Multiplying 2-digit numbers ①

1 **a)** Use the area model to work out 26 × 14.

26

	20	6
10	⬚ × ⬚ = ⬚	⬚ × ⬚ = ⬚
4	⬚ × ⬚ = ⬚	⬚ × ⬚ = ⬚

14

H T O

+ _____

_____

26 × 14 = ⬚

b) Use the area model to work out 17 × 42.

17

⬚   ⬚

42

17 × 42 = ⬚

c) Zac says, 'On my area model, I put 42 along the top and 17 down the side.'

Will Zac still get the same answer? Explain why.

_____

_____

9

2 Work out these multiplications.

a) $27 \times 34 = \boxed{}$

b) $53 \times 38 = \boxed{}$

H T O

+ _____

_____

3 Each day Mike runs 41 km. How far does Mike run in 19 days?

Mike runs $\boxed{}$ km in 19 days.

4 Bella is working out 53×27.

Circle the mistakes Bella has made. What is the correct answer?

	50	3
20	$50 \times 20 = 100$	$3 \times 20 = 60$
7	$50 \times 7 = 350$	$3 \times 7 = 10$

Th	H	T	O
	3	5	0
	1	0	0
	6	0	
+		1	0
1	1	5	0

$53 \times 27 = \boxed{}$

5 This is the method Gina used to work out 23×47.

• First, multiply 20 by 40, which is $20 \times 40 = 800$.

• Next, multiply 3 by 7, which is $3 \times 7 = 21$.

• Now add those answers together, which is $800 + 21 = 821$.

What mistake has Gina made? Explain why her method does not work.

_____

_____

CHALLENGE

6 Isla is trying to multiply two 2-digit numbers.

Here is her working so far. What numbers is she trying to multiply?

Complete Isla's working and give the answer to the multiplication.

$\boxed{}$	$\boxed{}$

	900	240
$\boxed{}$	$\boxed{}$	48

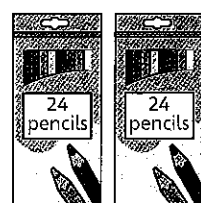## Reflect

Explain the method you would use to work out 56×21.

_____

_____

_____

Multiplying 2-digit numbers ❷
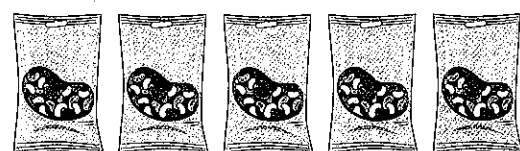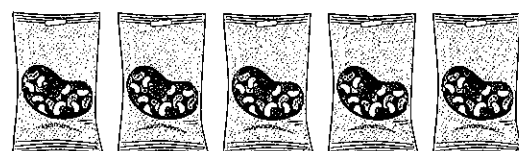
1 How many pencils are there in total?
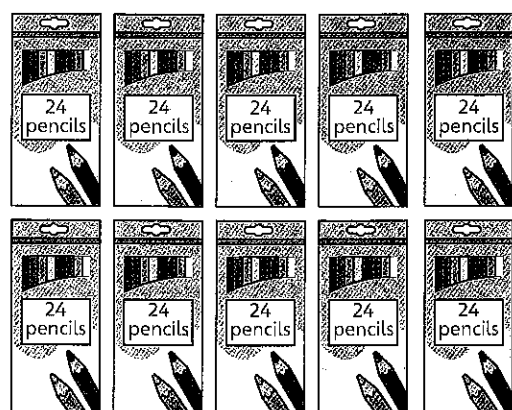
$10 \times \boxed{} = \boxed{}$

$2 \times \boxed{} = \boxed{}$

$\boxed{} + \boxed{} = \boxed{}$

There are $\boxed{}$ pencils in total.

2 There are 36 jelly beans in each packet. How many jelly beans are there in total?

$21 \times 36 = \boxed{} \times 36 + \boxed{} \times 36 + \boxed{} \times 36$

$= \boxed{} + \boxed{} + \boxed{}$

$= \boxed{}$

There are $\boxed{}$ jelly beans in total.

3 a) Lexi and Danny are working out 32×12.

Show that they both get the same answer.

