Surname		Other Names	
Centre Number			Candidate Number									
Candidate Signature												

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General Certificate of Secondary Education
June 2004

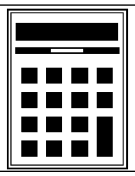
ASSESSMENT and QUALIFICATIONS ALLIANCE

MATHEMATICS (SPECIFICATION A) 3301/2F
Foundation Tier
Paper 2 Calculator

F

Tuesday 15 June 2004 9.00 am to 10.30 am

In addition to this paper you will require:
- a calculator
- mathematical instruments.



Time allowed: 1 hour 30 minutes

Instructions
- Use blue or black ink or ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions in the spaces provided.
- Do all rough work in this booklet.
- If your calculator does not have a π button, take the value of π to be 3.14 unless otherwise instructed in the question.

Information
- The maximum mark for this paper is 100.
- Mark allocations are shown in brackets.
- Additional answer paper, graph paper and tracing paper will be issued on request and must be tagged securely to this answer booklet.
- You are expected to use a calculator where appropriate.

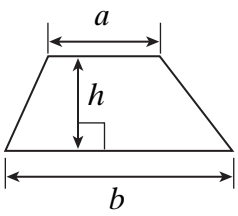
Advice
- In all calculations, show clearly how you work out your answer.

For Examiner's Use	
Pages	**Mark**
3	
4 – 5	
6 – 7	
8 – 9	
10 – 11	
12 – 13	
14 – 15	
16 – 17	
18 – 19	
20 – 21	
22 – 23	
TOTAL	
Examiner's Initials	

Formula Sheet: Foundation Tier

You may need to use the following formula:

Area of trapezium $= \frac{1}{2}(a+b)h$



LEAVE MARGIN BLANK

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

1 (a) Write seven million in figures.

Answer ..... *(1 mark)*

(b) Write seven thousand and eighty-four in figures.

.....

Answer ..... *(1 mark)*

(c) Write 8736 to the nearest 10.

.....

Answer ..... *(1 mark)*

2 Tony is buying some CDs.
Each CD costs £8.95

(a) How many CDs can Tony buy for £40?

.....

.....

Answer ..... *(2 marks)*

(b) How much money does he have left?

.....

.....

Answer £ ..... *(2 marks)*

7

3 (a) Draw a circle of radius 4 cm.

(1 mark)

(b) Write down the length of the diameter of the circle.

Answer ..... cm *(1 mark)*

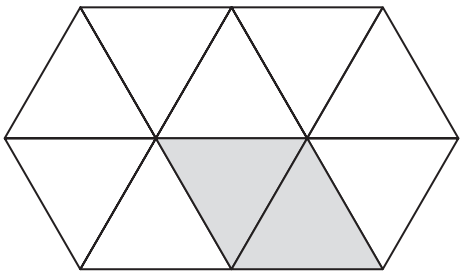
(c) On your diagram draw a tangent to the circle.

(1 mark)

(d) On your diagram draw a chord of length 6 cm inside the circle.

(2 marks)

4 (a) This diagram is made from equilateral triangles.



(i) What percentage of the diagram is shaded?

.....

Answer ..... % *(2 marks)*

(ii) What percentage of the diagram is not shaded?

.....

Answer ..... % *(1 mark)*

(b) Another diagram has 60% shaded.
What fraction of the diagram is shaded?
Simplify your answer.

.....

.....

Answer ..... *(2 marks)*

(c) Another diagram has $\frac{3}{4}$ shaded.

Write $\frac{3}{4}$ as a decimal.

.....

Answer ..... *(1 mark)*

11

5 The charges on a light railway are worked out by this formula.

30p per mile plus 25p

(a) Abdul travels 7 miles on the railway.
How much is he charged?

.....

.....

Answer £ ..... *(2 marks)*

(b) Belle is charged £3.85
How far does she travel?

.....

.....

.....

Answer ..... miles *(2 marks)*

6 This is part of Sari's electricity bill.

OHM Electricity Company	
Present reading	7466 units
Last reading	6942 units
Each unit costs 4.5p	

How much does she pay?

.....

.....

.....

.....

