

Mark Scheme (Results)

November 2012

GCSE Mathematics (Linear) 1MA0 Foundation (Calculator) Paper 2F

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk for our BTEC qualifications.

Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

If you have any subject specific questions about this specification that require the help of a subject specialist, you can speak directly to the subject team at Pearson. Their contact details can be found on this link: www.edexcel.com/teachingservices.

You can also use our online Ask the Expert service at www.edexcel.com/ask. You will need an Edexcel username and password to access this service.

Pearson: helping people progress, everywhere

Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

November 2012
Publications Code UG033844
All the material in this publication is copyright
© Pearson Education Ltd 2012

NOTES ON MARKING PRINCIPLES

- 1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- 2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- 4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- **5** Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.
- 6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:
 - i) ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear Comprehension and meaning is clear by using correct notation and labeling conventions.
 - ii) select and use a form and style of writing appropriate to purpose and to complex subject matter

 Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.
 - iii) organise information clearly and coherently, using specialist vocabulary when appropriate.

 The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.

If there is no answer on the answer line then check the working for an obvious answer.

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.

If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.

Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).

Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.

If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.

If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 - 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme

M1 – method mark

A1 – accuracy mark

B1 – Working mark

C1 – communication mark

QWC - quality of written communication

oe – or equivalent

cao - correct answer only

ft – follow through

sc – special case

dep - dependent (on a previous mark or conclusion)

indep – independent

isw – ignore subsequent working

1MA	1MA0_2F							
Qu	estion	Working			Answer	Mark	Notes	
1	(a)				3600	1	B1 for 3600	
	(b)				1.8	1	B1 for 1.8	
	(c)				3.6 shown	1	B1 for 3.6 marked on number line	
2	(a)				Correct tally	2	M1 for at least 2 tallies or frequencies correct	
	, ,	Fruit	Tally	Freq	_		A1 for 4 correct frequencies	
		Currant		5				
		Prune		5				
		Raisin		6				
		Sultana	 	8				
			_					

1M A	A0_2F					
Qı	iestion	Working	Answer Mark		Notes	
2	(b)	Angles: Currants (75°) Prunes (75°) Raisins (90°) Sultanas (120°)	Diagram drawn	3	M1 for bar chart or other suitable chart with at least 2 correct heights for their scale or ft from (a) M1 for all bars correctly labelled and vertical axis correctly scaled A1 for fully correct bar chart or ft from (a) OR M1 for pictogram, at least 2 correct rows or ft from (a) M1 for correct labels on all rows and key A1 for fully correct pictogram or ft from (a) OR M1 for stick graph with at least 2 sticks of correct height for their scale or ft from (a) M1 for all sticks correctly labelled and vertical axis correctly scaled A1 for fully correct stick graph or ft from (a) OR M1 for pie chart with at least 2 correct sectors (±2°) or 2 angles correctly calculated or ft from (a) M1(dep) for all sectors correctly labelled A1 for fully correct pie chart or ft from (a)	

1MA	1MA0_2F							
Qu	estion	Working	Answer	Mark	Notes			
3	(a)		16 or 4	1	B1 for 4 or 16 (or both)			
	(b)		21	1	B1 cao			
	(c)		10 or 15	1	B1 10 or 15 (or both)			
4	(a)		32 and 10	2	B1 for 32 in the correct place B1 for 10 in the correct place			
	(b)	$ 10 \times 3 \times 2 = 60 \text{ or} 10 \times 3 + 30 = 60 $	×2 or +30	1	B1 for ×2 or +30			
5		$180 \times \frac{10}{100} = 18$ or $\frac{20}{180} \times 100 = 11.1$	No	3	M1 for $180 \times \frac{10}{100}$ oe or 180×1.1 oe or $\frac{20}{180} \times 100$ (= 11.1) oe A1 for (£)18 or (£)198 or 11% C1 (dep M1) for comparison of increases or total pay or percentage increases leading to a correct deduction			

1MA	1MA0_2F								
Qu	estion	Working	Answer Mai		Notes				
6	(a)		No + reason	1	B1 for No because she has 1 choice out of 3 which is the same as Mike oe				
	(b)	(r,g)(r,b)(g,b)(g,r)(b,g)(b,r) (r,r)(b,b)(g,g)	Complete list	2	M1 for listing pairs (at least 5 correct pairs) A1 for fully correct list (ignore repeats)				
	(c)		$\frac{1}{9}$	1	B1 for $\frac{1}{9}$ oe (If M1A0 in (b), then SC B1 in (c) for their number of (b,g)				
7	(-)	3 4 4 5 5 6 8 9 10	5	2	their total number of outcomes '				
/	(a)	3443308910	3	2	M1 for ordering the 9 numbers A1 cao				
	(b)	$ (4+8+5+9+10+5+6+3+4) \div 9 $ $54 \div 9 $	6	2	M1 for $(4+8+5+9+10+5+6+3+4) \div 9$ or $54 \div 9$ A1 cao				
8	(a)		10	1	B1 cao				
	(b)		6	1	B1 cao				
	(c)		Correct image	2	B2 cao (B1 for reflection in a line parallel to the given line)				
9		$20 \times 20 \times 40 = 16000$	16000 cm ³	3	M1 for $20 \times 20 \times 40$ or $0.2 \times 0.2 \times 0.4$				
					A1 for for 16 000 or 0.016 B1 for cm ³ or m ³ (consistent with working)				

