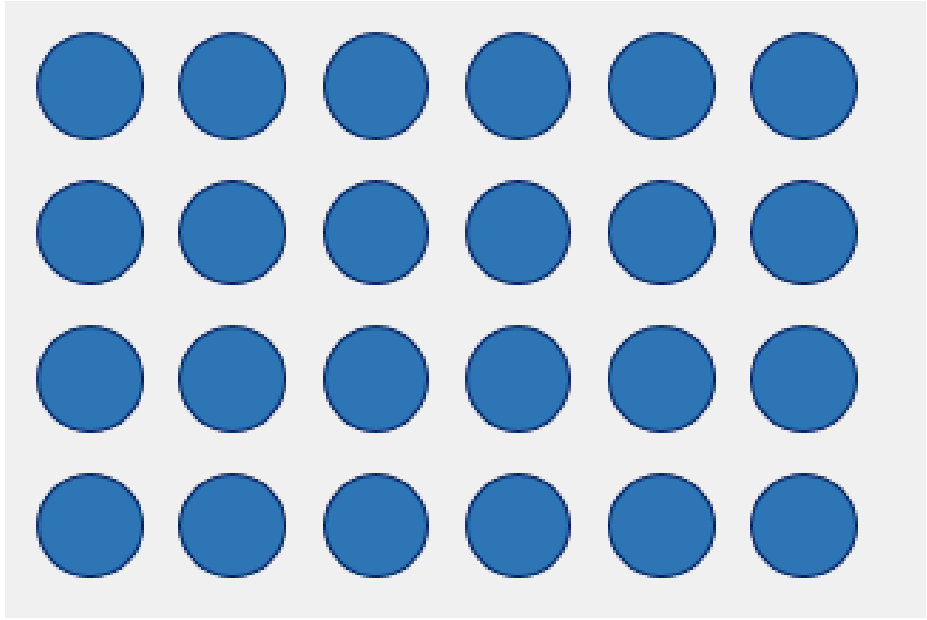
# Formal written methods of multiplication

This week we will revisit multiplication starting from the pictorial representation, moving into the grid method and formal written method.
Please read this pdf and do all the activities in your book.
Remember to do the Self-Assessment too.

**Which multiplication sentences do not match this image? Write your answers in the book.**

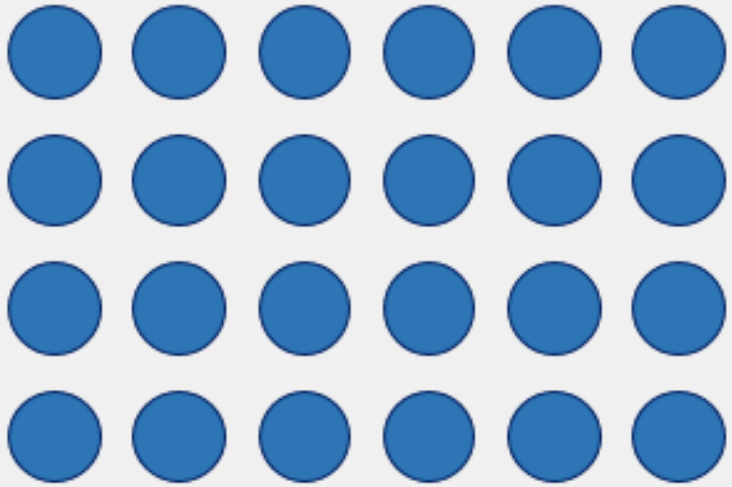
Starter



| | | | |
|---|---|---|---|
| 6 x 4 | 3 x 8 | 1 x 22 | 14 x 2 |
| 8 x 3 | 24 x 1 | 4 x 6 | 3 x 9 |