Answer £ ..... *(4 marks)*

LEAVE MARGIN BLANK

7 A company puts this advert in the local paper.

AQA Motor Company
Mechanic needed
Average wage over £400 per week

The following people work for the company.

Job	Wage per week (£)
Apprentice	200
Cleaner	200
Foreman	350
Manager	800
Mechanic	250
Parts Manager	520
Sales Manager	620

(a) What is the mode of these wages?

.....

Answer £ ..... *(1 mark)*

(b) What is the median wage?

.....

Answer £ ..... *(2 marks)*

(c) Calculate the mean wage.

.....

.....

Answer £ ..... *(3 marks)*

(d) Explain why the advert is misleading.

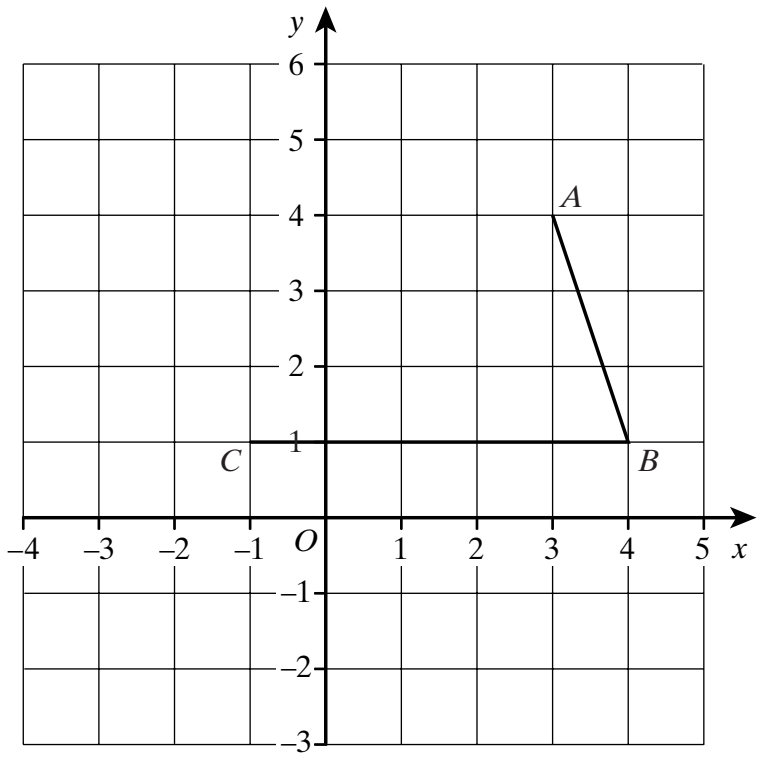
.....

.....

(1 mark)

15

8 Two sides of a parallelogram are drawn on the grid below.



(a) Write down the coordinates of the point *A*.

Answer (..... , ...) *(1 mark)*

(b) Write down the coordinates of the point *C*.

Answer (..... , ...) *(1 mark)*

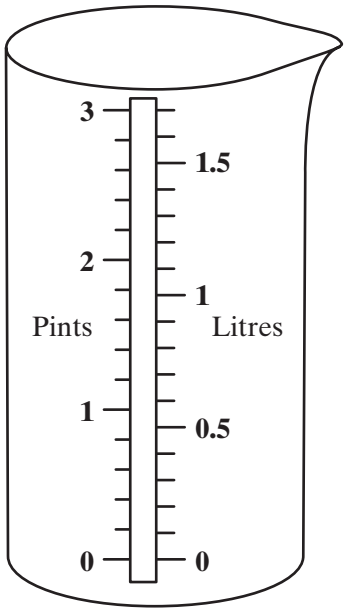
(c) (i) Draw two more lines to complete the parallelogram *ABCD*.

(1 mark)

(ii) Write down the coordinates of *D*.

Answer (..... , ...) *(1 mark)*

9 This scale shows pints and litres.



(a) Draw an arrow on the scale to show 2.5 pints.

(1 mark)

(b) Use the scale to estimate how many pints are in 1 litre.

.....

Answer ..... pints *(1 mark)*

(c) Estimate the number of litres in 8 pints.

.....

