

Candidate Name	Centre Number	Candidate Number
		0



GCSE

185/07

**MATHEMATICS
FOUNDATION TIER
PAPER 1**

A.M. TUESDAY, 9 November 2010
2 hours

**CALCULATORS ARE
NOT TO BE USED
FOR THIS PAPER**

INSTRUCTIONS TO CANDIDATES

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

Take π as 3.14.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

SOLUTIONS

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1	12	
2	4	
3	3	
4	5	
5	9	
6	4	
7	8	
8	5	
9	6	
10	10	
11	6	
12	4	X
13	7	
14	5	
15	4	
16	4	X
17	4	
TOTAL MARK		

1. (a) (i) Write down, in figures, the number four thousand, two hundred and six.

4206

- (ii) Write down, in words, the number 16 000 000.

sixteen million

[2]

- (b) (i) Add together 34 and 27.

61

- (ii) Find the number which must be added to 38 to make 62.

24

- (iii) Write down the multiple of 7 that is between 20 and 25.

21

- (iv) Write down the square number that is between 30 and 40.

36

[4]

- (c) Write 8623

- (i) correct to the nearest 10,

8620

- (ii) correct to the nearest 1000.

9000

[2]

- (d) Write down all the factors of 33.

1, 33, 3, 11

[2]

- (e) How many notebooks each costing £2.99 can be bought with a £20 note?

20 ÷ 3 = 6

[2]

12

2. (a) Using the following list, circle the fractions that are equivalent to $\frac{1}{3}$.

$\frac{2}{6}$ $\frac{2}{9}$ $\frac{6}{12}$ $\frac{4}{15}$ $\frac{5}{15}$

- (b) Janet buys a newspaper costing 34p and a magazine costing £1.27. How much change should she get from £5?

$$5.00 - 1.61$$

$$= \pounds 3.39$$

3. impossible unlikely an even chance likely certain
- For each of the following events, choose **one** of the above to describe the chance of the event occurring.

An odd number score is obtained when an ordinary fair dice is rolled once.

even chance

At least one of the days in the next 10 days will be a Monday.

certain

It will rain in London on at least one day in March.

likely

7

4. (a) Write down the next term in **each** of the following sequences.

(i) 3, 10, 17, 24, *31*

(ii) 84, 78, 72, 66, *60*

[2]

- (b) Write 0.3 as a percentage. *30%*

Write $\frac{1}{4}$ as a percentage. *25%*

Write 0.3, $\frac{1}{4}$ and 28% in ascending order.

0.3, 28%, 0.3

[3]

5. Rachel records the number of goals scored by her favourite team for each game throughout the season.
She writes M when her team scores more than 3 goals.
The team plays 40 games and the results are shown below.

0	2	3	1	0	2	M	0	1	1
0	1	3	0	M	1	3	1	3	2
3	0	3	M	1	2	0	1	0	1
1	M	2	1	3	0	M	2	1	3

- (a) Complete the frequency table below.