# Self-Assessment with different colour and a small tick.

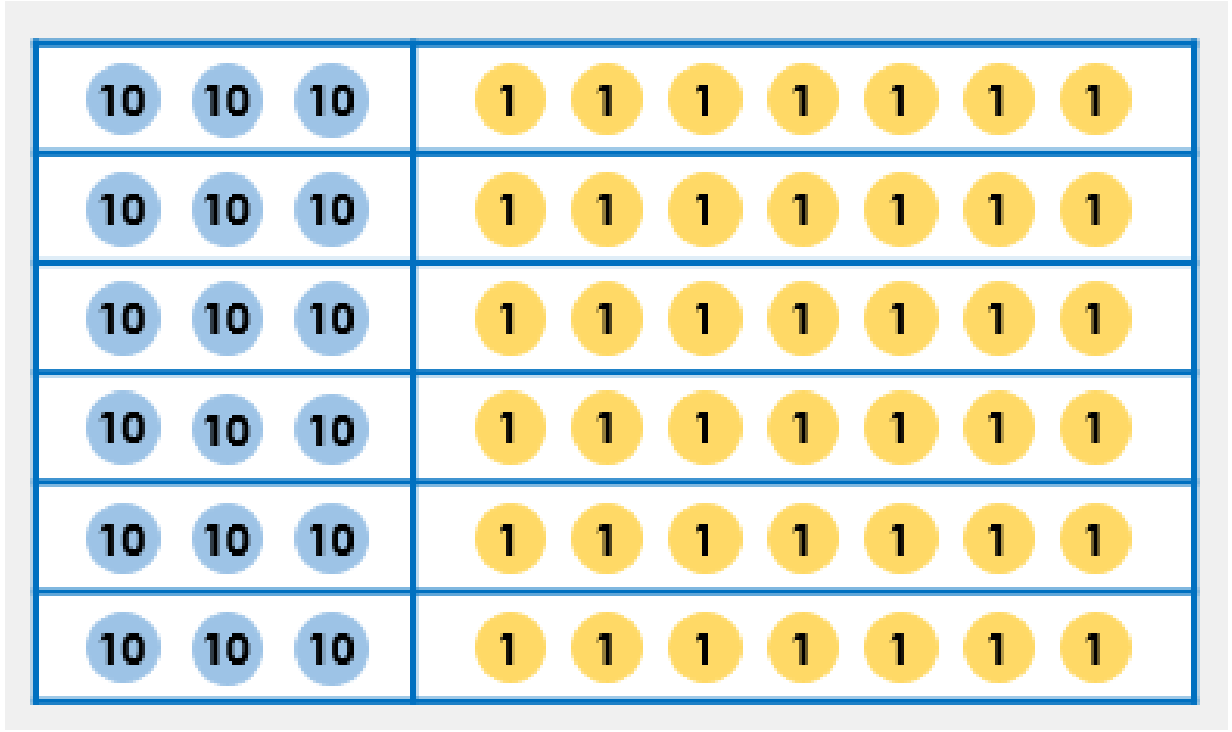
**Which multiplication sentences do not match this image?**



| | | | |
|---|---|---|---|
| 6 x 4 | 3 x 8 | 1 x 22 | 14 x 2 |
| 8 x 3 | 24 x 1 | 4 x 6 | 3 x 9 |

