

Multiple Choice Answer Sheet

Name _____ Marking Sheet _____

Completely fill the response oval representing the most correct answer.

1. A ☒ B ☐ C ☐ D ☐
2. A ☐ B ☒ C ☐ D ☐
3. A ☐ B ☐ C ☒ D ☐
4. A ☐ B ☐ C ☐ D ☒
5. A ☐ B ☐ C ☒ D ☐
6. A ☒ B ☐ C ☐ D ☐
7. A ☒ B ☐ C ☐ D ☐
8. A ☐ B ☐ C ☒ D ☐
9. A ☐ B ☐ C ☐ D ☒
10. A ☐ B ☒ C ☐ D ☐
11. A ☐ B ☒ C ☐ D ☐
12. A ☐ B ☐ C ☐ D ☒
13. A ☐ B ☒ C ☐ D ☐
14. A ☐ B ☒ C ☐ D ☐
15. A ☐ B ☒ C ☐ D ☐

Outcomes Addressed in this Question**H7, H9, H11**

Outcome	Solutions	Marking Guidelines
	18 (a) (i) <ul style="list-style-type: none"> The range was the same in 2005 and 2006 The interquartile range is similar in both years The median is higher in 2006 The interquartile range is higher in 2006 	2 marks <ul style="list-style-type: none"> Two correct comparisons and no incorrect statements 1 mark <ul style="list-style-type: none"> One correct comparison and no incorrect statements
	18 (a) (ii) $\$1600 \times 28 = \$44\,800$	1 mark <ul style="list-style-type: none"> Correct answer with correct calculation
	18 (b) (i) 25 million	1 mark <ul style="list-style-type: none"> Answer in the range 22-30 million
	18 (b) (ii) Spring	1 mark <ul style="list-style-type: none"> Spring (or August, September, October)
	18 (b) (iii) <ul style="list-style-type: none"> The number of bellbirds is low when the number of insects is low. The number of bellbirds increases about two weeks after the number of insects increases. Both bird and insect numbers are relatively low in November, December, May and June. Both numbers are relatively high in September and March. 	2 marks <ul style="list-style-type: none"> Two correct comparisons and no incorrect statements 1 mark <ul style="list-style-type: none"> One correct comparison and no incorrect statements
	18 (c) (i) 43	1 mark <ul style="list-style-type: none"> Correct answer
	18 (c) (ii) 41	1 mark <ul style="list-style-type: none"> Correct answer
	18 (c) (iii) Male: $76 - 31 = 45$ Female: $80 - 21 = 59$ Males have smaller range.	1 mark <ul style="list-style-type: none"> Correct answer Accept "45 is smaller than 59" as reason
	18 (c) (iv) The female group because its tail is larger.	1 mark <ul style="list-style-type: none"> Correct answer with correct reason
	18 (d)(i) 45	1 mark <ul style="list-style-type: none"> Correct answer
	18 (d)(ii) 75%	1 mark <ul style="list-style-type: none"> Correct answer
	18 (d) (iii) <ul style="list-style-type: none"> The box and whisker plot would move 30 units to the right The median would be 75 The highest score would be 90 and the lowest would be 60. 	2 marks <ul style="list-style-type: none"> Two correct comparisons and no incorrect statements 1 mark <ul style="list-style-type: none"> One correct comparison and no incorrect statements

