Reasoning and Problem Solving
Step 4: Multiply 3 Digits by 2 Digits

National Curriculum Objectives:

Mathematics Year 5: (5C6a) Multiply and divide numbers mentally drawing upon known facts
Mathematics Year 5: (5C7a) Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers

Differentiation:

Questions 1, 4 and 7 (Reasoning)
Developing Explain who is correct by comparing the method for two identical calculations. Fully expanded method shown with no exchanges.
Expected Explain who is correct by comparing the method for two identical calculations. Formal multiplication method shown including exchanges.
Greater Depth Explain who is correct by comparing the method for two identical calculations. Formal multiplication method shown including exchanges where some numbers in the questions are incomplete.

Questions 2, 5 and 8 (Problem Solving)
Developing Explain if a statement is correct. Fully expanded method with no exchanges.
Expected Explain if a statement is correct. Formal multiplication method including exchanges.
Greater Depth Explain if a statement is correct. Formal multiplication method where some numbers in the questions are incomplete. Including exchanges.

Questions 3, 6 and 9 (Reasoning)
Developing Solve the 2-step calculation using the fully expanded method. No exchanges required.
Expected Solve the 2-step calculation using the formal multiplication method including exchanges.
Greater Depth Solve the 2-step calculation using the formal multiplication method including exchanges where some of the numbers in the questions are incomplete.

More Year 5 Multiplication and Division resources.

Did you like this resource? Don't forget to review it on our website.

Multiply 3 Digits by 2 Digits

1a. Omar and Melissa are working on the same calculation. They get different answers.

Omar

	3	0	2	
x		2	1	
			2	(1 x 2)
			0	(1 x 0)
	3	0	0	(1 x 300)
		4	0	(20 x 2)
			0	(20 x 0)
6	0	0	0	(20 x 300)
6	3	4	2	

Melissa

	3	0	2	
x		2	1	
			2	(1 x 2)
			1	(1 x 0)
	3	0	0	(1 x 300)
		4	0	(20 x 2)
		2	0	(20 x 0)
6	0	0	0	(20 x 300)
6	3	6	3	

Who is correct?

PS

1b. Beau and Selina are working on the same calculation. They get different answers.

Beau

	2	2	4	
x		3	1	
			4	(1 x 4)
			2	(1 x 20)
			2	(1 x 200)
	1	2	0	(30 x 4)
	6	0	0	(30 x 20)
6	0	0	0	(30 x 200)
6	7	2	8	

Selina

	2	2	4	
x		3	1	
			4	(1 x 4)
		2	0	(1 x 20)
	2	0	0	(1 x 200)
	1	2	0	(30 x 4)
	6	0	0	(30 x 20)
6	0	0	0	(30 x 200)
6	9	4	4	

Who is correct?

PS

2a. Complete the calculations so that calculation B is less than calculation A.

A.

	4	2	2	
x		1	2	
				(2 x 2)
				(2 x 20)
				(2 x 400)
				(10 x 2)
				(10 x 20)
				(10 x 400)

B.

	□	□	□	
x		1	2	

PS

2b. Complete the calculations so that calculation B is greater than calculation A.

A.

	3	1	2	
x		2	4	
				(4 x 2)
				(4 x 10)
				(4 x 300)
				(20 x 2)
				(20 x 10)
				(20 x 300)

B.

	□	□	□	
x		2	4	

PS

3a. Harold is painting one side of the rabbit hutch. One tin covers an area of 5,000cm². The hutch is 130cm x 61cm.

	1	3	0	
x		6	1	
				(1 x 0)
				(1 x 30)
				(1 x 100)
				(60 x 0)
				(60 x 30)
				(60 x 100)

He thinks he needs to buy 2 tins. Is he correct? Explain your answer.

R

3b. Jan is waterproofing her decking. Each bottle covers an area of 3,000cm². The decking is 205cm x 42cm.

	2	0	5	
x		4	2	
				(2 x 5)
				(2 x 0)
				(2 x 200)
				(40 x 5)
				(40 x 0)
				(40 x 200)

She thinks she needs to buy 2 bottles. Is she correct? Explain your answer.

R

Multiply 3 Digits by 2 Digits

4a. Molly and Jess are working on the same calculation. They get different answers.

Molly

		3	1	2
x			1	4
	1	2	4	8
		3	1	2
	1	5	5	0

Jess

		3	1	2
x			1	4
	1	2	4	8
	3	1	2	0
	4	3	6	8

Who is correct?

PS

Multiply 3 Digits by 2 Digits

4b. Chen and Jamie are working on the same calculation. They get different answers.

Chen

		4	3	4
x			2	5
	2	1_1	7_2	0
	8	6	8	0
1	0	8	5	0
		1		

Jamie

		4	3	4
x			2	5
	2	0_1	5_2	0
	8	6	8	0
1	0	6	3	0
		1		

Who is correct?