# Complete the calculation to match the pictorial representation and solve it in your book.

Recap



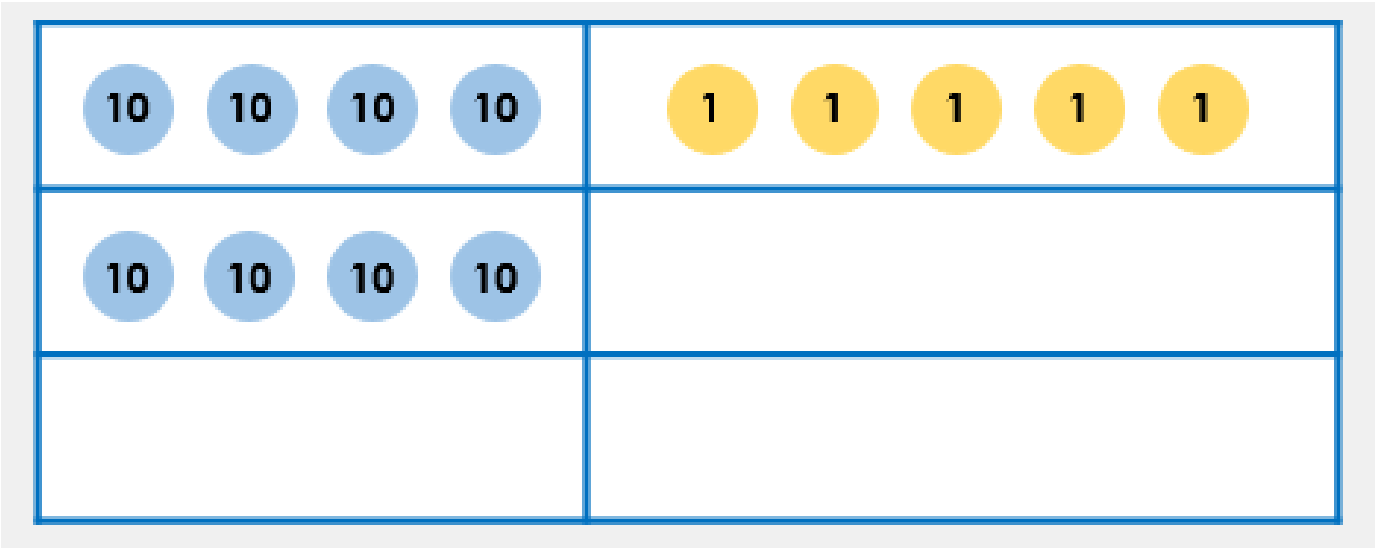

$\square \times 6 = \square$

# Self-Assessment with different colour and a small tick.

**Complete the calculation to match the pictorial representation and solve it.**


37 x 6 = 222

Complete the pictorial representation and the calculation in your book.