1MA	0_2F				
Qu	estion	Working	Answer	Mark	Notes
10	(a)	30 + 8×4	62	2	M1 for 30 + 8×4 or attempt to add four 8s to 30 (allow one error in addition) A1 cao
	(b)	$110 - 30 = 80$ $80 \div 8 = 10$	10	3	M1 for 110 – 30 (=80) M1 (dep) for '80' ÷ 8 or A1 cao
		OR			OR
		110 - 62 = 48 $48 \div 8 = 6$ 4 + 6 = 10			M1 for 110 – 62 (= 48) M1(dep) for '48'÷8 = 6 A1 cao
11	(a)		cm	2	B1 for centimetres or cm or millimetres or mm
			gallons		B1 for gallons (accept pints)
	(b)(i)		4000	2	B1 cao
	(ii)		3.5		B1 for 3.5 oe
12		3 ×9.58 + 12.61 + 7.06 + 4.41 (= 52.82)	Yes + working	4	M2 for 3 ×9.58 (=28.74) + 12.61 + 7.06 + 4.41 or 55 - 3 ×9.58 (=28.74) - 12.61 - 7.06 - 4.41 (M1 for at least 2 correct costs seen) A1 for 52.82 or 2.18 C1 (dep M1) for comparison and correct deduction using their total cost or amount left

1MA	1MA0_2F								
Qu	estion	Working	Answer	Mark	Notes				
13	(a)		A and C	1	B1 for A and C (no extras)				
	(b)		B or E	1	B1 for B or E (or both) (no extras)				
	(c)		2	1	B1 cao				
14		$3 \times 4 = 12$ $12 \text{ m}^2 = 120000 \text{ cm}^2$ $20 \times 20 = 400$ $120000 \div 400 = 300$ $300 \div 10 = 30$ OR $3m = 300\text{cm}, 4 \text{ m} = 400\text{cm}$ $300 \div 20 = 15, 400 \div 20 = 20$ $15 \times 20 = 300$ $300 \div 10 = 30$ $30 \times 34.99 = 1049.70$	No with working	6	B1 for a correct conversion of 3 m or 4 m to cm or 20 cm to m or a correct and appropriate area conversion. M1 for 300 × 400 (=120000) or 3 ×4 (=12) M1 for 20 × 20 or 0.20 × 0.20 M1 for '120000'÷ '400' or '12' ÷ '0.04' A1 for 1049.7(0) C1 (dep M1) for comparison and correct deduction using their total cost with supportive working OR B1 for a correct conversion of 3 m or 4 m to cm or 20 cm to m or a correct and appropriate area conversion. M1 for 300 ÷ 20 or 400 ÷ 20 or 3 ÷ 0.2(0) or 4 ÷ 0.2(0) M1 for 300 ÷ 20 and 400 ÷ 20 or 3 ÷ 0.2(0) and 4 ÷ 0.2(0) M1 for '15' × '20' A1 for 1049.7(0) C1 (dep M1) for comparison and correct deduction using their total cost with supportive working				

1MA	1MA0_2F								
Question		Working	Answer	Mark	Notes				
15	(a)		Correct net	1	B1 for correct net				
	(b)	Shade two faces. For each correct net there are 3 different possibilities	Correct shading	1	B1 for shading 2 opposite faces				
	(c)		12	1	B1 cao				
16		Paint R Us 6 × 2.19 (= 13.14) Deco Mart 9× 1.80 (= 16.20) 16.20 × 0.9 (= 14.58)	Paint R Us	6	Paint R Us M1 for '9 - 3' × 2.19 A1 for 13.14 Deco Mart M2 for $\frac{90}{100}$ × '16.20' oe (M1 for $\frac{10}{100}$ × '16.20' oe) A1 for 14.58 C1 (dep M1) for comparison of cost of 9 tins at Paint R Us with cost of 9 tins at Deco Mart leading to a correct deduction				