Goals scored	Tally	Frequency
0		9
1		12
2		6
3		8
M		5

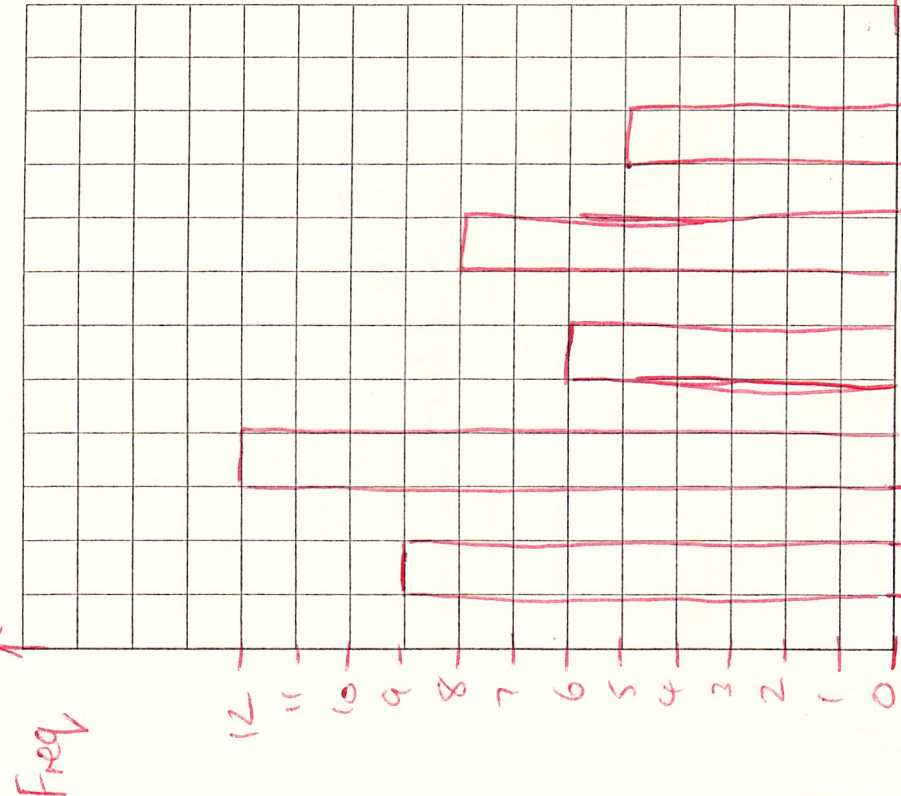
[2]

- (b) Write down the mode

[1]

3

- (c) Using the squared paper below, draw a suitable bar chart for the data given in the table. [4]



- (d) (i) Using these results, complete the following:

The probability that the team scored exactly 2 goals in a match = $\frac{6}{40}$

- (ii) Explain why you cannot find the range for the number of goals scored.

Don't know biggest value because of M.

[2]

6

6. The diagram represents a 11 cm by 5 cm rectangle.

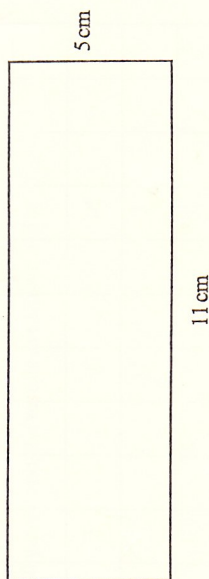


Diagram not drawn to scale

- (a) Calculate the perimeter of the rectangle.

$$11 + 5 + 11 + 5 = 32 \text{ cm}$$

[1]

- (b) Calculate the area of the rectangle, giving the units of your answer.

$$11 \times 5 = 55 \text{ cm}^2$$

[3]

4

7. (a) The tickets for a concert cost £39 each. A group of 56 pupils are going to this concert. How much will the tickets cost altogether?

$$\begin{array}{r} 56 \\ \times 39 \\ \hline 504 \\ 1680 \\ \hline \pounds 2184 \end{array}$$

[3]

- (b) Write down the value of $\sqrt{144}$.

$$12$$

[1]

- (c) Calculate 3% of 500.

$$500 \div 100 \times 3 = 15$$

[2]

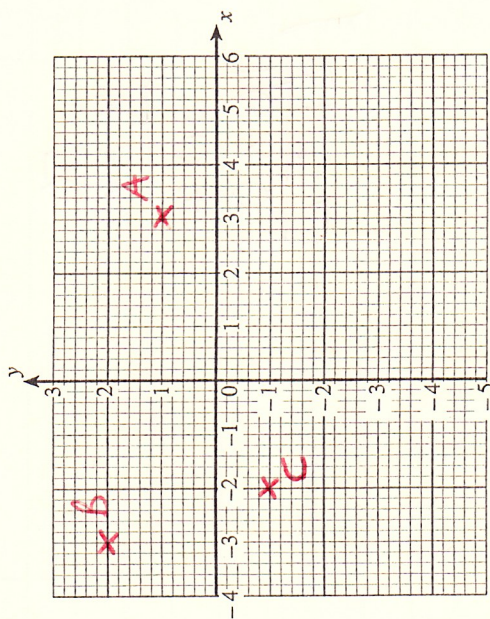
- (d) Alice thinks of a number. She multiplies it by 5 and subtracts 6. Her answer is 39. What was her number?