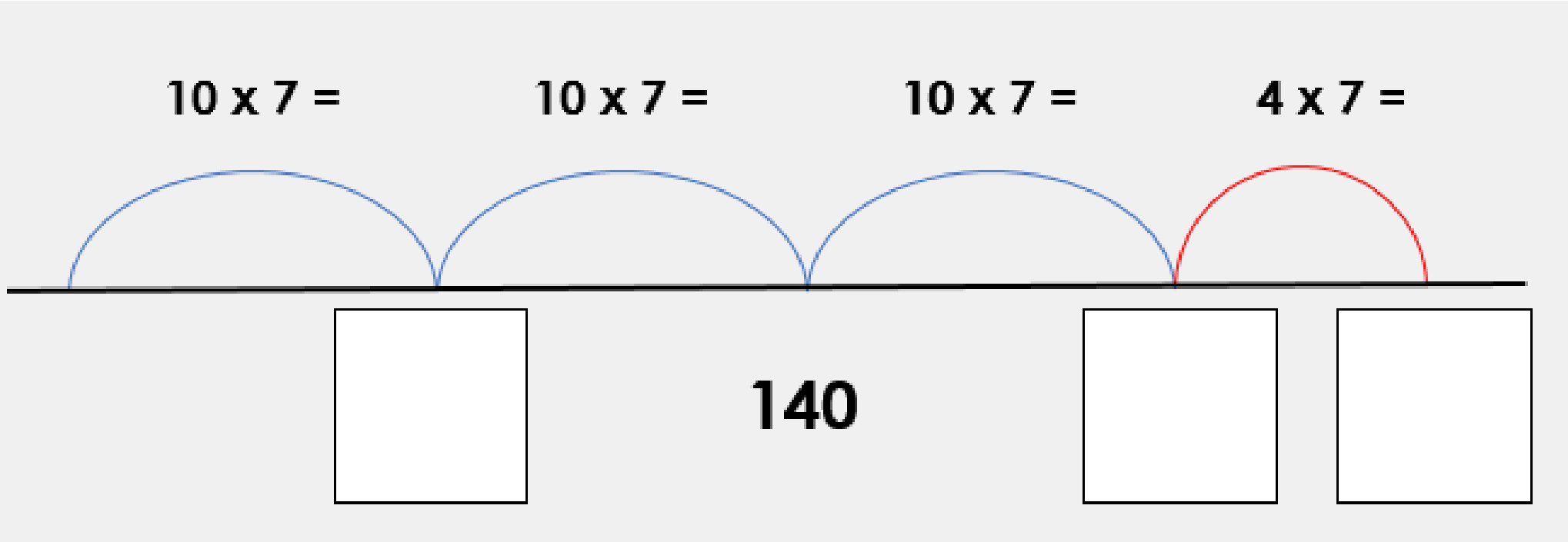



# Self-Assessment with different colour and a small tick.

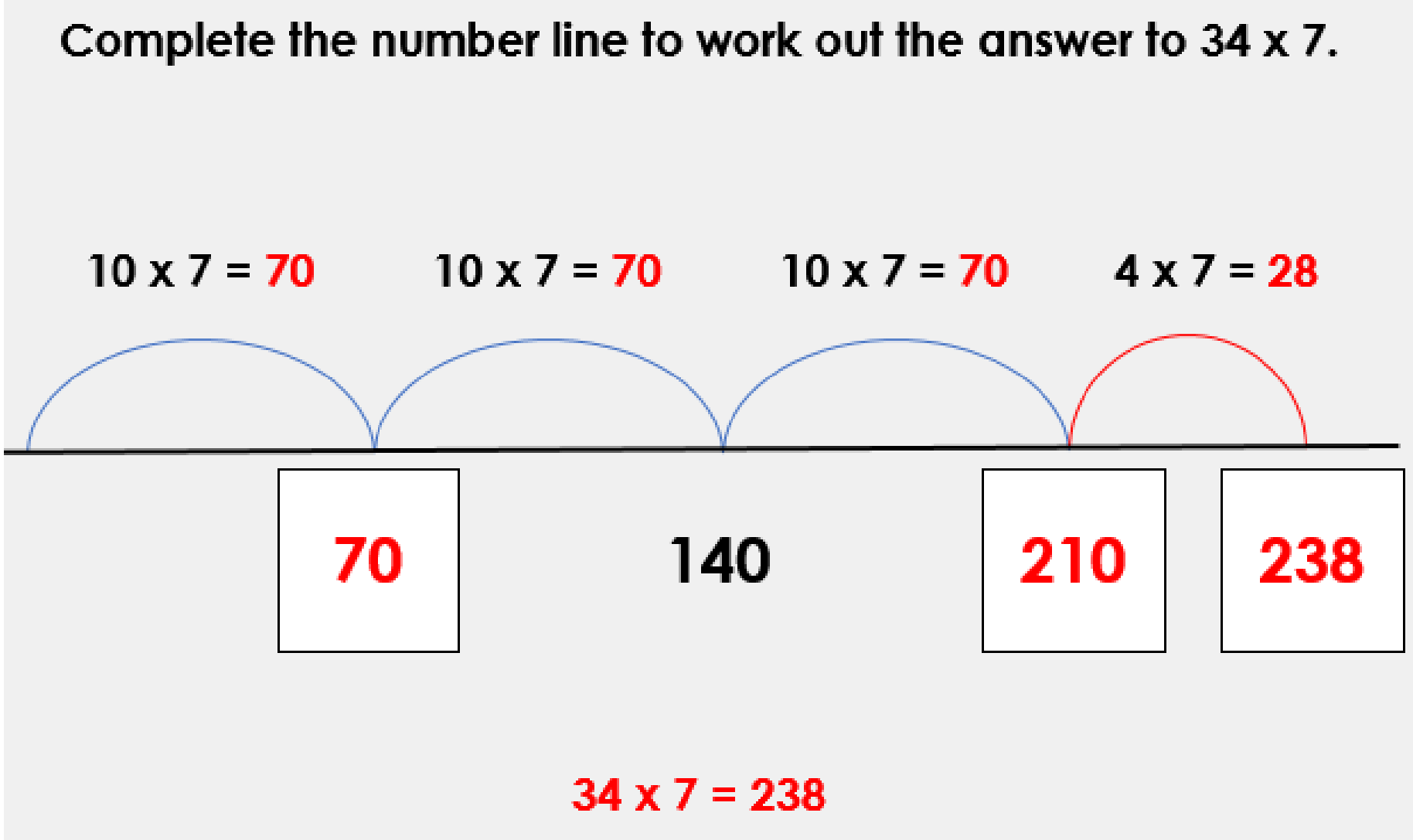
**Complete the pictorial representation and the calculation.**


