

WA5MNACN3

Calculating with number

Core + Challenge

NAPLAN-style

Multiplying by One and Two Digits — Marking Key

I can multiply by one- and two-digit numbers using arrays, area models and partitioning.

For tutors and parents. Award method marks for correct working even if the final answer is wrong.

Marks summary

A Warm up: 16 B Practise: 21 C Think it through: 10 D Challenge: 9 **Total: 56**

Gold shading in this key shows what the child should have shaded or drawn. Accept any correct arrangement unless the question fixes it.

A

Warm up answers

/ 16 marks

Q	Answer	Model answer / notes	Marks
1	$30 + 12 = 42$		

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Q	Answer	Model answer / notes	Marks				
10	210	$100 + 40 + 50 + 20 = 210$	1				
11	672	302 20 1 <table><tr><td>600</td><td>40</td></tr><tr><td>30</td><td>2</td></tr></table> $600 + 40 + 30 + 2 = 672$	600	40	30	2	1
600	40						
30	2						
12	312	$200 + 60 + 40 + 12 = 312$	1				
13	720	$36 \times 2 = 72$, then $\times 10 = 720$.	1				
14	500	$4 \times 100 + 4 \times 25 = 400 + 100 = 500$.	1				
15	594	$100 \times 6 - 6 = 600 - 6 = 594$.	1				
16	400	$25 \times 4 = 100$, and $16 = 4 \times 4$, so $100 \times 4 = 400$.	1				

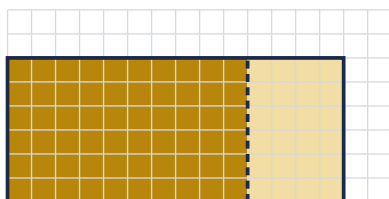
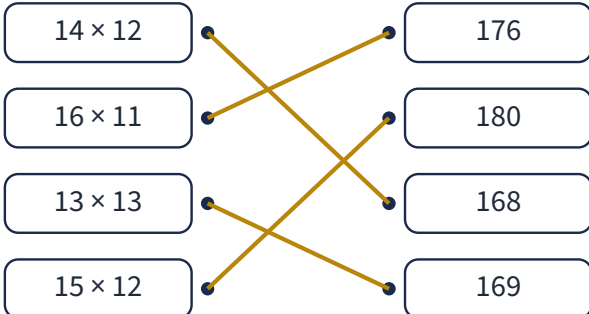
B

Practise *answers and working*

/ 21 marks

Q	Answer	Working / sample response	Marks				
1	456 passengers	8 <table><tr><td>400</td><td>56</td></tr></table> 50 7 Split 57 into 50 and 7. $8 \times 50 = 400$ and $8 \times 7 = 56$. $400 + 56 = 456$. <i>1 mark: area model labelled and parts correct (400 and 56).</i> <i>1 mark: 456.</i>	400	56	2		
400	56						
2	About 400; exact 384	10 <table><tr><td>200</td><td>40</td></tr><tr><td>120</td><td>24</td></tr></table> 20 4 Estimate: $20 \times 20 = 400$ (or $15 \times 25 = 375$). $10 \times 20 = 200$, $10 \times 4 = 40$, $6 \times 20 = 120$, $6 \times 4 = 24$. $200 + 40 + 120 + 24 = 384$ chairs. <i>1 mark: a sensible estimate.</i> <i>1 mark: the four parts correct (accept the model either way round).</i> <i>1 mark: 384.</i>	200	40	120	24	3
200	40						
120	24						

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Q	Answer	Working / sample response	Marks								
3	84	 The rectangle has 6 rows of 14 squares. $6 \times 10 = 60$ and $6 \times 4 = 24$. $60 + 24 = 84$. 1 mark: rectangle shaded and split correctly. 1 mark: 84.	2								
4	2,562	$6 \times 427 = 6 \times 400 + 6 \times 20 + 6 \times 7$ $= 2,400 + 120 + 42 = 2,562$	2								
5	180, 216, 48 cartons	<table border="1"><thead><tr><th>Cartons</th><th>Eggs</th></tr></thead><tbody><tr><td>15</td><td>180</td></tr><tr><td>18</td><td>216</td></tr><tr><td>48</td><td>576</td></tr></tbody></table> $15 \times 12 = 150 + 30 = 180$. $18 \times 12 = 180 + 36 = 216$. $48 \times 12 = 480 + 96 = 576$, so 576 eggs is 48 cartons. 1 mark for each correct answer.	Cartons	Eggs	15	180	18	216	48	576	3
Cartons	Eggs										
15	180										
18	216										
48	576										
6	$34 \times 20 + 34 \times 6 = 884$	$30 \times 20 + 4 \times 6$ $34 \times 20 + 34 \times 6$ $34 \times 2 + 34 \times 6$ $30 \times 26 + 4$ $26 = 20 + 6$, so $34 \times 26 = 34 \times 20 + 34 \times 6$. $680 + 204 = 884$. 1 mark: circles $34 \times 20 + 34 \times 6$. 1 mark: 884.	2								
7	See lines	14×12 16×11 13×13 15×12 176 180 168 169  $14 \times 12 = 168$ $16 \times 11 = 176$ $13 \times 13 = 169$ $15 \times 12 = 180$ 2 marks: all four correct. 1 mark: two or three correct.	2								