Lexi's working

$30 \times 12 = \boxed{}$

$2 \times 12 = \boxed{}$

$\boxed{} + \boxed{} = \boxed{}$

Danny's working

$32 \times 10 = \boxed{}$

$32 \times 2 = \boxed{}$

$\boxed{} + \boxed{} = \boxed{}$

b) Whose method did you prefer? Why?

_____

_____

4 a) Work out 25×13.

$25 \times 13 = \boxed{} \times 10 + \boxed{} \times 3$

$= \boxed{} + \boxed{}$

$= \boxed{}$

I might need to use short multiplication to work some of these out.

Use this method to solve:

b) $41 \times 24 = \boxed{}$

c) $14 \times 62 = \boxed{}$

5 What two 2-digit numbers are being multiplied here? Complete the calculation.

41 × 10   41 × 4

0   410   574

$\boxed{} \times \boxed{} = \boxed{}$
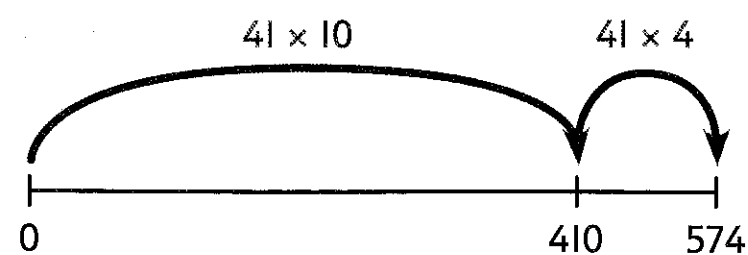
6 A shopkeeper buys toy boats for £34 each and sells them for £51 each.

Last month she sold 76 toy boats. How much money did she make?

CHALLENGE

Reflect

Explain and show two ways to work out 45 × 23.

14

Multiplying 2-digit numbers ❸

1 **a)** Olivia and Jamilla are working out 34 × 12.

They each use a different method. Complete their methods.

Olivia's method

34

10

2

H T O

+ _____

_____

34 × 12 = $\boxed{}$

Jamilla's method

    3 4
×   1 2
_____

       0
_____

b) Whose method did you prefer? Why?

_____

_____

_____

2 Complete the following column multiplications.

a) 29 × 23 = $\boxed{}$

    2 9
×   2 3
_____
          29 × 3
       0 29 × 20
_____
          29 × 23
_____

b) 37 × 16 = $\boxed{}$

    3 7
×   1 6
_____
          37 × 6
       0 37 × 10
_____
          37 × 16
_____

15

3 Complete these calculations.

a) $45 \times 27 = \boxed{}$

```
      4  5
  ×   2  7
  _____
            45 × 7
         0  45 × 20
  _____
            45 × 27
  _____
```

b) $\boxed{} \times \boxed{} = \boxed{}$

```
      5  2
  ×   1  7
  _____

  _____

  _____
```

c) $49 \times 34 = \boxed{}$
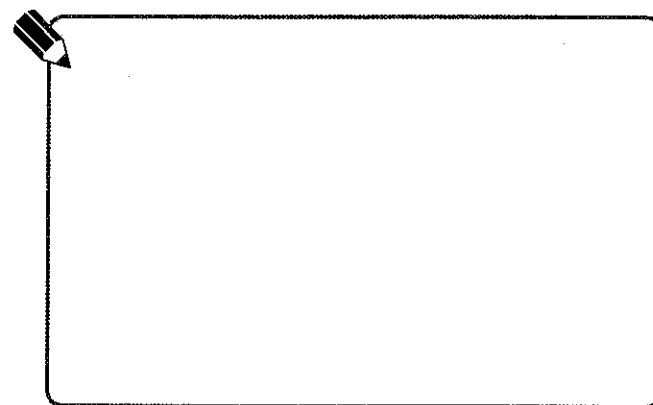
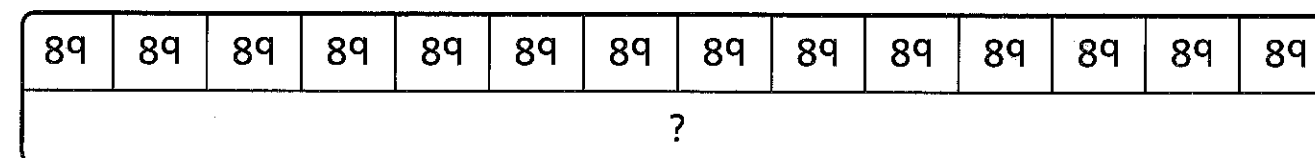d) $28 \times 76 = \boxed{}$
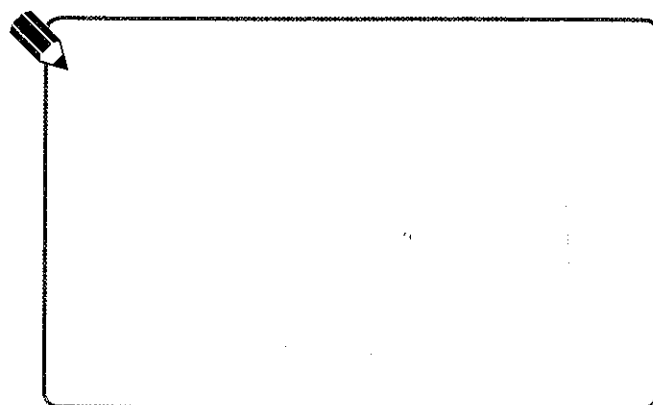
4 A snack bar has 85 calories.