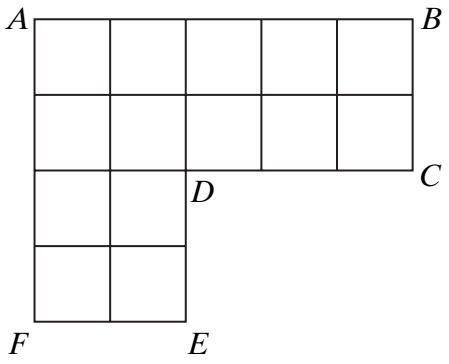
.....

.....

Answer ..... litres *(2 marks)*

8

10 The diagram shows a shape *ABCDEF* drawn on a 1 cm grid.



(a) Name a line that is parallel to *AB*.

Answer ..... *(1 mark)*

(b) Work out the area of the shape *ABCDEF*.

.....

.....

Answer ..... cm^2 *(1 mark)*

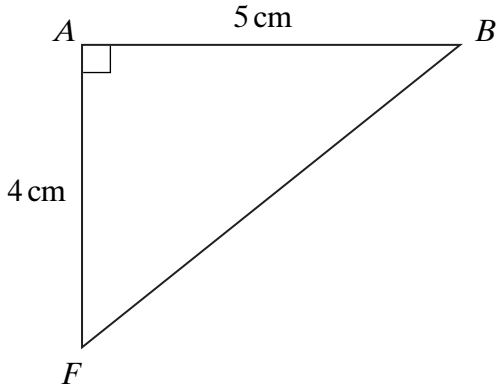
(c) Work out the perimeter of the shape *ABCDEF*.

.....

.....

Answer ..... cm *(1 mark)*

(d) The triangle formed by the points A, B and F is drawn.



(i) Measure the size of angle B.

Answer ..... degrees *(1 mark)*

(ii) Work out the area of the triangle ABF.

.....

.....

Answer ..... cm^2 *(2 marks)*

TURN OVER FOR THE NEXT QUESTION

6

11 (a) Here is a sequence of numbers.

31 27 23 19 15

(i) Write down the next two numbers in the sequence.

.....

Answer ..... and ..... *(2 marks)*

(ii) Write down the rule for continuing the sequence.

.....

.....

(1 mark)

(b) Another sequence of numbers begins

3 5 9 17

The rule for continuing this sequence is

Multiply by 2 and subtract 1

(i) What is the next number in the sequence?

.....

Answer ..... *(1 mark)*

(ii) The same rule is used for a sequence that starts with the number 7.
What is the second number in this sequence?

.....

Answer ..... *(1 mark)*

(iii) The same rule is also used for a sequence that starts with the number –5.
What is the second number in this sequence?

.....

Answer ..... *(1 mark)*

12 Mr and Mrs Smith are buying a washing machine.

How much do they save in the sale?

.....

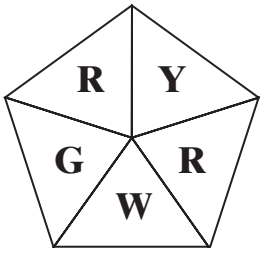
.....

Answer £ ..... *(2 marks)*

TURN OVER FOR THE NEXT QUESTION

8

13 (a) Ann has a spinner which has five equal sections.
Two sections are red, one is yellow, one is green and one is white.

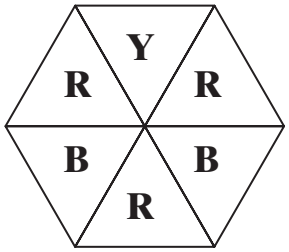


First spinner

Ann spins the spinner once.
On what colour is the spinner most likely to land?

Answer ..... *(1 mark)*

(b) Ann has a second spinner which has six equal sections.
Three sections are red, one is yellow and two are blue.