$$\begin{aligned} 5x - 6 &= 39 \\ 5x &= 45 \\ x &= 9 \end{aligned}$$

[2]

8

8. (a) Plot the points $A(3, 1)$, $B(-3, 2)$ and $C(-2, -1)$.



[3]

- (b) The coordinates of each of the points $(1, 3)$, $(2, 4)$ and $(3, 5)$ satisfy a rule. The coordinates of the point (x, y) satisfy the same rule. Write down the rule that connects x and y .

$$y = x + 2$$

[2]

5

9. (a) A number is represented by the letter k . Write down, in terms of k ,

- (i) the number that is 5 more than k ,

$$k + 5$$

- (ii) the number that is 4 less than k ,

$$k - 4$$

- (iii) the number that is 3 times k ,

$$3k$$

- (iv) the number that is 7 more than 10 times k .

$$10k + 7$$

[4]

- (b) Simplify

(i) $5x + 3x + 4x$,

$$12x$$

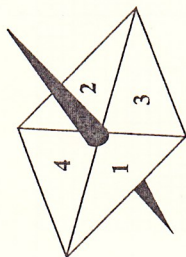
- (ii) $7a - a$.

$$6a$$

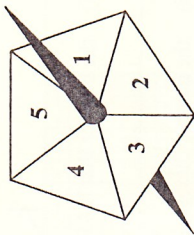
[2]

6

10. A square shaped spinner has the numbers 1, 2, 3 and 4 written on it. Another spinner, in the shape of a regular pentagon, has the numbers 1, 2, 3, 4 and 5 written on it.



Square spinner



Pentagon spinner

In a game, a player spins both spinners and multiplies the two numbers showing on the spinners to get the score for the game.

For example, if the number on the square spinner is 3 and the number on the pentagon spinner is 2, the player works out $3 \times 2 = 6$ and the player scores 6.

- (a) Complete the following table to show all the possible scores.

	5	4	3	2	1
Pentagon spinner	5	10	15	20	
	4	8	12	16	
	3	6	9	12	
	2	4	6	8	
	1	2	3	4	
		1	2	3	4
					Square spinner

[2]

- (b) (i) What is the probability that a player scores 4?

$$\frac{3}{20}$$

5

- (ii) What is the probability that a player does not score 4?

$$\frac{17}{20}$$

[3]

A player wins a prize by getting a score of 3 or less.

- (c) Toby plays the game once. What is the probability that he wins a prize?

$$\frac{5}{20} = \frac{1}{4}$$

[1]

- (d) (i) 800 people each play the game once.
Approximately how many would you expect to win a prize?

$$\frac{1}{4} \times 800$$

$$= 200$$

[2]

- (ii) It costs 50p to play the game once. The prize for getting a score of 3 or less is £1.50. If the 800 people each play the game once, approximately how much profit do you expect the game to make?

$$800 \times 50p = £400 \text{ taken}$$

$$200 \text{ winners at } £1.50 = £300 \text{ prize}$$

$$£0 \text{ } £100 \text{ profit}$$

[2]

5

11. (a) Find the size of the angle marked x .

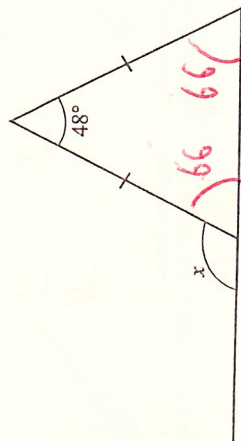


Diagram not drawn to scale

$$\frac{180 - 48}{2} = \frac{132}{2} = 66^\circ$$

$$180 - 66 = 114^\circ$$

$$x = 114^\circ$$

[3]

- (b) Find the size of the angle marked y .