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Q	Answer	Working / sample response	Marks				
8	$25 \times 34 = 850$	30 4 20 <table><tr><td>600</td><td>80</td></tr><tr><td>150</td><td>20</td></tr></table> 5 $20 \times 30 = 600$, $20 \times 4 = 80$, $5 \times 30 = 150$, $5 \times 4 = 20$. The numbers are $20 + 5 = 25$ and $30 + 4 = 34$. $600 + 80 + 150 + 20 = 850$. <i>1 mark: 20 and 5.</i> <i>1 mark: 30 and 4.</i> <i>1 mark: $25 \times 34 = 850$.</i>	600	80	150	20	3
600	80						
150	20						
9	\$348	4 bikes for 3 days is 12 bike-days. $12 \times 29 = 12 \times 30 - 12 = 360 - 12 = \\$348$. (Or $4 \times 29 = 116$, then $116 \times 3 = 348$.) <i>1 mark: 12×29 or $4 \times 29 \times 3$ set up.</i> <i>1 mark: \$348.</i>	2				

C

Think it through *sample answers and criteria*

/ 10 marks

Q	Answer	Working / sample response	Marks				
1	No, it is 322	20 3 10 4 <table><tr><td>200</td><td>30</td></tr><tr><td>80</td><td>12</td></tr></table> Jai only multiplied tens by tens and ones by ones. He missed $20 \times 4 = 80$ and $3 \times 10 = 30$. Correct: $200 + 80 + 30 + 12 = 322$. 1 mark: No / 322. 1 mark: explains the two missing parts (20×4 and 3×10).	200	30	80	12	2
200	30						
80	12						
2	True	15 was doubled to make 30, and 24 was halved to make 12. Doubling one number and halving the other keeps the answer the same (both are 360). 1 mark: True. 1 mark: explains doubling and halving (or shows both are 360).	2				
3	Sometimes	Always Sometimes Never $10 \times 10 = 100$ has only 3 digits. $50 \times 50 = 2,500$ has 4 digits. So it is sometimes true. 1 mark: Sometimes. 1 mark: one example each way.	2				
4	5×50	6×40, 12×20 and 8×30 are all 240. $5 \times 50 = 250$. 1 mark: 5×50. 1 mark: shows the others are 240.	2				

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Q	Answer	Working / sample response	Marks
5	740	$37 \times 2 = 74$, then $74 \times 10 = 740$. It works because $20 = 2 \times 10$, so multiplying by 2 and then by 10 is the same as multiplying by 20. <i>1 mark: 740.</i> <i>1 mark: explains that $20 = 2 \times 10$.</i>	2

D

Challenge *solutions and criteria*

/ 9 marks

Q	Answer	Working / sample response	Marks
1	a) $52 \times 43 = 2,236$ b) $432 \times 5 = 2,160$ c) a) is bigger	a) Put 5 and 4 in the tens places: $52 \times 43 = 2,236$ is bigger than $53 \times 42 = 2,226$. b) Multiply by the biggest digit, 5, and make the rest as big as possible: $432 \times 5 = 2,160$. c) $2,236 > 2,160$. <i>1 mark: 2,236.</i> <i>1 mark: 2,160.</i> <i>1 mark: a) is bigger.</i>	3
2	$76 \times 3 = 228$, $86 \times 3 = 258$, $96 \times 3 = 288$	The answer is between 200 and 299, so the two-digit number is between 67 and 99. It ends in 6, so try 76, 86 and 96: 228, 258, 288. Each answer is 2 hundreds, some tens and 8 ones. $66 \times 3 = 198$ is too small. So there are exactly 3 answers. <i>1 mark: two correct answers.</i> <i>1 mark: all three.</i> <i>1 mark: explains why there are no others.</i>	3
3	a) 82 b) Yes (178 empty chairs)	a) $18 \times 24 = 432$ chairs. $432 - 350 = 82$ empty. b) $4 \times 24 = 96$ more chairs, so $82 + 96 = 178$ empty chairs. 178 is more than 100, so yes. <i>1 mark: 432.</i> <i>1 mark: 82.</i> <i>1 mark: yes, with 178 (or 528 chairs vs 450 people).</i>	3