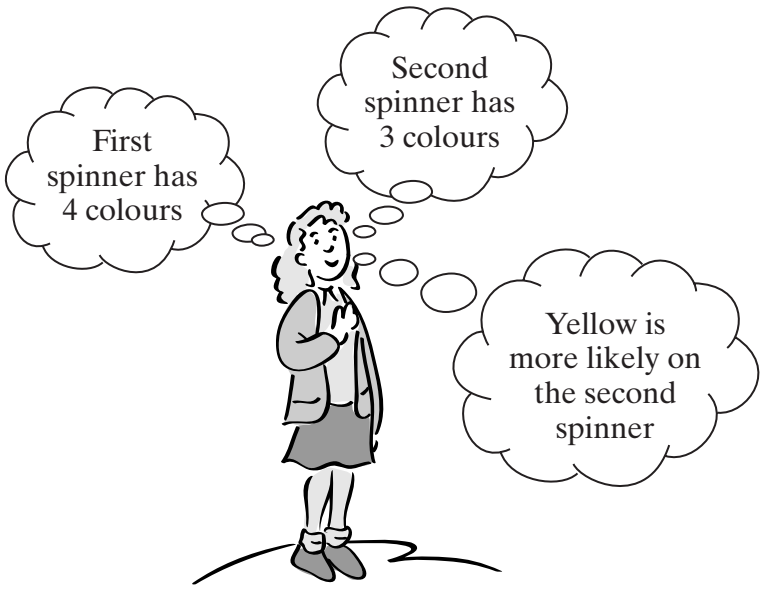
Second spinner

Ann spins this spinner once.
What is the probability that this spinner lands on red?

.....

Answer ..... *(2 marks)*

(c) Ann thinks that she has more chance of getting yellow on the second spinner.



Explain why Ann is wrong.

.....

.....

.....

.....

(2 marks)

TURN OVER FOR THE NEXT QUESTION

5

14 (a) Work out 3.7^2

.....

Answer ..... *(1 mark)*

(b) Work out the cube of 4

.....

Answer ..... *(1 mark)*

(c) Work out $3 \div 0.7^2$

(i) Write down the full calculator display.

Answer ..... *(1 mark)*

(ii) Give your answer to the nearest whole number.

Answer ..... *(1 mark)*

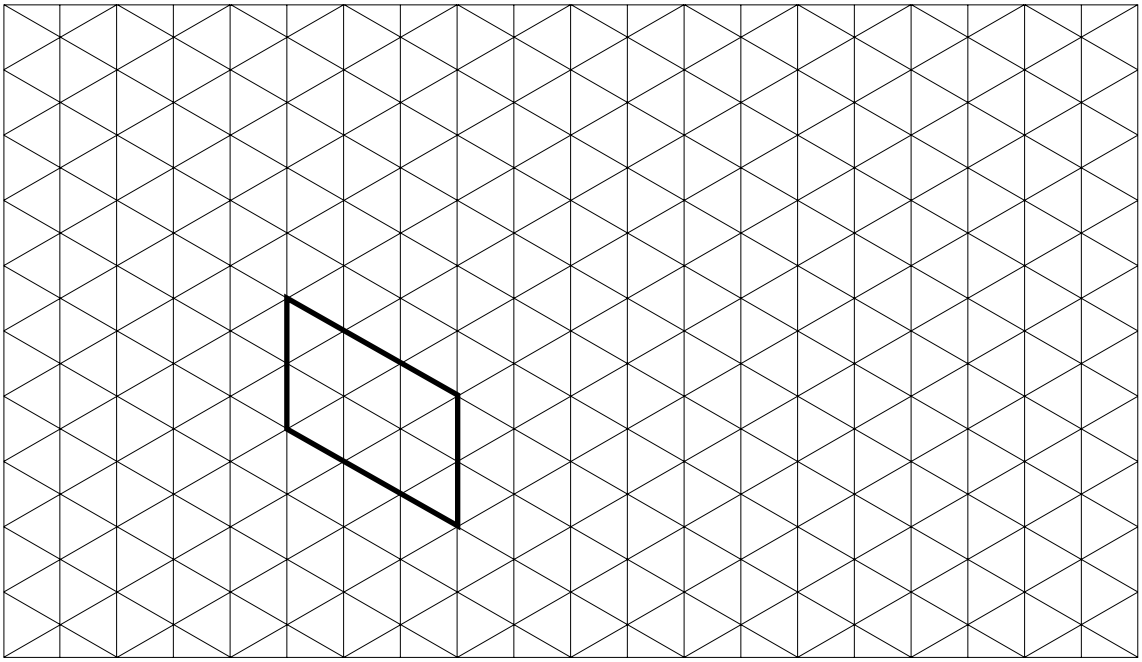
(d) (i) Calculate $\dfrac{9.8}{6.7 - 1.2}$

Answer ..... *(1 mark)*

(ii) Give your answer to an appropriate degree of accuracy.