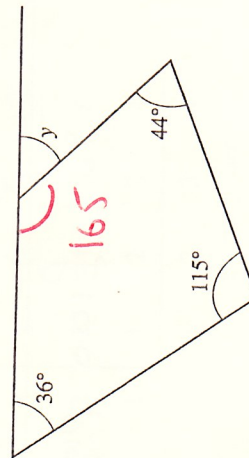


Diagram not drawn to scale

$$360 - 36 - 115 - 44$$

$$= 165$$

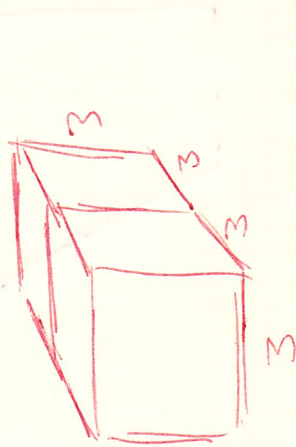
$$180 - 165$$

$$y = 15^\circ$$

(185-07)

[3]

12. (a) Two cubes, each with sides 3 cm, are stuck together by matching up two complete faces to form a cuboid. Draw a sketch of the cuboid. [2]



- (b) Find the volume of the cuboid.

$$V = lbh$$

$$V = 3 \times 6 \times 3$$

$$V = 54 \text{ cm}^3$$

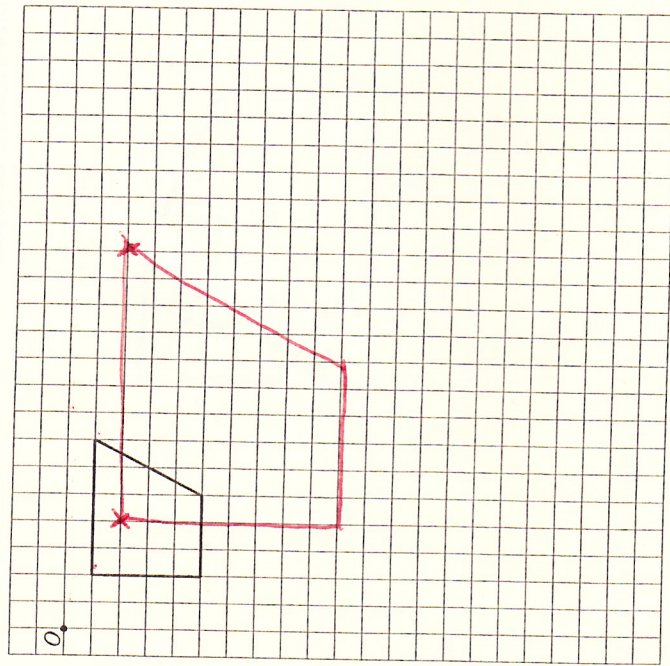
[2]

(185-07)

Turn over.

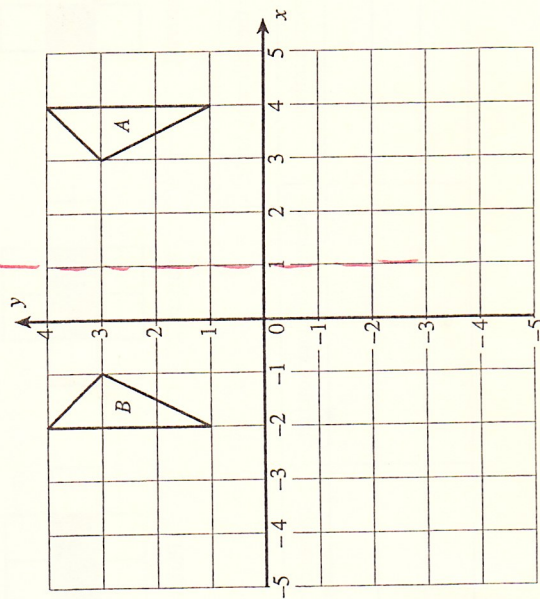
13. (a) On the grid below, draw the enlargement of the given shape using a scale factor of 2 and centre O .

