

Mathematics Foundation Tier, June 2008
4301/2F (Paper 2, calculator)

Link to past paper on AQA website:

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Question 1

4 oranges at 26p each would cost a total of 104p (£1.04) (4×26)

$\frac{1}{2}$ kg of grapes at £3.20 a kg would cost £1.60 ($0.5 \times £3.20$)

Total cost is therefore £1.04 + £1.60 = £2.64

Question 2

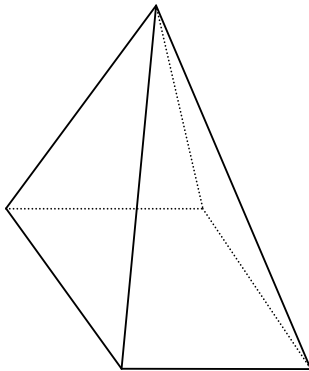
a) There are 10 sections. 2 out of 10 are shaded in. The percentage that is shaded is

$$\frac{2}{10} \times 100 = 20\%$$

b) The percentage that is not shaded is the rest. $100 - 20 = 80\%$

Question 3

a)



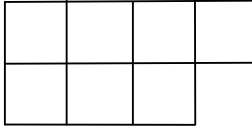
b) they are both prisms as they have the same shape running all the way through them. The first is a **triangular based prism**. The second is a rectangular based prism whose special name is a **cuboid**.



Mathematics Foundation Tier, June 2008
4301/2F (Paper 2, calculator)

Question 4

a)



b)

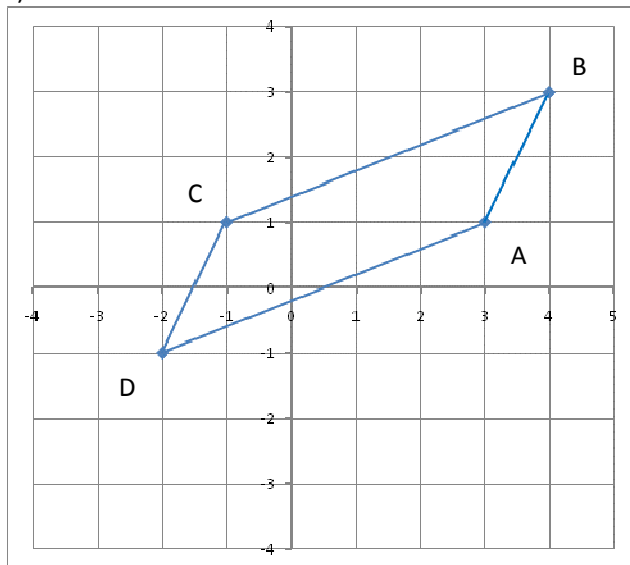
Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6
1	3	5	7	9	11

We can see that the numbers form a sequence and increase by 2 each time. The number of squares in pattern 6 will be 11.

Question 5

a) A is (3,1), B is (4,3)

b)



c) ABCD forms a parallelogram (both pairs of opposite sides are parallel)



Mathematics Foundation Tier, June 2008
4301/2F (Paper 2, calculator)

Question 6

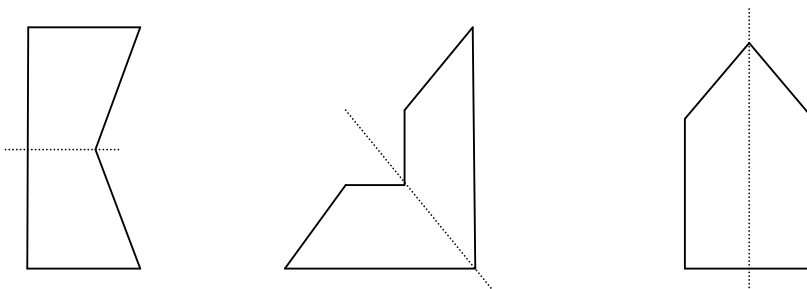
- a) the weight is 45g, this is more than 40g but less than 60g so look up 60g. The cost is £0.83.
- b) the weight is 82g, this is more than 60g but less than 80g so look up 80g. The cost is £1.21 + £2.31 = £3.52
- c) the weight is 26g, this is more than 20g but less than 40g so look up 40g. The cost of one letter is £0.64 so the cost of 3 letters will be $3 \times 0.64 = £1.92$