Answer ..... *(1 mark)*

15 (a) On the isometric grid complete the drawing of a cuboid 4 cm by 3 cm by 2 cm.



(2 marks)

(b) Calculate the volume of the cuboid.

.....

.....

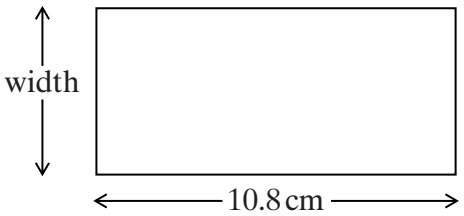
.....

Answer ..... cm^3 *(2 marks)*

TURN OVER FOR THE NEXT QUESTION

10

16 The length of a rectangle is 10.8 cm.
The perimeter of the rectangle is 28.8 cm.



Not to scale

Calculate the width of the rectangle.

.....

.....

.....

Answer ..... cm *(3 marks)*

17 (a) John, Paul and Mark go on holiday for 6 days.
Altogether they spend £800.
John spends £350.
Paul spends £40 each day.
On average how much does Mark spend each day?

.....

.....

.....

.....

.....

Answer £ ..... *(4 marks)*

(b) On the day he returns from his holiday John spends 3 hours waiting at the airport.
What percentage of the day does John spend waiting at the airport?

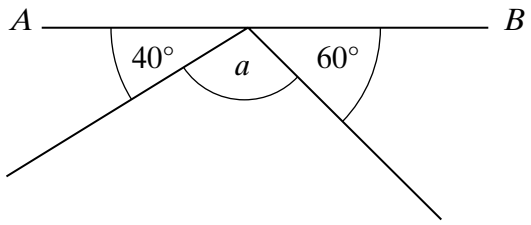
.....

.....

.....

Answer ..... % *(3 marks)*

18 (a) The diagram shows three angles on a straight line AB.



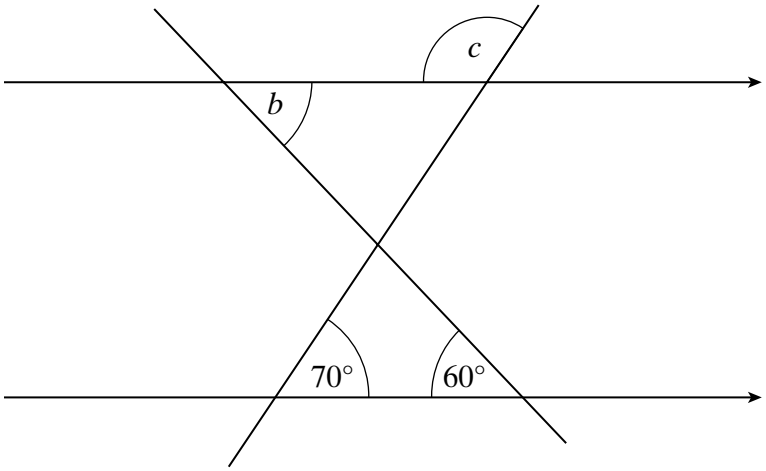
Not drawn accurately

Work out the value of a.

.....

Answer a = ... degrees *(1 mark)*

(b)



Not drawn accurately

Work out the values of b and c.

.....