[3]



3

- (b) Describe fully the transformation that transforms triangle A into triangle B .

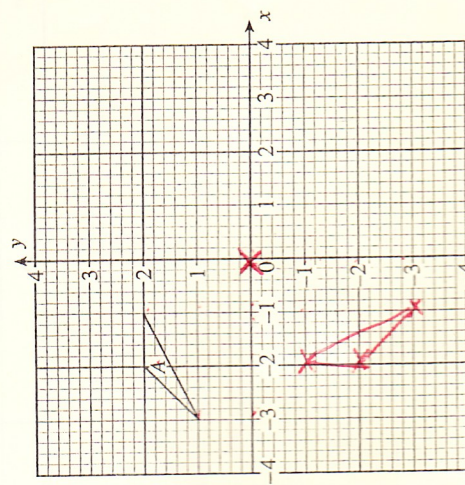


reflect in line $xc = 1$

[2]

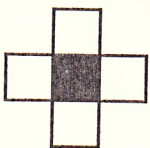
- (c) Rotate the triangle A through 90° anticlockwise about the origin.

[2]

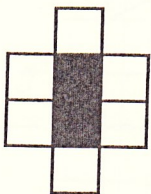


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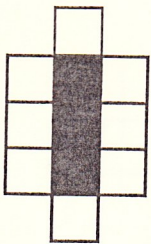
14.



Pattern 1



Pattern 2



Pattern 3

Complete the following table.

Pattern number	Number of black squares	Number of white squares
1	1	4
2	2	6
3	3	8

15	15	32
----	----	----

100	100	202
-----	-----	-----

n	n	$2n + 2$
-----	-----	----------

15. (a) Share £385 in the ratio 2 : 9.

$$\frac{385}{11} = £35$$

$$\therefore 2 \times 35 = £70$$

$$9 \times 35 = £315$$

[2]

(b) Estimate the value of $\frac{607.45}{0.2498}$.

$$\frac{600}{0.2} \approx \frac{6000}{2} \approx 3000$$

[2]

16. (a) Simplify $\frac{m^4 \times m^5}{m^3}$.

$$\frac{m^9}{m^3} = m^6$$

[1]

(b) Solve $7(x - 4) = 3x - 10$.

$$7x - 28 = 3x - 10$$

$$4x = 18$$

$$x = \frac{18}{4} = \frac{9}{2}$$

[3]

17. (a)

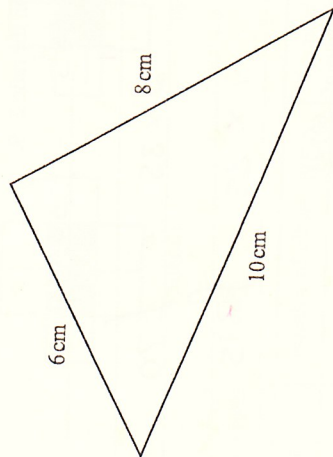


Diagram not drawn to scale

Show, by calculation, that the triangle drawn above is a right-angled triangle.

$$h^2 = a^2 + b^2$$

$$10^2 = 6^2 + 8^2$$

$$100 = 36 + 64$$

$$100 = 100 \quad \text{True!}$$

$\therefore$ Yes right-angled
as Pythag works.

[2]

(b) Calculate the area of a semicircle with a radius of 20 cm using $\pi = 3.14$.

$$A = \frac{\pi r^2}{2}$$

$$A = \frac{3.14 \times 20 \times 20}{2}$$

[2]

$$A = \frac{628}{2} \text{ cm}^2 = 314$$

4