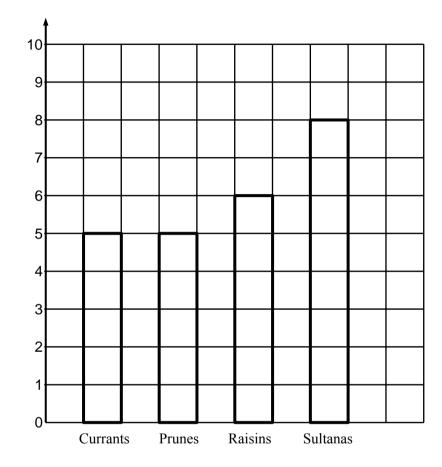
1MA0_2F	1MA0_2F							
Question		Working		Answer	Mark	Notes		
_	Bird Magpie Thrush Starling Sparrow Angles $\frac{15}{72} \times 36$ $\frac{27}{72} \times 360$ OR $\frac{75}{15} \times 10, \frac{75}{15} \times 36$	Frequency 15 10 20 27 $60, \frac{10}{72} \times 360, \frac{20}{72}$	Angles 75 50 100 135 0 2×360 ,	Answer Correct pie chart	Mark 3	M1 for any one of $\frac{15}{'72'} \times 360$, $\frac{10}{'72'} \times 360$, $\frac{20}{'72'} \times 360$, $\frac{27}{'72'} \times 360$ oe ('72' must clearly come from adding frequencies) A1 for 75 seen from correct working or 50 seen or 100 seen or 135 seen or one sector of angle 50° or 100° or 135° labelled correctly with bird's name or all sectors correctly drawn A1 for correct pie chart fully labelled with birds' names OR M1 for $\frac{'75'}{15} \times 10$ or $\frac{'75'}{15} \times 20$ or $\frac{'75'}{15} \times 27$ ('75' must be in the range 73 - 77)		
						A1 for 50 seen or 100 seen or 135 seen or one sector of angle 50° or 100° or 135° labelled correctly with bird's name or all sectors correctly drawn A1 for correct pie chart fully labelled with birds' names		
						NB. Allow a tolerance of $\pm 2^{\circ}$ on all drawn angles		

1MA	0_2F				
Qu	estion	Working	Answer	Mark	Notes
18	(a)	$y = 4 \times 7.5 + 5.4$	35.4	2	M1 for 4 ×7.5 + 5.4 A1 cao
	(b)	$18.8 = 4x - 2.4$ $x = \frac{18.8 + 2.4}{4}$	5.3	2	M1 for intention to add 2.4 to 18.8 or to subtract -2.4 from 18.8 or to divide 18.8 and (-)2.4 by 4 A1 cao
19		180÷30 = 6 9 + 6 + 0.5+0.5 = 16	16:00 or 4pm	3	M1 for 180÷30 (= 6) or 30 + 30 +to a total of between 150 and 210 exclusive M1 for 9 + '6' + 0.5 + 0.5 A1 for 16:00 or 4pm (accept 4 o'clock) OR M1 for 60 bricks used or 120 bricks left at 11 am M1 for 45 bricks used between 11 30 am and 1 pm or 75 bricks left at 1 pm A1 for 16:00 or 4pm (accept 4 o'clock) (SC B1 for 3 pm or 3 30pm if M0 scored) (SC B1 for 7 hours needed if M0 scored)
20		$\frac{\sqrt{20.4}}{6.2 \times 0.48} = \frac{4.5166359}{2.976}$	1.5176(868)	2	B2 for 1.5176 (B1 for sight of 4.51(66359) or 4.52 or 2.976 or 2.98 or 1.51 or 1.52 or 1.518 or or 1.517 or 1.5177 or $\frac{\sqrt{510}}{5}$)

1MA	1MA0_2F							
Qu	estion	Working	Answer	Mark	Notes			
21	(a)		56	1	B1 for 56 (accept answer in the range 55 to 57)			
	(b)	Barry's Bricks £50 Bricks ArUs £65 65 – 50	15	3	M1 for 50 or 65 (accept 64 – 66) M1 for 65 – 50 (accept 64-66 for 65) A1 for 15 (accept answer in range 14 to 16)			
22	(a)	1 – 0.7	0.3	2	M1 for 1 – 0.7 A1 for 0.3 oe			
	(b)	200 ×0.7	140	2	M1 for 200 ×0.7 A1 for 140			
23		$25 \div 50 = 0.5 \text{ h} = 30 \text{ min}$ $25 \div 60 = 0.416 \text{ h} = 25 \text{ min}$	5	3	M1 for $25 \div 50$ or $\frac{60}{50} \times 25$ or 30 (min) or 0.5 (h) or $25 \div 60$ or $\frac{60}{60} \times 25$ or 25 (min) or 0.41 (6)(h) M1(dep) '0.5' -'0.41(6)' or '30' - '25' A1 cao OR M1 for $60 \div 25$ (= 2.4) and $60 \div$ "2.4" or $50 \div 25$ (= 2) and $60 \div$ "2" M1(dep) for '30' - '25' A1 cao			

