Here is a graph of the curve $y = \cos x°$ for $0 \leqslant x \leqslant 360$



Use the graph to solve $\cos x° = 0.75$ for $0 \leqslant x \leqslant 360$

Q17

.....

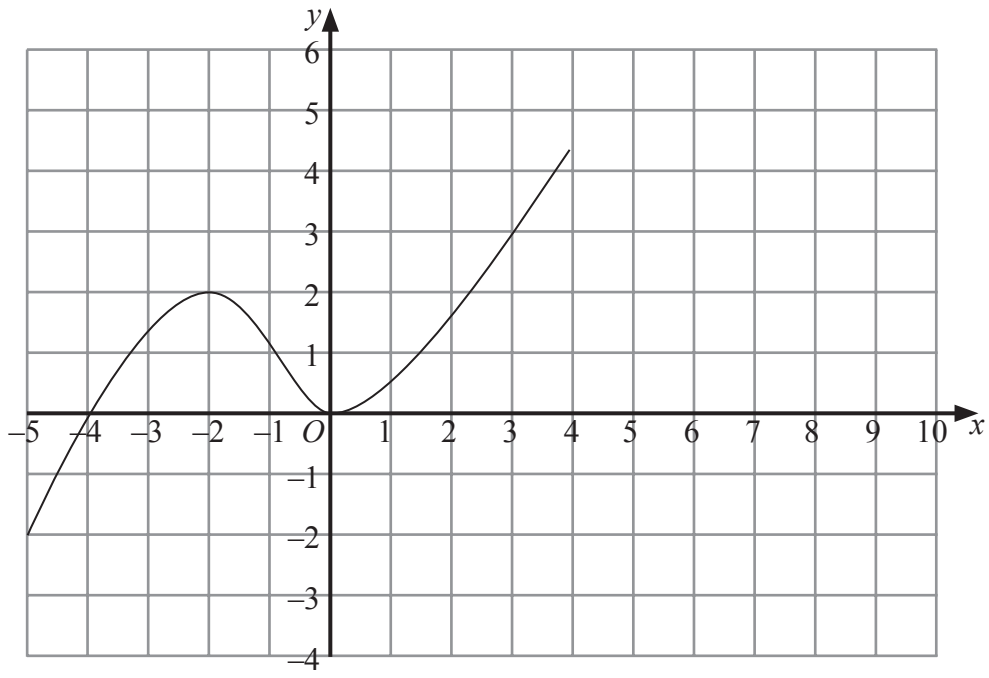
(Total 2 marks)

Turn over

Leave blank

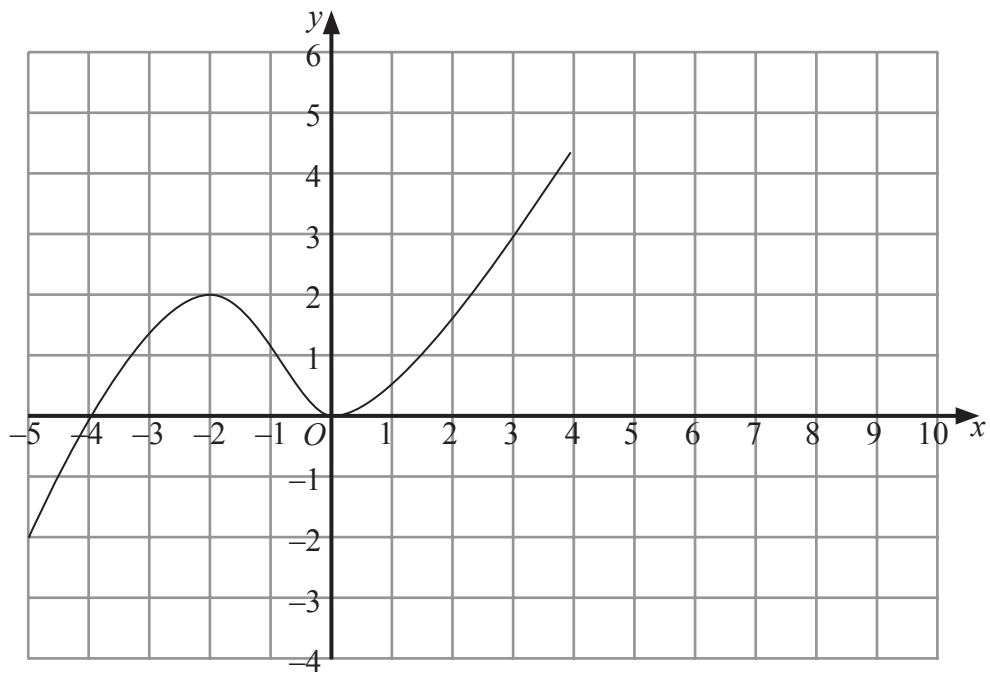
18. The graph of $y = f(x)$ is shown on the grids.

(a) On this grid, sketch the graph of $y = f(x) + 2$



(2)

(b) On this grid, sketch the graph of $y = -f(x)$



(2) **Q18**

(Total 4 marks)

Leave blank

19. By eliminating y, find the solutions to the simultaneous equations

$$y = 5x^2$$

$$y = 3 - 14x$$

$x =$ ..... , $y =$ .....

$x =$ ..... , $y =$ **Q19**

(Total 5 marks)

TOTAL FOR PAPER: 62 MARKS

END

BLANK PAGE