Question 7

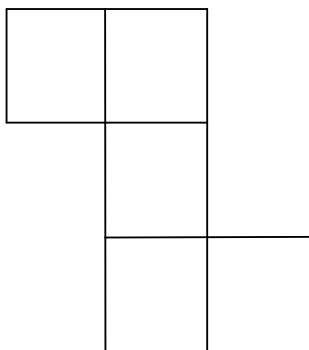
- a) 6 faces on a cuboid
- b) we need to find the area of all the six faces and add these together. Top and bottom face are both 6, back and front faces are both 3, side faces are both 2. We have $6 + 6 + 3 + 3 + 2 + 2 = 22\text{cm}^2$

Question 8

- a) lines of symmetry have been drawn as dashed lines



- b)



Mathematics Foundation Tier, June 2008
4301/2F (Paper 2, calculator)

Question 9

a) $(6 \times 40) + 25 = 240 + 25 = 265$ minutes

b) let the weight of the turkey be w kg

then $(w \times 40) + 25 = 165$

$40w + 25 = 165$

subtract 25 from both sides

$40w = 140$

divide both sides by 40

$w = 140 \div 40 = 3.5$ kg

Question 10

a) we have 4 complete circles so there were $4 \times 100 = 400$ bicycles in 2003

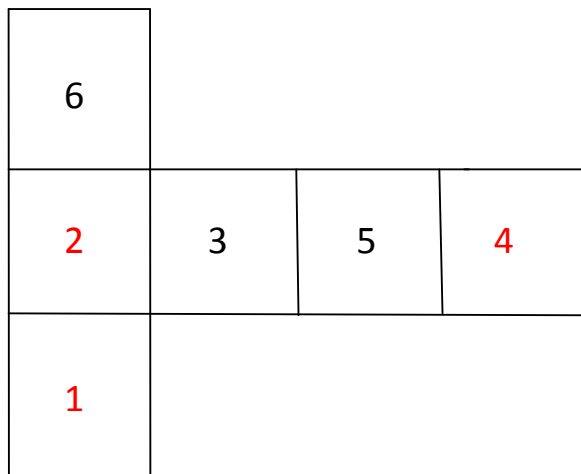
b) we have 1 complete circle and one half of a circle. The complete circle represents 100 and the half circle represents 50 so we have 150 bicycles in 2004.

c) we have 7 complete circles in 2005 and 4 complete circles in 2002. There were 3 more complete circles in 2005 (than in 2002) so $3 \times 100 = 300$ more bicycles.

d)



Question 11



Mathematics Foundation Tier, June 2008
4301/2F (Paper 2, calculator)

Question 12

First we need to add all the numbers up; $34 + 27 + 38 + 27 + 45 + 17 = 188$

Then we need to divide by how many numbers there are (6)

$$188 \div 6 = 31.3$$

Question 13

a) $\sqrt{1062.76} = 32.6$

b) i) 29.326

ii) 29.3

iii) 30

Question 14

a) i) $R = (6 \times 8) + (7 \times 11) = 48 + 77 = 125$

ii) $38 = (6 \times 4) + (7 \times Q)$

$$38 = 24 + 7Q$$

subtract 24 from both sides

$$14 = 7Q$$

rewriting so that q is on the LHS

$$7Q = 14$$

divide both sides by 7

$$Q = 2$$

b) grouping terms

$$5a + 6b$$

Question 15

volume of a cuboid is given by multiplying the 3 dimensions by each other.

$$v = 5 \times 4 \times h$$

we are given that volume is 75

$$75 = 5 \times 4 \times h$$

$$75 = 20h$$

rewriting so that h is on the LHS

$$20h = 75$$

divide both sides by 20

$$h = 3.75\text{cm}$$



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4301/2F (Paper 2, calculator)

Question 16

a)

x	1	2	3	4
1	1	2	3	4
2	2	4	6	8
3	3	6	9	12
4	4	8	12	16

b) There are 4 odd number scores in the grid out of a possible 16 scores so the probability is $\frac{4}{16} = \frac{1}{4}$

Question 17

a) the number of cubic metres used is $4205 - 4154 = 51$

104 p = £1.04

Cost in pounds is $51 \times 1.04 = £53.04$

b) we need to find 97% of £62

$$\frac{97}{100} \times 62 = £60.14$$

c) to get percentage change we find the difference between the old and new figure. Then divide by the old and multiply by 100 ((new – old) ÷ old x 100)

$$\frac{39-34}{34} \times 100 = \frac{5}{34} \times 100 = 14.71\%$$

Question 18

a)

£	\$
1	1.87
500	$1.87 \times \frac{500}{1} = 935.00$

Whatever we did to get from 1 to 500 we must do the same to get from 1.87 to our answer.
£500 divided by £1 is 500 so we need to multiply \$1.87 by 500 to get \$935

b)

£	\$
1	1.87
$1 \times \frac{200}{1.87} = 106.95$	200

Whatever we did to get from 1.87 to 200 we must do the same to get from 1 to our answer.
\$200 divided by \$1.87 is 106.95 so we need to multiply £1 by 106.95 to get £106.95



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Question 19

Angles on a straight line make 180° so angle $CBE = 180^\circ - 110^\circ = 70^\circ$

Angles in a quadrilateral add up to 360°

The three angles we have add up to $70^\circ + 90^\circ + 120^\circ = 280^\circ$

Angle $BED = 360^\circ - 280^\circ = 80^\circ$

Question 20

a) 150 miles

b) this is shown on graph by horizontal line. He stopped for 10 minutes between 10:30 and 10:40

c) average speed = total distance \div total time

speed = $150 \div 3 = 50$ mph

Question 21

To find kilometres to the litre we need to divide the number of kilometres by the number of litres.

Alice: $580 \div 51 = 11.37$

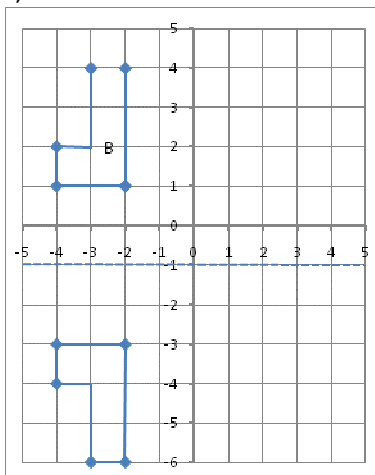
Beryl: $370 \div 32 = 11.56$

So Beryl's car travel more kilometres to the litre

Question 22

a) Rotation of 90° in an anti-clockwise direction, with centre of rotation at the origin (0,0)

b)



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4301/2F (Paper 2, calculator)

Question 23

a) The total number is $97 + 116 + 45 = 258$, there are 200 pupils so the extra **58** must all be studying two languages

b) i) $32 + 28 = 60$ pupils are sitting Foundation level. This as a percentage is $\frac{60}{200} \times 100 = 30\%$

ii) there are 64 girls taking the higher level so the probability that one of these is absent is $\frac{64}{200} = \frac{8}{25}$ or **0.32**

Question 24

the empty box would be

$$(3y - 3) + (2y + 3) = 5y$$

we then add this to $(4y - 1)$ to get the upper box in terms of y

$$5y + (4y - 1) = 5$$

$$9y - 1 = 5$$

add 1 to both sides

$$9y = 6$$

divide both sides by 9

$$y = \frac{6}{9} = \frac{2}{3}$$

Question 25

by Pythagoras' Theorem

$$x^2 = 6^2 + 9^2 = 36 + 81 = 117$$

square root both sides

$$x = \sqrt{117} = 10.8 \text{ cm}$$



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4301/2F (Paper 2, calculator)

Question 26

The ratio is 12:8 with a total of 20

We want a new ratio where the total is £170

If we find out how many times 20 goes into £170 then we can multiply both 12 and 8 by the same number.

$$170 \div 20 = 8.5$$

So Adam will receive $12 \times 8.5 = \text{£}102$

Brenda will receive $8 \times 8.5 = \text{£}68$

(this type of question is helped by looking at a table)

	Adam	Brenda	Total
Ratio	12	8	20
£	102 note 1	68 note 2	170

Note 1: $12 \times \frac{170}{20} = \text{£}102$

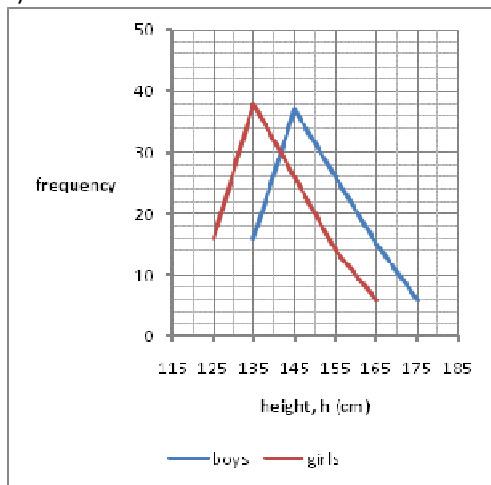
Note 2: $8 \times \frac{170}{20} = 68$

Question 27

a) i) mid-point is just half way in the interval so will be **125cm**

ii) the mid-points for all the heights are exactly 100 higher than the x values in the first table. The frequencies are all exactly the same too. So to find an estimate of the mean for the second group we just add 100 to our first mean. We have **140.6 cm**

b)



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