PS

5a. Complete the calculations so that calculation B is less than calculation A.

A.

		5	1	0
x			1	6

B.

		□	□	□
x			□	□

PS

5b. Complete the calculations so that calculation B is greater than calculation A.

A.

		4	6	2
x			3	2

B.

		□	□	□
x			□	□

PS

6a. Derek is painting the ceiling of the local church. A tin of paint covers 2,000m². The ceiling is 142m x 54m.

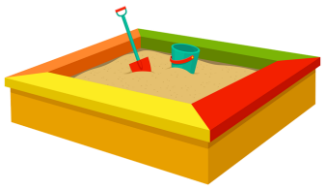
x

He thinks he needs to buy 7 tins of paint. Is he correct? Explain your answer.

R

6b. James is filling the sandpit with sand. One bag of sand covers an area of 1,000cm². The sandpit is 215cm x 95cm.

x



He thinks he needs to buy 21 bags of sand. Is he correct? Explain your answer.

R

Multiply 3 Digits by 2 Digits

7a. Atifa and Jacob are working on the same calculation. They get different answers.

Atifa

		4	2	□
x			□	3
	1	2	6	9
1	6	8_{1}	2	0
1	7	0	8	9
	1			

Jacob

		4	2	□
x			□	3
	1	2	6	9
1	6	9_{1}	2	0
1	8	1	8	9
	1			

GD

Who is correct?

PS

7b. Kate and Stanley are working on the same calculation. They get different answers.

Kate

		3	□	4
x			6	□
	1	5_{3}	3_{1}	6
2	3_{5}	0_{2}	4	0
2	4	5	7	6

Stanley

		3	□	4
x			6	□
1	5_{3}	3_{1}	6	0
2	3_{5}	0_{2}	4	0
3	8	4	0	0
		1		

GD

Who is correct?

PS

8a. Complete the calculations so that calculation B is greater than calculation A.

A.

		2	8	1
x			3	2

B.

		2	□	1
x			3	□

GD

PS

8b. Complete the calculations so that calculation B is less than calculation A.

A.

		7	1	3
x			2	4

B.

		7	1	□
x			2	□

GD

PS

9a. Carol the caretaker is varnishing the hall. 1 tin of varnish covers 100m². The length of the hall is 108m and the width of the hall is between 40m and 44m. School has ordered 47 tins of varnish.

x

Will there be enough varnish? Explain your answer.

GD

R

9b. Liam the gardener is sowing grass seed to cover a path. 1 packet covers 1,000cm². The length of the path is 682cm the width is between 70cm and 74cm. He has ordered 50 packets.

x

Will there be enough grass seed? Explain your answer.

GD

R

Reasoning and Problem Solving
Multiply 3 Digits by 2 Digits

Developing

1a. Omar is correct. 302 x 21 = 6,342

2a. Various possible answers where the total is less than 5,064, for example: 332 x 12 = 3,984

3a. Harold is correct. 130cm x 61cm = 7,930cm² so Derek will need to buy 2 tins.

Expected

4a. Jess is correct. 312 x 14 = 4,368

5a. Various possible answers where the total is less than 8,160, for example: 154 x 24 = 3,696

6a. Derek is incorrect. 142m x 54m = 7,668m² so he will need to buy 4 tins.

Greater Depth

7a. Jacob is correct. 423 x 43 = 18,189

8a. Various possible answers where the total is greater than 8,992, for example: 291 x 33 = 9,603

9a. Carol will have enough varnish if the width of the hall is 43m or less as 108m x 43m = 4,644m² but she will not have enough if the width of the hall is 44m as 108m x 44m = 4,752m².

Reasoning and Problem Solving
Multiply 3 Digits by 2 Digits

Developing

1b. Selina is correct. 224 x 31 = 6,944

2b. Various possible answers where the total is greater than 7,488, for example: 322 x 24 = 7,728.

3b. Jan is incorrect. 205cm x 42cm = 8,610cm² so she will need to buy 3 bottles.

Expected

4b. Chen is correct. 434 x 25 = 10,850

5b. Various possible answers where the total is greater than 14,784, for example: 464 x 43 = 19,952

6b. James is correct. 215cm x 95cm = 20,425cm² so he will need to buy 21 bags of sand.

Greater Depth

7b. Kate is correct. 384 x 64 = 24,576

8b. Various possible answers where the total is less than 17,112, for example: 711 x 22 = 15,642

9b. Liam will have enough grass seed if the width of the path is 73cm or less as 682cm x 73cm = 49,786m² but he will not have enough if the width of the path is 74cm as 682cm x 74cm = 50,468cm².