

Reasoning and Problem Solving

Step 8: 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 Calculate area by multiplying 3-digits by 2-digits (up to 30). No exchanges.

Expected Calculate area by multiplying 3-digits by 2-digits (up to 50). Up to one exchange per calculation.

Greater Depth Calculate area by multiplying 3-digits by 2-digits (up to 99). One or more exchanges per calculation.

Questions 2, 5 and 8 (Problem Solving)

Developing Solve a word problem by multiplying 3-digits by 2-digits (up to 30). No exchanges.

Expected Solve a word problem by multiplying 3-digits by 2-digits (up to 50). Up to one exchange per calculation.

Greater Depth Solve a word problem by multiplying 3-digits by 2-digits (up to 99). One or more exchanges per calculation.

Questions 3, 6 and 9 (Reasoning)

Developing Identify whether a statement is correct by multiplying 3-digits by 2-digits (up to 30). No exchanges.

Expected Identify whether a statement is correct by multiplying 3-digits by 2-digits (up to 50). Up to one exchange per calculation.

Greater Depth Identify whether a statement is correct by multiplying 3-digits by 2-digits (up to 99). One or more exchanges per calculation.

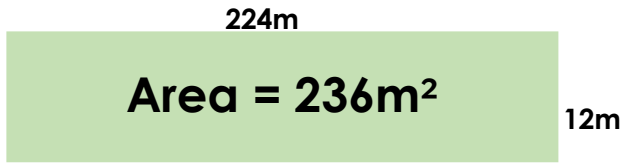
More [Year 5 and Year 6 Multiplication and Division](#) resources.

Did you like this resource? Don't forget to [review](#) it on our website.

Multiply 3-Digits by 2-Digits

Multiply 3-Digits by 2-Digits

1a. The members of a gardening club work out the area of new allotments. They do the calculation 224×12 . Explain their mistake.

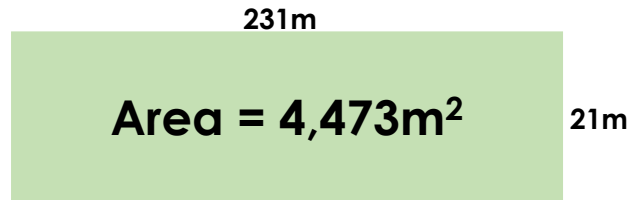


What is the correct area of the allotments?



5 R

1b. A conservationist works out the area of a reserve. She does the calculation 213×21 . Explain her mistake.



What is the correct area of the reserve?



5 R

2a. A headteacher wants to work out the cost of three school trips taken this year.

Destination	Number of pupils	Price per ticket (£)
Museum	145	11
Castle	513	13
Theatre	201	23

What was the total cost for each destination?



5 PS

2b. A catering company want to work out their profit from three events this year.

Event	Number of guests	Profit per guest (£)
Wedding	302	13
Party	712	12
Graduation	123	21

How much money did the company make from each event?



5 PS

3a.

I think that 12×300 is bigger than 121×30 .



Ryan



Suki

I think that 121×30 is bigger than 12×300 .

Who is correct? How do you know?



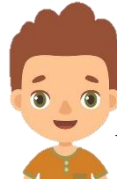
5 R

3b.

I think that 12×220 is bigger than 122×22 .



Denise



Fraser

I think that 122×22 is bigger than 12×220 .

Who is correct? How do you know?

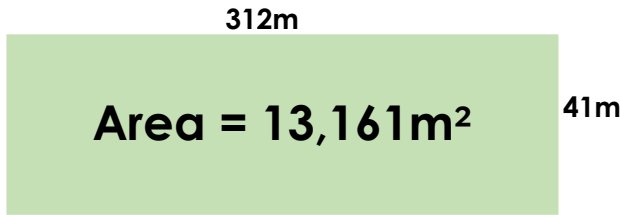


5 R

Multiply 3-Digits by 2-Digits

Multiply 3-Digits by 2-Digits

4a. A farmer wants to work out the area of his land. He does the calculation 41×321 . Explain his mistake.

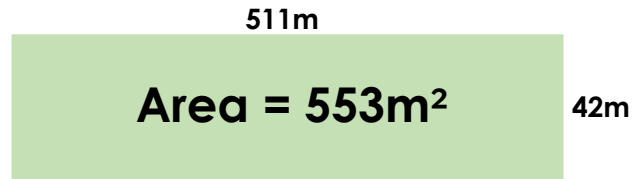


What is the correct area of his land?



5 R

4b. Year 4 want to work out the area of their playing field. They do the calculation $42 + 511$. Explain their mistake.



What is the correct area of the playing field?



5 R

5a. An airline wants to identify which flight was most profitable last week.

Destination	Number of passengers	Profit per ticket (£)
Paris	301	34
Budapest	102	47
Berlin	504	21

How much money did they make from each flight?



