Mark Scheme (Results)

Summer 2017

Pearson Edexcel Mathematics in Context
Level 3 Core Maths (7MC0/02) Paper 02

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.

- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.

- 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.

- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.

- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

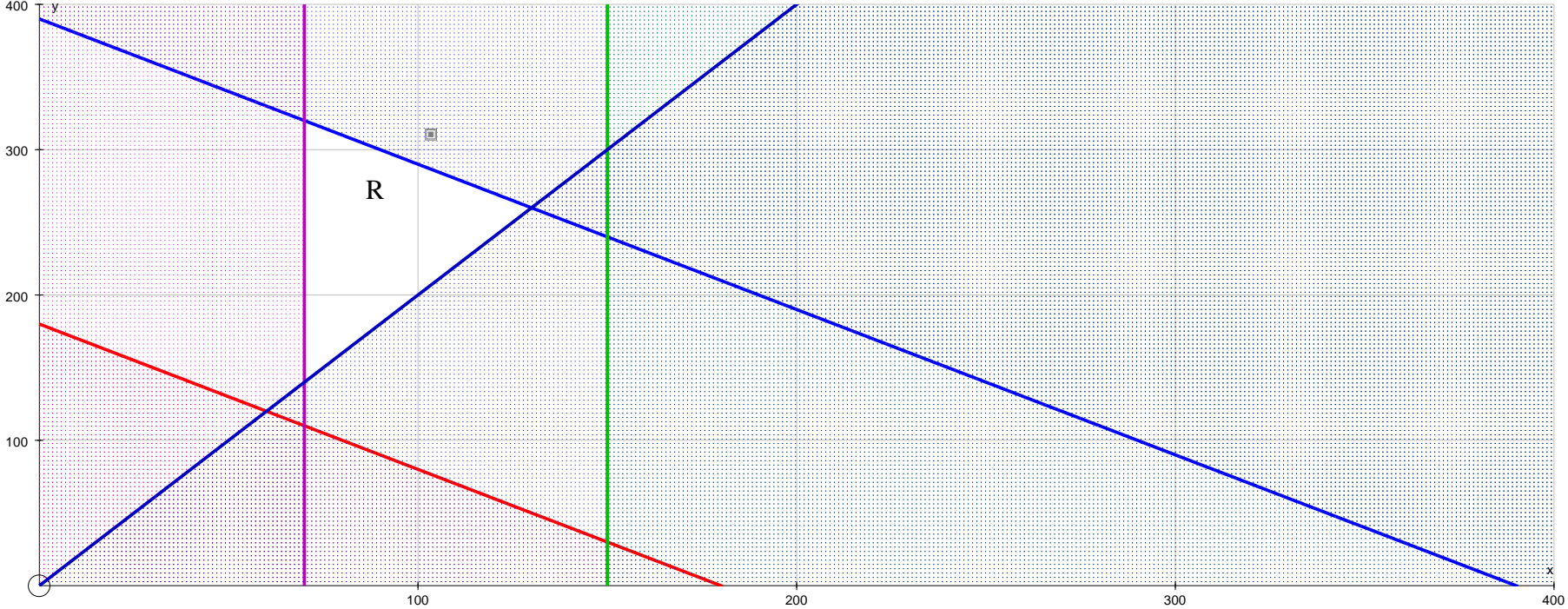| Question	Working	Answer	Mark	Notes
1(a)		623	1	B1 cao
1(b)		107%, 95.9% and statement	5	M1 for $(619-299) \div 299 \times 100$ OR $(``623"-318) \div 318 \times 100$ OR $``623" \div 318 \times 100$ OR $619 \div 299 \times 100$ OR sight of 195.9 or 207 M1 for $(619-299) \div 299 \times 100$ AND $(``623"-318) \div 318 \times 100$ OR $``623" \div 318 \times 100 - 100$ AND $619 \div 299 \times 100 - 100$ A1 for 107(%) and 95.9(%) C1 (dep on M1) for a comparison eg SC to PRE C1 (dep on M1) for a second comparison (Maybe a combined statement)
2		Mean £399.31 SD £121.67 Statements	6	M1 for an attempt to calculate mean or SD with n=15, 16 or 18 M1 for a correct method to calculate the mean and standard deviation with n=16 A1 for (£)399 awrt A1 for (£)122 awrt C1 (dep on M1) for an interpreted comparison statement comparing means must be some reference to **cost** for home suppliers being greater than non-home suppliers. (Can be implied by giving the difference between the means) C1 (dep on M1) for an interpreted comparison statement comparing SDs must be some reference to "spread" of costs

3(a)	1958.76 and 1546.39 (Allow 1959 and 1546)	412(.368) (kWh)	4	M1 for using 95×100 or 75×100 or 20×100 or $4.85 \div 100$ M1 for "9500" $\div$ 4.85 or "7500" $\div$ 4.85 or "2000" $\div$ 4.85 or $95 \div$ "0.0485" or $75 \div$ "0.0485" or $20 \div$ "0.0485" M1 for finding the range of their figures (before or after division by 4.85 and $\times$ 100) A1 Allow 413
(b)		54(.35)%	4	M1 for using $85 \div 0.0485$ (= 1752.58) to find G M1 for substituting for C_0 and C_1 correctly or 800 seen M1 for full method to use the formulae to find T A1
4(a)		18.5 and 29 With statement	4	M1 for use of $x=0.5$ or $y=0.5$ or $31+6$ (=37) and $50+8$ (=58) M1 for full method for wet or dry weather A1 for 18.5 and 29 C1 (dep on M1) for comparison comment
(b)(i) (ii) (iii)		Reason $x = \frac{18}{25}$ and $y = \frac{7}{25}$	1 1 4	C1 Reason eg whole crop is split between two areas only so must add to 1 B1 $31x + 6y = 24$ (condone $\geq$) M1 for correct method to eliminate one variable M1 for a correct method to find the other variable eg by substitution or by elimination A1 for $x = \frac{18}{25}$ o.e. A1 for $y = \frac{7}{25}$ o.e.

5(a)		$0.39(735..)$ $\frac{60}{151}$	1	B1 $\frac{60}{151}$ o.e.
(b)	$(8 \times 0.93 + 15 + 110 +$ $19 \times 24.60) \div 120$	$5	3	M1 for expenditure calculated (599.84) (allow one error or omission) M1 for "599.84"÷120 or "599.84"÷60 A1 awrt ($)5
6(a)		Graph Drawn	4	B1 for appropriate axes drawn with scale B1 for 15,23,48,57, 60 M1 ft for cumulative points correctly plotted at the end of the intervals or consistently plotted within the interval A1 fully correct diagram
(b)		11-12 pounds	2	M1 full method to find median from a cumulative frequency graph A1 for 11-12 or ft from their cf graph
7(i) (ii) (iii)		Description Statement Description	3	C1 eg Defective items from machine A C1 eg Because A and B don't overlap or an item cannot be produced by both machines. C1 eg defective items not produced by machine A or B. The defective items from machine C

8(a)	$\frac{2}{6} \times 0.02 = 0.00666$, $\frac{1}{150}$ $\frac{1}{6} \times 0.03 = 0.005$, $\frac{1}{200}$ $\frac{3}{6} \times 0.025 = 0.0125$, $\frac{1}{80}$ $0.024(16\ldots)$	$\dfrac{29}{1200}$	4	M1 for 2×0.02 (= 0.04) or $3 \times 0.025 (=0.075)$ M1 for $2 \times 0.02 + 0.03 + 3 \times 0.025 (=0.145)$ M1 (dep M2) for "0.145"÷(2+1+3) A1 $\frac{29}{1200}$ o.e OR M1 for $\frac{2}{6}$ or $\frac{1}{6}$ or $\frac{3}{6}$ M1 for $\frac{2}{6} \times 0.02$ or $\frac{1}{6} \times 0.03$ or $\frac{3}{6} \times 0.025$ M1 (dep M2) for $\frac{2}{6} \times 0.02 + \frac{1}{6} \times 0.03 + \frac{3}{6} \times 0.025$ A1 $\frac{29}{1200}$ o.e.
(b)		Probability shown	3	M1 for 1-0.02 (=0.98) o.e. M1 for $(0.98)^{115}$ C1 communicating 0.902(051293) is greater than 0.9
9(a)		$70 \le x \le 150$ $x+y \le 390$ $2x \le y$	3	B1 for $70 \le x \le 150$ or $x \ge 70$ and $x \le 150$ (Condone strict inequalities) B1 for $x+y \le 390$ B1 for $2x \le y$
(b)		See diagram on page 9	4	M1 for $x=70$ and $x=150$ drawn M1 for $x + y = 390$ drawn M1 for $y = 2x$ drawn A1 fully correct diagram with R labelled
(c)	(70,320) £1400 (70,140) £770 (130,260) £1430	130 and 260 £1430	3	M1 for testing one of their vertices in the FR A1ft profit for their vertex A1 (130,260) (£)1430 OR M1 Objective line drawn with gradient $-\frac{7}{8}$ or $-\frac{8}{7}$ A1 A correct objective line. A1 (130,260) (£)1430

10	f	w	fw	£2503.57	4	M1 for at least 4 products *fw* consistently within interval (including end points). M1 (dep) for use of at least 3 correct midpoints. M1 (dep on 1st M) for 'Σ*fw*'÷(5+15+18+23+9) A1 £2503.57 or £2503 or £2504
	5	625	3125			
	15	1625	24375			
	18	2250	40500			
	23	3000	69000			
	9	4250	38250			
	70		175250			
11(a)				Graph drawn	4	B1 appropriate scales M2 for plotting all points correctly (M1 for plotting at least 4 points correctly) A1 fully correct labelled diagram
(b)				Statement	1	C1 Statement eg Age set and wages variable
(c)				$y = 11.29x + 84.3$	5	M1 for finding $\bar{x}$ (=32.83...) M1 for finding $\bar{y}$ (=455) M1for $a = \bar{y} - b\bar{x}$ M1 for a complete method to state the equation A1 $y = 11.29x + a$, *a* in the range 84.29 to 84.35
(d)	Formula: 423 and 360 Interpolation: 505 and 465			(m)£423.01 and (f) £360.04 Statement	4	M1 for a method to find male wage with 30 M1 for a method to find female wage with 30 A1 awrt 423 and 360 or 505 and 465 C1 Comment eg data within range so valid Not reliable as prediction is less than earnings at age 25 and 35
(e)				Extended statement	2	C1 Description of gradient in context e.g. **gradient** is **increase** in weekly **wage per year** of age C1 for comparison of men and women e.g. **increase** in weekly wage is (significantly) **greater** for **men**

Qu 9