How many calories are there in a pack of 24 snack bars?

ONLY 85 CALORIES

5 What multiplication does this bar model represent?

Solve it using short multiplication.

89	89	89	89	89	89	89	89	89	89	89	89	89	89
?													

6 Work out the missing digits in these calculations.

CHALLENGE

a)
```
        3  6
  ×     1  ☐
  _____
     ☐  ☐  8
     ☐  ☐  0
  _____
     ☐  6  ☐
```

b)
```
           ☐  ☐
  ×        ☐  3
  _____
        2  2  2
     2  9  6  0
  _____
     ☐  ☐  ☐  ☐
```

Reflect

Explain how you would work out 99×47.

_____

_____

_____

Multiplying a 3-digit number by a 2-digit number

1 Complete these area models.

a) $172 \times 24 = \boxed{}$

	100	70	2
20	$100 \times 20 = \boxed{}$		
4			
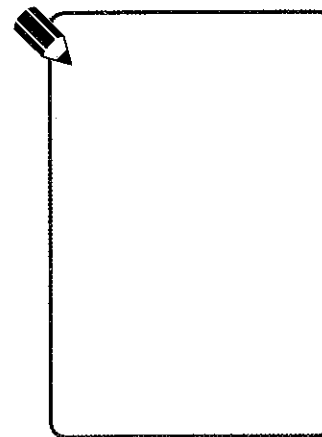
b) $325 \times 18 = \boxed{}$

	300	20	5
10			
8			
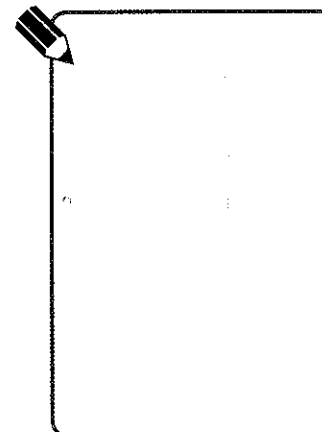
2 Complete these long multiplications.

a)
```
    1  7  2
×      2  4
  ₂ 8  8      172 × 4
       0      172 × 20
  ─────────
             172 × 24
```

b)
```
    3  2  5
×      1  8
  ─────────
          0   325 × 8
          0   325 × 10
  ─────────
          0   325 × 18
```

3 Complete these long multiplications.

a) $145 \times 39 = \boxed{}$

```
    1  4  5
×      3  9
  ─────────

  ─────────
```

b) $408 \times 25 = \boxed{}$

```
    4  0  8
×      2  5
  ─────────

  ─────────
```