5 PS

5b. A supermarket is checking its stock of vegetables.

Type of vegetable	Weight in each bag (g)	Number of bags
Carrots	420	21
Celery	250	31
Tomatoes	310	15

What is the total weight of each type of vegetable?



5 PS

6a.

I think that 16×510 is bigger than 161×50 .



Sammy



Lauren

I think that 161×50 is bigger than 16×510 .

Who is correct? How do you know?



5 R

6b.

I think that 14×300 is bigger than 141×30 .



Milly



Omar

I think that 141×30 is bigger than 14×300 .

Who is correct? How do you know?

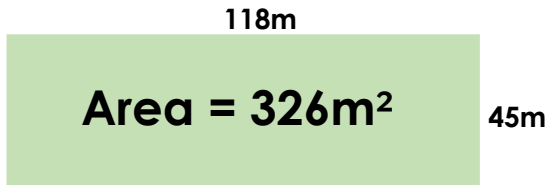


5 R

Multiply 3-Digits by 2-Digits

Multiply 3-Digits by 2-Digits

7a. A football club work out the area of a new pitch. They do the calculation $118 + 118 + 45 + 45$. Explain their mistake.

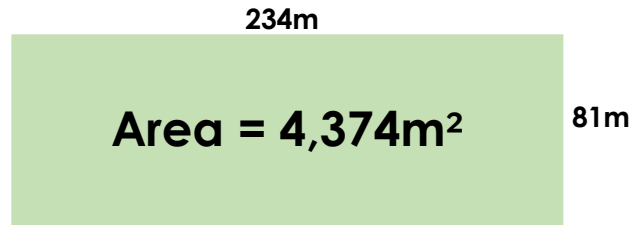


What is the correct area of the pitch?



5 R

7b. An umpire works out the area of three tennis courts. He does the calculation 243×18 . Explain his mistake.



What is the correct area of the courts?



5 R

8a. The table below records the number of spectators at Olympic events and the price they each paid for a ticket.

Event	Number of spectators	Price per ticket (£)
Swimming	415	63
Hurdles	832	52
Archery	105	88

How much money did each event make in ticket sales?



5 PS

8b. The table below records the number of passengers on three train journeys and the price they each paid for a ticket.

Destination	Number of passengers	Price per ticket (£)
Newcastle	325	41
Penzance	224	35
Edinburgh	112	92

What was the total cost of tickets for each destination?



5 PS

9a.

I think that 21×291 is bigger than 211×29 .



Ben



Lara

I think that 211×29 is bigger than 21×291 .

Who is correct? How do you know?



5 R

9b.

I think that 13×370 is bigger than 131×37 .



Joseph



Jessica

I think that 131×37 is bigger than 13×370 .

Who is correct? How do you know?



5 R

Reasoning and Problem Solving Multiply 3-Digits by 2-Digits

Developing

1a. They should have multiplied the numbers rather than adding them.

$$224 \times 12 = 2,688\text{m}^2$$

2a. Museum: £1,595; Castle: £6,669

Theatre: £4,623

3a. Suki is correct.

$$300 \times 12 = 3,600; 121 \times 30 = 3,630$$

Expected

4a. He has multiplied the wrong numbers.

$$312 \times 41 = 12,792\text{m}^2$$

5a. Paris: £10,234; Budapest: £4,794

Berlin: £10,584

6a. Sammy is correct.

$$16 \times 510 = 8,160; 161 \times 50 = 8,050$$

Greater Depth

7a. They have worked out the perimeter, not the area. $118 \times 45 = 5,310\text{m}^2$

8a. Swimming: £26,145; Hurdles: £43,264

Archery: £9,240

9a. Lara is correct.

$$21 \times 291 = 6,111; 211 \times 29 = 6,119$$

Reasoning and Problem Solving Multiply 3-Digits by 2-Digits

Developing

1b. She has multiplied the wrong numbers.

$$231 \times 21 = 4,851\text{m}^2$$

2b. Wedding: £3,926; Party: £8,544

Graduation: £2,583

3b. Fraser is correct.

$$220 \times 12 = 2,640; 122 \times 22 = 2,684$$

Expected

4b. They should have multiplied the numbers rather than adding them.

$$511 \times 42 = 21,462 \text{ m}^2$$

5b. Carrots: 8,820g; Celery: 7,750g

Tomatoes: 4,650g

6b. Omar is correct.

$$14 \times 300 = 4,200; 141 \times 30 = 4,230$$

Greater Depth

7b. He has multiplied the wrong numbers.

$$234 \times 81 = 18,954\text{m}^2$$

8b. Newcastle: £13,325; Penzance: £7,840

Edinburgh: £10,304

9b. Jessica is correct.

$$13 \times 370 = 4,810 \text{ and } 131 \times 37 = 4,847$$