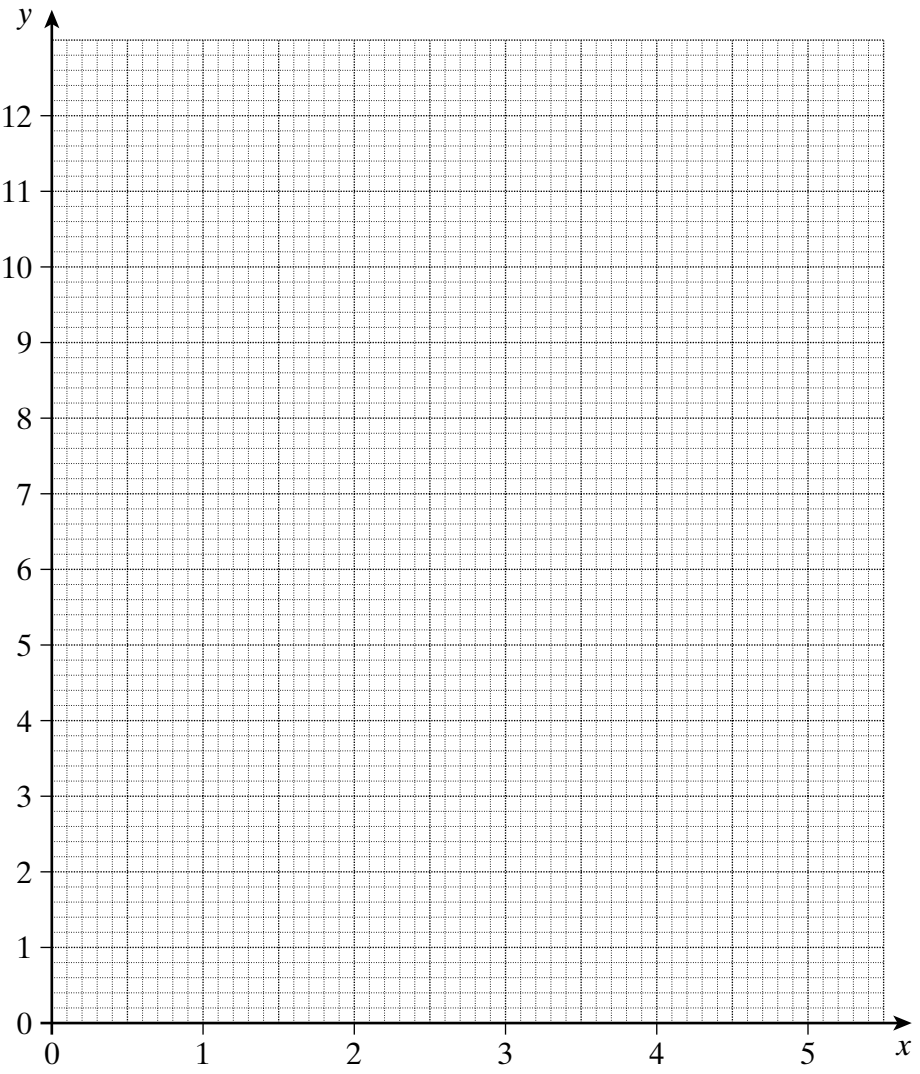
.....

Answer b = ... degrees

c = ... degrees *(2 marks)*

13

19 On the grid draw the graph of $y = 2x + 1$ for values of x from 0 to 5.



.....

.....

.....

.....

(3 marks)

20 (a) Find the value of $3x + 5y$ when $x = -2$ and $y = 4$

.....

Answer ..... *(2 marks)*

(b) Find the value of $3a^2 + 5$ when $a = 4$

.....

Answer ..... *(2 marks)*

(c) k is an even number.
Jo says that $\frac{1}{2}k + 1$ is always even.

Give an example to show that Jo is wrong.

.....

.....

(1 mark)

(d) The letters a and b represent prime numbers.
Give an example to show that $a + b$ is **not** always an even number.

.....

.....

(1 mark)

TURN OVER FOR THE NEXT QUESTION

21 The table shows the amounts needed to make 36 mince pies.

Ingredient	Amount for 36 pies	Amount for 48 pies
Plain Flour	330g	
Lard	75g	
Butter	75g	
Mincemeat	720g	

Calculate the amounts needed to make 48 mince pies.
Put your answers in the table.

.....

.....

.....

(3 marks)

22 A circular dish has a diameter of 9 cm.
Calculate the circumference of the dish.

.....

.....

Answer ..... cm *(2 marks)*

23 Jane conducts a survey of the favourite colours of the students in her class.
She records the results.

Male	Red	Female	Yellow
Male	Yellow	Female	Red
Male	Red	Female	Green
Female	Green	Female	Green
Female	Red	Male	Red
Male	Green	Male	Yellow
Male	Green		

Record the results in a two-way table.

(3 marks)

END OF QUESTIONS

8

THERE ARE NO QUESTIONS PRINTED ON THIS PAGE