c) $418 \times 72 = \boxed{}$
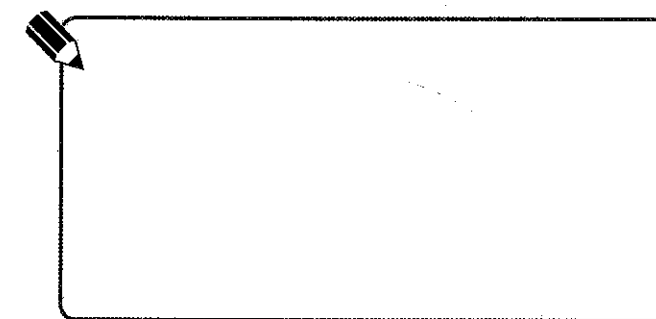
d) $529 \times 44 = \boxed{}$
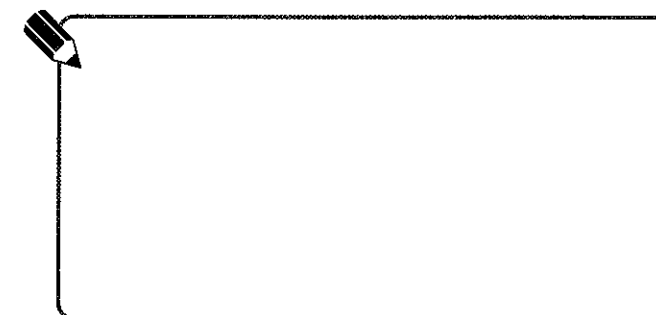
4 Max works out 72×314 in two ways.

```
         7  2
×     3  1  4
  ──────────
      2  8  8      72 × 4
      7  2  0      72 × 10
   2  1  6  0  0   72 × 300
  ──────────
                  72 × 314
```

```
         3  1  4
×         7  2
  ──────────
         6  2  8      314 × 2
   2  1  9 ₂8  0      314 × 70
  ──────────
                     314 × 72
```

Complete the calculations. Which method is more efficient?

_____

_____

5 288 packs of water bottles are ordered for the runners in a charity run.

2,390 bottles of water are given out to the runners.

How many bottles of water are left?

6 Fill in the missing digits. Explain each step in your reasoning.

CHALLENGE

```
      5  6  7
   ×
   _____

   8  5  0  5
```

Reflect

Use long multiplication to work out 354 × 30 and 300 × 52.
What do you notice?

Multiplying a 4-digit number by a 2-digit number

1 Work out these long multiplications.

a) $1{,}203 \times 26 =$ _____

```
      1  2  0  3
   ×        2  6
   _____
             ₁8     1,203 × 6
             0      1,203 × 20
   _____
                    1,203 × 26
   _____
```

c) $25 \times 2{,}459 =$ _____

```
      2  4  5  9
   ×        2  5
   _____


   _____
```

b) $1{,}612 \times 24 =$ _____

```
      1  6  1  2
   ×        2  4
   _____
                    1,612 × 4
                    1,612 × 20
   _____
                    1,612 × 24
   _____
```

d) $3{,}006 \times 37 =$ _____

```
      3  0  0  6
   ×        3  7
   _____


   _____
```

2 A bag of marbles weighs 1,654 g. How much do 23 bags of marbles weigh?

```
      1  6  5  4
   ×        2  3
   _____


   _____
```

23 bags of marbles weigh _____ g.

3 Work out these multiplications.

a) $3,612 \times 38 =$ ⬚

b) $6,005 \times 23 =$ ⬚

4 Work out these multiplications.

$72 \times 17 =$ ⬚

$720 \times 17 =$ ⬚

$7,200 \times 17 =$ ⬚

$1,700 \times 72 =$ ⬚

How did you work out each of your answers?

5 A motorbike costs £2,350. A sports car costs 19 times as much.

How much do the car and the motorbike cost in total?

The car and the motorbike cost £ ⬚ in total.

6 What do you get if you multiply these three numbers together?

| 26 | 37 | 49 |

Does it matter which order you multiply the numbers in? Explain.

_____

_____

CHALLENGE

7 Here are seven digit cards.

| 0 | 2 | 3 | 4 | 5 | 7 | 8 |

Use six of these cards to make a calculation with this answer.

$$\times$$
$$1\ 1\ 4\ 0\ 6$$
$$4\ 5\ 6\ 2\ 4\ 0$$
$$4\ 6\ 7\ 6\ 4\ 6$$

Reflect

How do you know that this calculation is incorrect without multiplying the two numbers together? What is the correct answer?

$1,395 \times 37 = 53,010$

_____

_____

_____

22

23