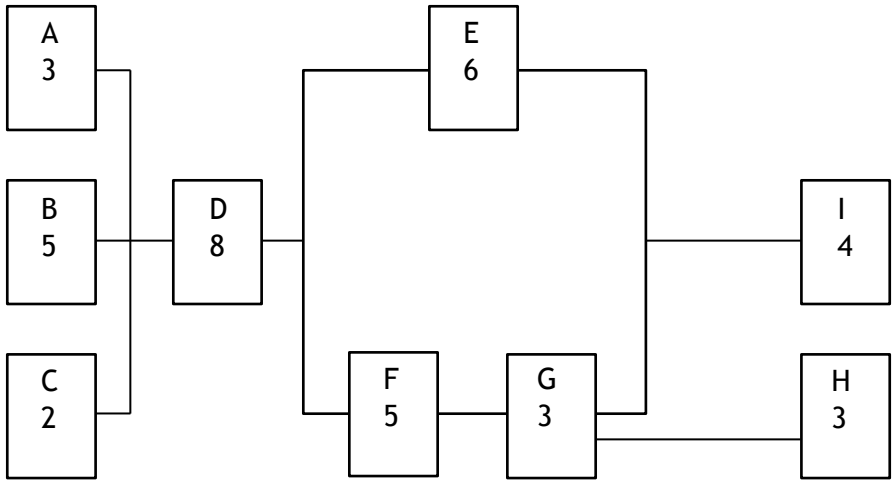
Detailed Marking Instructions for each question

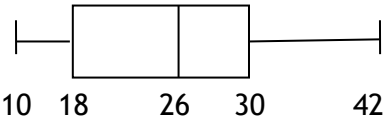
Question			Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
1.			**Ans:** $\frac{1}{10}$ •[1] Strategy: know how to calculate probability •[2] Process: correctly simplify	**2**	•[1] $\frac{3}{30}$ •[2] $\frac{1}{10}$
Notes: 1. Accept 1:10, 1 in 10, 10% … 2. Special cases if $\frac{3}{17}$ Award 1 mark if $\frac{3}{7}$ Award 1 mark 3. If tree diagram used evidence of • $\frac{17}{30}$ • $\times\frac{3}{17}=\frac{1}{10}$					
2.			**Ans: no with reason** •[1] Strategy: find temperature from scale •[2] Strategy: determine upper limit of tolerance •[3] Communication: state conclusion	**3**	•[1] 37·7°C •[2] (36·4°C to) 37·2°C •[3] Frances is not in good health as her temperature (37·7°C) is above the upper tolerance (37·2°C) of good health.
Notes: 3rd mark available for other suitable statement. Eg "not within range 36·4-37·2"					
3.	(a)		**Ans: 5 (m)** •[1] Strategy: Use Pythagoras to find AB.	**1**	•[1] AB = $\sqrt{3^2+4^2}$ = 5
Notes:					

Question			Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
	(b)		**Ans: 21 m^2** • [1] Strategy: know to find areas of two triangles and add • [2] Process/Communication: calculate areas and add, stating units	**2**	• [1] Evidence • [2] 6 + 15 = 21
Notes: 1. If $6m^2$ and $15m^2$ are clearly shown, but not added, award 1/2					
4.	(a)		**Ans: £259** • [1] Process: calculate take home pay **in £**	**1**	• [1] 296 – (28·43 + 8·57) = 259
Notes:					
	(b)		**Ans: yes with reason** • [1] Strategy/Process: calculate holiday fund • [2] Process: find total cost of holiday and total holiday fund 13 × 44 • [3] Communication: state conclusion with reason	**3**	• [1] 259 – (76 + 41 + 45 + 30 + 23) = 44 • [2] 520 and 572 • [3] Yes he can afford the holiday as he can save £52 more than he needs.
Notes: 1. Working must be shown to justify the answer 2. 1st mark is for holiday fund which is balance of income v total outgoings – and is available for follow through from (a) – and could be a deficit 3. If holiday fund is <0 (or "deficit" mentioned) mark 2 is unavailable as subsequent working has been eased 4. Mark 3 is available (after deficit) if justified. 5. Alternative: 13 x 259 – 13 x 215					

Question			Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
5.			**Ans: 8200 metres (8·2 km)** • [1] Strategy: Evidence of suitable conversion of units • [2] Strategy: Know how to find distance • [3] Process: calculate distance correctly • [4] Communication: round answer correctly, using appropriate units	**4**	• [1] 20 min x 60 (change to secs) 6.8 m/s x 60 (m per min) • [2] $D = S \times t = 6{\cdot}8 \times 20 \times 60$ • [3] D = 8160 metres • [4] D = 8200 metres or 8·2 kilometres
Notes:					
6.	(a)		**Ans: task letters and times inserted in chart** • [1] Strategy: start to allocate tasks • [2] Strategy: complete allocation of tasks	**2**	• [1] Any 5 boxes correct • [2] Remaining 3 boxes correct

Notes:



Question			Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
	(b)		**Ans: no with reason** • [1] Stratgey: select critical path • [2] Communication: state conclusion with reason	**2**	• [1] 5+8+(5+3)+4 • [2] no, because it will take 25 hours
Notes: 1. H/I interchanged is acceptable 2. (b) marks can be awarded for incorrect critical path with valid comparison to 22 hours Eg if $\frac{C}{2}\frac{D}{8}\frac{E}{6}\frac{I}{4} = 20$ hours YES as 20<22 would gain mark					
7.	(a)		**Ans: boys with valid reason**	**1**	
Notes:					
	(b)		**Ans: 26, 18, 30** • [1] Process: state the median • [2] Process: state the quartiles	**2**	• [1] 26 • [2] 18, 30
Notes:					
	(c)		**Ans:**  • [1] Strategy: correct end points • [2] Strategy: correct box	**2**	• [1] end points at 10 and 42 • [2] box showing Q_1, Q_2, Q_3
Notes: 1. Incorrect answers in part (b) must be followed through to give the possibility of awarding 2/2					

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]