Outcomes Addressed in this Question**H6, H7**

Outcome	Solutions	Marking Guidelines
	16 (a) (i) Angular dist = $90^\circ - 50^\circ$ $= 40^\circ$ Distance = 40×60 nautical miles $= 2400$ nautical miles	2 marks <ul style="list-style-type: none"> Correct distance in nautical miles 1 mark <ul style="list-style-type: none"> Correct distance in km OR Correct angular distance
	16 (a) (ii) Winnipeg is ($50^\circ N, 95^\circ W$)	1 mark <ul style="list-style-type: none"> Correct answer
	16 (a) (iii) Time difference = 30×4 minutes $= 120$ minutes (or 2 hours) Vancouver is behind Winnipeg. Vancouver time = $11\text{pm} - 2$ hours $= 9\text{pm}$ on the same day $= 9\text{pm}$ Monday	2 marks <ul style="list-style-type: none"> Correct time and day 1 mark <ul style="list-style-type: none"> Calculation of 2 hour time difference
	16 (a) (iv) Arc Length = $\frac{30}{360} \times 2 \times \pi \times 4110$ km $= 2151.99\dots$ or 2152 km	2 marks <ul style="list-style-type: none"> Correct answer, ignore rounding 1 mark <ul style="list-style-type: none"> Calculation of the circumference OR Determining the required fraction
	16 (b) (i) Angular distance = $20^\circ + 25^\circ$ $= 45^\circ$ Distance = 45×60 $= 2700$ nautical miles OR Distance = $\frac{45}{360} \times 2 \times \pi \times 6400$ $= 5026.55$ km $= \frac{5026.55}{1.852}$ nM $= 2714$ nautical miles	2 marks <ul style="list-style-type: none"> Correct answer, ignore rounding 1 mark <ul style="list-style-type: none"> Correct angular distance
	16 (b) (ii) Angular distance = $160^\circ + 155^\circ$ $= 315^\circ$ Time difference = 315×4 minutes $= 21$ hours Ship B is 21 hours behind ship A. Ship B time is 9am on Friday 28 th March.	2 marks <ul style="list-style-type: none"> Correct time and day 1 mark <ul style="list-style-type: none"> Calculation of 21 hour time difference
	16 (c) (i) Angular distance = 40°	1 mark Correct answer
	16 (c) (ii) Angular distance = 100° Distance = 100×60 $= 6000$ nautical miles OR Distance = $\frac{100}{360} \times 2 \times \pi \times 6400$ $= 11\,170$ km $= \frac{11170}{1.852}$ nM $= 6031$ nautical miles	2 marks <ul style="list-style-type: none"> Correct answer, ignore rounding 1 mark <ul style="list-style-type: none"> Correct angular distance

Outcomes Addressed in this Question

H2 integrates mathematical knowledge and skills from different content areas in exploring new situations

H3 develops and tests a general mathematical relationship from observed patterns

Outcome	Solutions	Marking Guidelines
	(a) 2.5	2 marks <ul style="list-style-type: none"> Correct answer, 2 sig figs. 1 mark <ul style="list-style-type: none"> Incorrect rounding from answer of 2.45817309..
	$10 = 8 + \frac{18-a}{2}$ (b) $\frac{18-a}{2} = 2$ $18-a = 4$ $a = 14$	2 marks <ul style="list-style-type: none"> Correct answer 1 mark <ul style="list-style-type: none"> Solution with one error.
	$\sqrt{2x-1} = 3$ (c) $2x-1 = 9$ $x = 5$	2 marks <ul style="list-style-type: none"> Correct answer 1 mark <ul style="list-style-type: none"> Solution with one error.
	$20^2 = u^2 + 2 \times 4 \times 18$ (d) $u^2 = 256$ $u = \pm 16$	2 marks <ul style="list-style-type: none"> Correct answer 1 mark <ul style="list-style-type: none"> Solution with one error, eg only positive solution for u.
	$\frac{2x}{x-4} = \frac{2}{3}$ (e) $6x = 2x - 8$ $4x = -8$ $x = -2$	2 marks <ul style="list-style-type: none"> Correct answer 1 mark <ul style="list-style-type: none"> Solution with one error
	(f) (i) n	1 mark <ul style="list-style-type: none"> Correct answer
	(f) (ii) see graph paper	3marks: Graph including: <ul style="list-style-type: none"> Heading Correct straight line 2 marks: <ul style="list-style-type: none"> Answer with no heading or Straight line with only one point properly plotted. 1 mark <ul style="list-style-type: none"> 2 of the above incorrect.
	(f) (iii) Gradient represents cost per mirror produced.	1 mark <ul style="list-style-type: none"> Correct answer

Outcomes Addressed in this Question**H10 solves problems involving uncertainty using basic principles of probability**

