Detailed Marking Instructions for each question

Question			Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
1.			**Ans: (£)30, (£)9·30** •[1] Process: calculate mean •[2] Process: calculate $(x-\bar{x})^2$ •[3] Process: substitute into formula •[4] Process: calculate standard deviation	**4**	 •[1] (32 + 23…) ÷ 8 = 30 •[2] 4, 49, 169, 100, 9, 25, 225, 25 •[3] $\sqrt{\frac{606}{7}}$ •[4] 9·30
Notes: 1. For use of alternative formula; award marks as follows: Mark 2 Process: calculate ∑x and ∑x^2 240 and 7806 Mark 3 Process: substitute into formula Mark 4 Process: calculate standard deviation					
2.	(a)		**Ans: Monthly Deal 1 is cheaper** •[1] Process: find price with Monthly Deal 1 •[2] Process: find price with Monthly Deal 2 •[3] Communication: state best Deal	**3**	 •[1] (279 + 18 + 45 + 9) × 0·85 = 298·35 •[2] (18 + 45 + 9) × 0·35 + 279 = 304·20 •[3] Monthly Deal 1 is cheaper
Notes: 1. For "Monthly Deal 1" with no working award 0 marks 2. Accept £298/299 for deal 1and £304/305 for deal 2 3. Alternative is by comparing savings. .1 Deal 1 saves £56·25 .2 Deal 2 saves £46·80 .3 Deal 1 greater saving					

Question			Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
	(b)		**Ans: £42·19** •[1] Process: find price for The Red Polka Dot Cycle Shop •[2] Process: find the difference between the price for The Red Polka Dot Cycle Shop and The Yellow Jersey Cycle Shop •[3] Process: calculate total refund	**3**	•[1] (310 +20 +50 + 10) ÷ 3 × 2 = 260 •[2] 298·35 – 260 = 38·35 •[3] 38·35 × 1·1 = 42·19
Notes: 1. Award third mark for £42·18 2. The actual cost from deal 1 part a must be used (not a rounded answer)					
3.	(a)		**Ans: Mark position** •[1] Process: correct bearing •[2] Process: correct length of line	**2**	•[1] 065 ± 2° •[2] 7·6cm ±0·2cm
Notes:					
	(b)	(i)	**Ans: Mark position** •[1] Strategy: bearing from Aberdeen •[2] Strategy: bearing from Ringkobing •[3] Strategy: mark position	**3**	•[1] Correct bearing of 125° ± 2° •[2] Correct bearing of 250°± 2° •[3] Correctly marks position
		(ii)	**Ans: 340km, 200°** •[1] Communication: Distance of fishing vessel from oil rig • •[2] Communication: Bearing of fishing vessel from oil rig	**2**	•[1] Correct distance of 340±10 •[2] Correct bearing of 200°± 2°
Notes:					

Question			Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
4.	(a)		**Ans: £135 000** •[1] Strategy: know how to increase by 5% •[2] Strategy: increase for 2 years •[3] Strategy: know how to decrease by 2% •[4] Process: calculate value after 5 years •[5] Communication: round to nearest thousand	**5**	•[1] multiplier of 1·05 •[2] $130\,000 \times 1{\cdot}05^2 = (143325)$ •[3] multiplier of 0·98 •[4] 134 896·34 •[5] 135 000
Notes: 1. £135 000 without working award 0/5 Do not accept £135 000·00					
	(b)		**Ans: no value of Saraish's house is about £1000 lower** •[1] Process: calculate value after 4.5% rise •[2] Communication: compare values	**2**	•[1] 135 850 •[2] no value of Saraish's house is lower
Notes: 1. Alternative solution is to compare rises .1 4·5% rise = £5850 .2 Saraish's rise is less 3 Saraish's rise is 3·8% (< 4·5%)					

Question			Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
5.	(a)		**Ans: 9·8 metres** • [1] Strategy/Process: find the hypotenuse • [2] Strategy: know to use correct form of Pythagoras • [3] Process: calculate the length of the wall	**3**	• [1] $5 \times 2{\cdot}8 = 14$ • [2] $14^2 - 10^2$ • [3] 9·8
Notes:					
	(b)		**Ans: £254·15** • [1] Strategy: know to calculate area • [2] Process: area of triangle • [3] Process: area of quarter circle • [4] Process: area for turf • [5] Strategy: know how to calculate the number of rolls • [6] Process: calculate cost	**6**	• [1] Rectangle – quarter circle - triangle • [2] 49 • [3] 19·6 • [4] 150 – 49 – 19·6 = 81·4 • [5] 17 • [6] $17 \times 14{\cdot}95 = 254{\cdot}15$
Notes: 1. For mark 6 cost must be stated to 2 decimal places (eg do not accept £342·8 or similar)					

Question			Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
6.	(a)		**Ans: 0·9s** • [1] Process: find time difference	**1**	• [1] 1:50·6 – 1:49·7
Notes:					
	(b)		**Ans: 179 (km/hr)** • [1] Strategy: extract data and substitute • [2] Process: convert time to seconds • [3] Process: calculate speed in km/s • [4] Strategy: know how to convert to km/hr • [5] Communication: round answer correctly	**5**	• [1] S= 5·543/01:51·7 • [2] 111·7 • [3] 5·543/111·7 = 0·0496… • [4] × 3600 • [5] 179
Notes: 1. If converted to minutes the evidence would be .2 1·862 .3 5·543/1·962 = 2·977 .4 x60 .5 179					
	(c)		**Ans: 1 hour 47 minutes 8·8 seconds** • [1] Strategy: know to convert time and multiply by 56 • [2] Strategy: convert to minutes • [3] Strategy: convert to hours, minutes and seconds • [4] Process: all calculations correct	**4**	• [1] 114·8 × 56 (=6428·8 secs) • [2] ÷ 60 (107·146…mins) • [3] 0·146…mins into seconds (8·8) • [4] 1 hour 47 minutes 8·8 seconds
Notes:					

Question			Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
7.	(a)		**Ans: £968·40, £357·48, £741·82** • [1] Process: calculate area of drive in square feet • [2] Process: calculate price for tarmac • [3] Process: calculate how much gravel is needed • [4] Strategy: find best way to buy the gravel • [5] Process: find total cost of using gravel • [6] Strategy: know to calculate minimum number of slabs • [7] Process: calculate number of slabs • [8] Process: calculate amount of hardcore needed • [9] Process: calculate price of slabbed drive	**9**	• [1] 45 m^2 × 10·76 = 484·2 sq ft • [2] 484·2 × £2 = £968·40 • [3] 45 x 50 = 2250kg • [4] 2 × 850kg + 11 × 50kg • [5] 2 × £125·99 + 11 × £8·29 + £14·31 = £357·48 • [6] Evidence • [7] 15 × 15 + 7 × 7 + 8 = 282 Or 45 ÷ 0.16 = 282 (rounded up) • [8] 45 m^2 × 0·04 m = 1·8 m^3 2 × 2 = 4 tonnes • [9] 282 × £2·12 + 4 × £18 + 2 × £35·99 = £741·82
Notes:					
	(b)		**Ans: Choice of surface plus reason** • [1] Strategy: know to find cost per year for each • [2] Process: calculate the 'cost per year' for each surface type • [3] Communication: state conclusion with valid reason	**3**	• [1] 968·40 ÷ 30, 357·48 ÷ 10, 741·82 ÷ 25 • [2] Tarmac costs £32·28 per year Gravel costs £35·75 per year Slabs cost £29·67 per year • [3] Slabs cheapest per year, or gravel cheaper initially etc
Notes:					

[END OF MARKING INSTRUCTIONS]