1MA	1MA0_2F							
Qu	estion	Working	Answer	Mark	Notes			
25	(a)		-1, 0, 1, 2, 3	2	B2 for all 5 correct values; ignore repeats, any order (B1 for 4 correct (and no incorrect values) eg. 0, 1, 2, 3 or one additional value, eg –1, 0, 1, 2, 3, 4)			
	(b)		$-4 < x \le 3$	2	B2 for $-4 < x \le 3$ or > -4 and ≤ 3 (B1 for $-4 < x$ or $x > -4$ or $x \le 3$ or $3 \ge x$ or > -4 or ≤ 3 or $-4 \le x < 3$) (NB Accept the use of any letter)			
	(c)	3y-2>5 $3y>7$	$y > \frac{7}{3}$	2	M1 for clear intention to add 2 to both sides (of inequality or equation) or clear intention to divide all terms by 3 or $3y > 7$ or $3y < 7$ or $3y = 7$ A1 $y > \frac{7}{3}$ or $y > 2\frac{1}{3}$ or $y > 2.3$ NB. final answer must be an inequality (SC B1 for $\frac{7}{3}$ oe seen if M0 scored)			
26	(a)		2(2x+5y)	1	B1 cao			
	(b)		x(x+7)	1	B1 cao			
27		Triangle at (-2, 2), (-2, 0),(-1,-1)	Correct figure	2	M1 for any translation A1 for correct translation			

Frequency

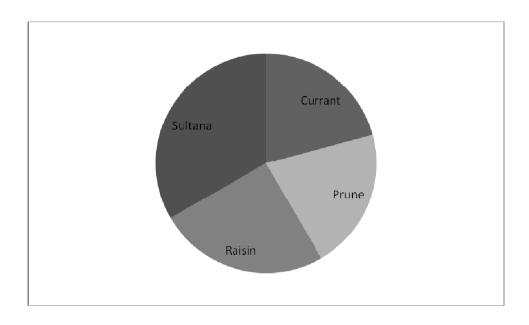


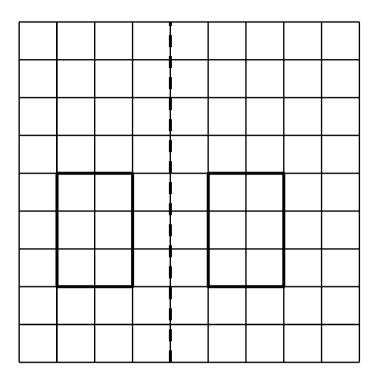
(Type of Dried Fruit)

2 (alt)

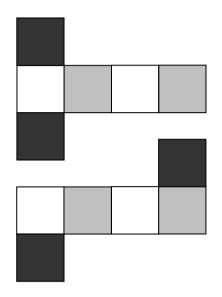
Currants	0000	
Prunes	0000	
Raisins	00000	Key: = 1 person
Sultanas	0000000	125). O I posson

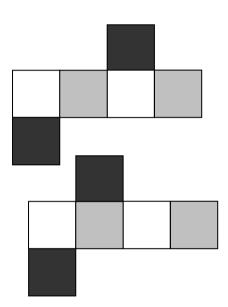
2 (alt)

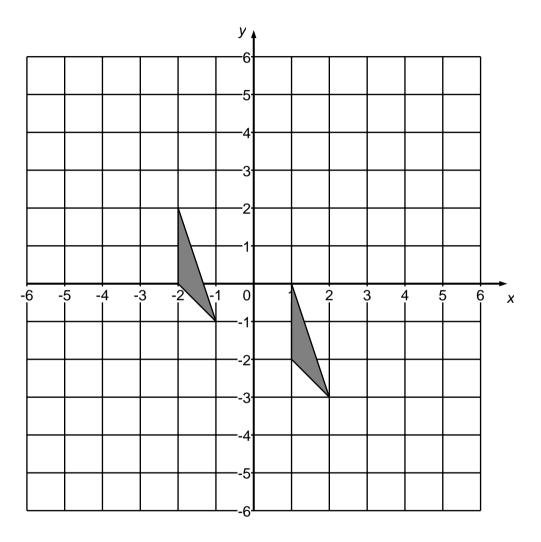




15b and c







Further copies of this publication are available from Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467 Fax 01623 450481 Email <u>publication.orders@edexcel.com</u> Order Code UG033844 November 2012

For more information on Edexcel qualifications, please visit our website $\underline{www.edexcel.com}$

Pearson Education Limited. Registered company number 872828 with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE





