



**General Certificate of Secondary Education  
June 2011**

**Applications of Mathematics (Pilot)      93701F**  
**(Specification 9370)**

**Unit 1: Applications of Mathematics**  
**Written Paper (Foundation)**

***Mark Scheme***

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## Glossary for Mark Schemes

GCSE examinations are marked in such a way as to award positive achievement wherever possible. Thus, for GCSE Mathematics papers, marks are awarded under various categories.

- M** Method marks are awarded for a correct method which could lead to a correct answer.
- A** Accuracy marks are awarded when following on from a correct method. It is not necessary to always see the method. This can be implied.
- B** Marks awarded independent of method.
- Q** Marks awarded for quality of written communication. (QWC)
- M Dep** A method mark dependent on a previous method mark being awarded.
- B Dep** A mark that can only be awarded if a previous independent mark has been awarded.
- ft** Follow through marks. Marks awarded following a mistake in an earlier step.
- SC** Special case. Marks awarded within the scheme for a common misinterpretation which has some mathematical worth.
- oe** Or equivalent. Accept answers that are equivalent.  
eg, accept 0.5 as well as  $\frac{1}{2}$

## A1 Foundation Tier

Q	Answer	Mark	Comments
<b>1(a)(i)</b>	Coffee 6.50 or $3.25 \times 2$	M1	
	Biscuits 3.36 or $1.12 \times 3$	M1	
	Total 12.65	A1	
<b>1(a)(ii)</b>	7.35	B1 ft	
<b>1(b)(i)</b>	$\frac{1}{3} \times 12$ or 4 or $\frac{1}{2} \times 12$ or 6	M1	or 4 shaded or 6 shaded
	4 and 6 seen or 10	M1	or 10 shaded
	2	A1	
<b>Alt 1(b)(i)</b>	$\frac{1}{3} + \frac{1}{2}$ or $\frac{5}{6}$	M1	
	$(1 - \text{their } \frac{5}{6}) \times 12$	M1	
	2	A1	
<b>1(b)(ii)</b>	20p, 20p, 20p, 20p or 50p, 20p, 5p, 5p or 50p, 10p, 10p, 10p	B2	B2 For any 2 correct combinations B1 For one correct combination
<b>2(a)</b>	31 or 32	B1	
<b>2(b)</b>	Scotland	B1	
<b>2(c)</b>	Greatest percentage want to spend time with family for all 3	B1	
<b>2(d)</b>	Bars at 26%, 23% and 30% and shaded correctly as key	B3	B2 For 3 correct lengths without shading OR 2 correct lengths and correct shading  B1 For 1 correct length OR 2 correct lengths and no shading

Q	Answer	Mark	Comments
<b>3(a)</b>	$67 + 58 + 62 + 71 + 59 + 83 + 74 + 84 + 90$	M1	Attempt at $\sum x$ Condone 1 error or omission A total of 558 to 738 would imply this mark
	Their $648 \div 9$	M1 Dep	
	72	A1	
<b>3(b)</b>	Decrease ticked	B1 ft	
	69 is lower than the mean	B1 ft	ft Or correct
<b>4(a)</b>	$4 \times 60$	M1	or $60 \div 16$
	$240 \div 16$	M1	$3.75 \times 4$
	15 (+ 4 mins spare)	A1	SC2 18 or 19
<b>Alt 4(a)</b>	$240 - 12$	M1	
	$(228 \div 16) + 1$	M1	
	15	A1	
<b>4(b)</b>	$1.25 + 8 \times 0.4$	M1	
	£4.45 or 445p	A1	SC1 £4.53
<b>5</b>	$8 + 9 + 9 + 10 + 7 (= 43)$	M1	or 3 hours extra
	$40 \times 5.78$ or 231.2	M1	
	$257.21 - \text{their } 231.20 (= 26.01)$	M1	oe
	Their $26.01 \div 3$	M1 Dep	
	8.67	A1	
	Key steps shown	Q1	Strand (iii) - All method marks gained and answer given

Q	Answer	Mark	Comments
<b>6(a)</b>	$9 + (7 - 5)$	M1	oe
	11am or 11.00	A1	
<b>6(b)</b>	$70 \div 1.45$	M1	or $52 \times 1.45$
	48.2...or 48.3	A1	75.4
	New York as it is only £48.28 (in New York)	A1	New York as £52 is \$75.40 oe

<b>7(a)(i)</b>	Tallies correct	B1	
	Frequencies correct 2, 4, 6, 3	B1 ft	ft Their tallies
<b>7(a)(ii)</b>	4	B1 ft	
<b>7(b)</b>	$(10 \times 1), (11 \times 3), (12 \times 6), (13 \times 3), (14 \times 2)$	M1	Attempt at $\sum fx$ at least 3 correct products
	$10 + 33 + 72 + 39 + 28$	M1	At least 3 correct
	182	A1	
<b>7(c)</b>	A complete response, eg Increase length of time <b>and</b> change time of day to be busier period /before or after the school day / when people come home from work	B2	oe B1 For one correct comment detailing one of these aspects B1 Count how many people cross the road

<b>8(a)</b>	Fully correct ordered diagram	B2	B1 For 2 lines correct
	Any 2 digit key	B1	
<b>8(b)</b>	Median of red = 15	B1	
	Range of red = 25	B1	
	More at red bus stop (on average) and number at red more varied	B2	B1 Either comment

<b>9(a)</b>	$270 \div 15$	M1	
	18	A1	
<b>9(b)</b>	$\frac{2500 \times 3 \times 4}{100} (= 300)$	M1	oe
	2500 + their 300	M1 Dep	
	2800	A1	

Q	Answer	Mark	Comments
10(a)	(=) B3 + C3	B1	
10(b)	(D3 =) 216	B1	
	(E3 =) 35	B1	Condone both answers seen in reverse cells
10(c)	(C4 =) 40	B1	SC1 For 40 and 140 in reverse cells
	(D4 =) 140	B1	SC1 For C4 and D4 completed with difference of 100
11(a)	1	B1	
11(b)	4 (+) 3 (+) 5 (+) 1	M1	Allow 4 (+) 3 (+) 5 (+) 1(+) 2 (+) 4 (+) 2
	13	A1	21
11(c)	12 + 3 + 6 + 1 + 2 + 1 (= 25)	M1	Allow one error or omission
	$\frac{\text{their } 25}{60} \times 100$	M1 Dep	
	42	A1	Accept 41.6... or 41.7 or 41
12(a)	135 < h < 160 or 135 < h and h < 160 oe	Q2	Q1 For one inequality 135 < h or h < 160 or for 135 ≤ h ≤ 160 Ignore units Strand (i) - Correct notation - inequality signs must be used
12(b)	x + 2x + 2x + 8 (= 423) or 5x + 8 (= 423)	M1	
	5x = 415	M1	
	83	A1	
Alt 1 12(b)	Finding 3 values that fit criteria with any total	M1	A total between 400 and 450 implies the 1st M1
	Finding improved values that fit criteria with total between 400 and 450	M1	
	83	A1	
Alt 2 12(b)	423 – 8 or 415 seen	M1	
	$\frac{\text{their } 415}{5}$	M1 Dep	
	83	A1	

Q	Answer	Mark	Comments
<b>13(a)</b>	$\frac{1}{4} \times 3.8(0)$ or $\frac{3}{4} \times 5.2(0)$	M1	oe Using 25% and 75% or 0.25 and 0.75
	Their 95p $\times 5$ (= 4.75)	M1 Dep	
	Their 3.90 $\times 5$ (= 19.50)	M1 Dep	Dep On 1st M1
	Their 4.75 + their 19.50	M1 Dep	
	24.25	A1	
<b>Alt 1 13(a)</b>	$5 \div 4 = 1.25$	M1	
	Their 1.25 $\times 3.80$ (= 4.75)	M1 Dep	
	3 $\times$ their 1.25 $\times 5.20$ (= 19.50)	M1 Dep	Dep On 1st M1
	Their 4.75 + their 19.50	M1 Dep	
	24.25	A1	
<b>Alt 2 13(a)</b>	$\frac{1}{4} \times 3.8(0)$ or $\frac{3}{4} \times 5.2(0)$	M1	oe Using 25% and 75% or 0.25 and 0.75
	Their 95p + their 3.90	M1 Dep	
	Their 4.85 (for 1 kg)	M1 Dep	
	Their 4.85 $\times 5$	M1 Dep	
	24.25	A1	
<b>Alt 3 13(a)</b>	$3 \times 5.20 = (15.60)$	M1	
	3.80 + their 15.60	M1 Dep	
	$5 \div 4$ (= 1.25) or their 19.40 $\times 5$ (= 97)	M1	or $\frac{19.40}{4}$ (= 4.85)
	Their 19.40 $\times 1.25$ or their 97 $\div 4$	M1 Dep	Their 19.40 + their 4.85
	24.25	A1	
<b>13(b)</b>	1.2 seen	B1	
	1.2 $\times 480$	M1	
	£5.76	A1	
<b>Alt 13(b)</b>	$4.8 \times \frac{20}{100}$	M1	oe
	4.8 + their 0.96	M1 Dep	
	£5.76	A1	