Outcome	Solutions	Marking Guidelines																				
	<p>(a) (i)</p> <table><tr><td></td><td>1</td><td>2</td><td>2</td></tr><tr><td>1</td><td>2</td><td>3</td><td>3</td></tr><tr><td>2</td><td>3</td><td>4</td><td>4</td></tr><tr><td>2</td><td>3</td><td>4</td><td>4</td></tr><tr><td>3</td><td>4</td><td>5</td><td>5</td></tr></table>		1	2	2	1	2	3	3	2	3	4	4	2	3	4	4	3	4	5	5	<p><u>2 marks</u></p> <ul style="list-style-type: none">Table including all values. <p><u>1 mark</u></p> <ul style="list-style-type: none">Substantial progress towards correct solution.
	1	2	2																			
1	2	3	3																			
2	3	4	4																			
2	3	4	4																			
3	4	5	5																			
	<p>(a) (ii) $\frac{1}{6}$</p>	<p><u>1 mark</u></p> <ul style="list-style-type: none">Correct answer																				
	<p>(a) (iii) 0</p>	<p><u>1 mark</u></p> <ul style="list-style-type: none">Correct answer																				
	<p>(b) 15</p>	<p><u>1 mark</u></p> <ul style="list-style-type: none">Correct answer																				
	<p>(c) $26^2 \times 10^4 = 6\,760\,000$</p>	<p><u>1 mark</u></p> <ul style="list-style-type: none">Correct answerCorrect numerical expression																				
	<p>(d) P (at least 1 head) = $\frac{7}{8}$</p>	<p><u>1 mark</u></p> <ul style="list-style-type: none">Correct answer																				
	<p>(e) P (loss) = $1 - \frac{5}{12} - \frac{1}{8}$ $= \frac{11}{24}$</p>	<p><u>1 mark</u></p> <ul style="list-style-type: none">Correct answer																				
	<p>(i) $\frac{1}{2}$ (ii) $\frac{1}{2}$ (f) (iii) $\frac{6}{20} = \frac{3}{10}$ (iv) $\frac{13}{20}$</p>	<p><u>1 mark each part</u></p> <ul style="list-style-type: none">Correct answer																				
	<p>(i) $\frac{150}{780} = \frac{5}{26}$ (g) (ii) $\frac{165}{780} = \frac{11}{52}$</p>	<p><u>1 mark each part</u></p> <ul style="list-style-type: none">Correct answer																				

Outcomes Addressed in this Question

H8 makes informed decisions about financial situations

Outcome	Solutions	Marking Guidelines
	(a) $60 \times \$425 - 36 \times \$638.60 = \$2510.40$	2 marks <ul style="list-style-type: none"> Correct answer 1 mark <ul style="list-style-type: none"> Incorrect answer from correct working Correct answer from 1 error in working.
	(b) (i) $\$1500(1.01) - 700 = \815	1 mark <ul style="list-style-type: none"> Correct answer
	(b) (ii) $\$815(1.01) - 700 = \123.15	1 mark <ul style="list-style-type: none"> Correct answer
	(c) (i) \$3 600	1 mark <ul style="list-style-type: none"> Correct answer
	(c) (ii) $r = \frac{600}{3000} \times 100 \div 3$ $= 6\frac{2}{3}\%$	2 marks <ul style="list-style-type: none"> Correct answer 1 mark <ul style="list-style-type: none"> Substantial progress toward solution.
	(d) (i) Monthly repayment = $\$8.40 \times 140$ = \$1176	2 marks <ul style="list-style-type: none"> Correct answer 1 mark <ul style="list-style-type: none"> Use of \$8.40 from table.
	(d) (ii) Total repaid = $\$1176 \times 25 \times 12$ = \$352 800 Interest = \$212 800	2 marks <ul style="list-style-type: none"> Correct solution (CFPA) 1 mark <ul style="list-style-type: none"> Correct interest from incorrect repayment Correct total repayment.
	(e) (i) \$240 000	1 mark <ul style="list-style-type: none"> Correct answer
	(e) (ii) $\$239\,400 \times 0.12 \times \frac{1}{12} = \2394	2 marks <ul style="list-style-type: none"> Correct solution 1 mark <ul style="list-style-type: none"> Working out with 1 error.
	(e) (iii) $\$239\,400 + \$2394 - \$3000 = \$238\,794$	1 mark <ul style="list-style-type: none"> Correct solution (CFPA)