45 x 3 = 135

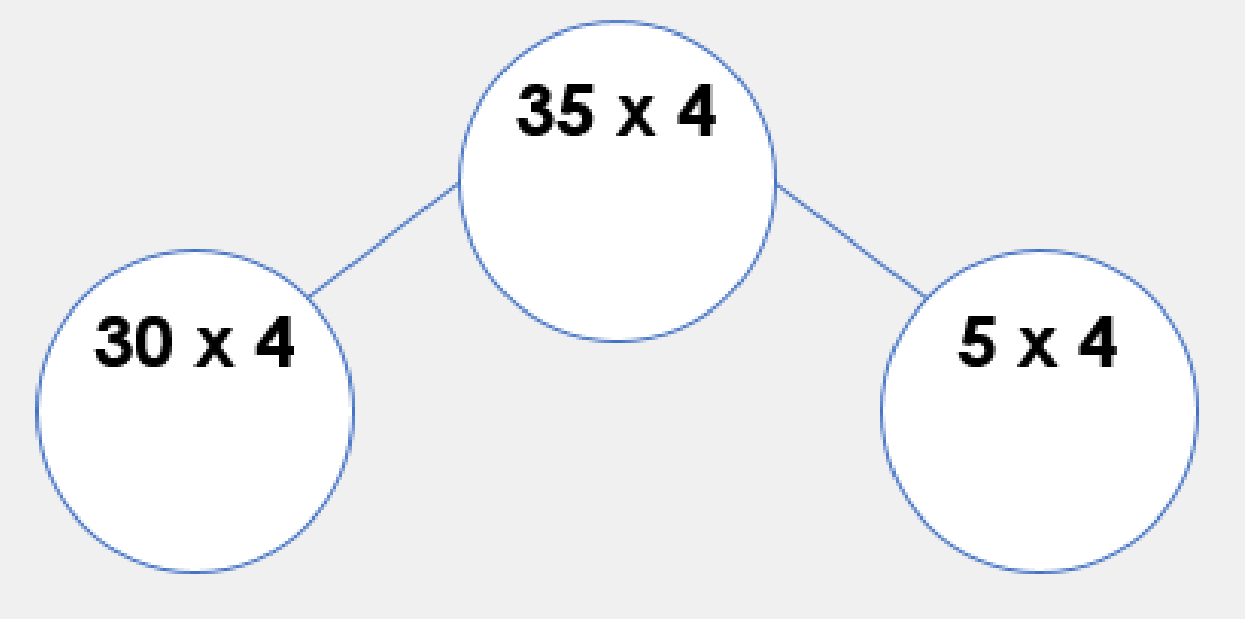
Complete the number line to work out the answer to 34 x 7 in your book.



# Self-Assessment with different colour and a small tick.



True or false?
A part-whole model is an efficient way to calculate 35 x 4.
Please answer in your book.

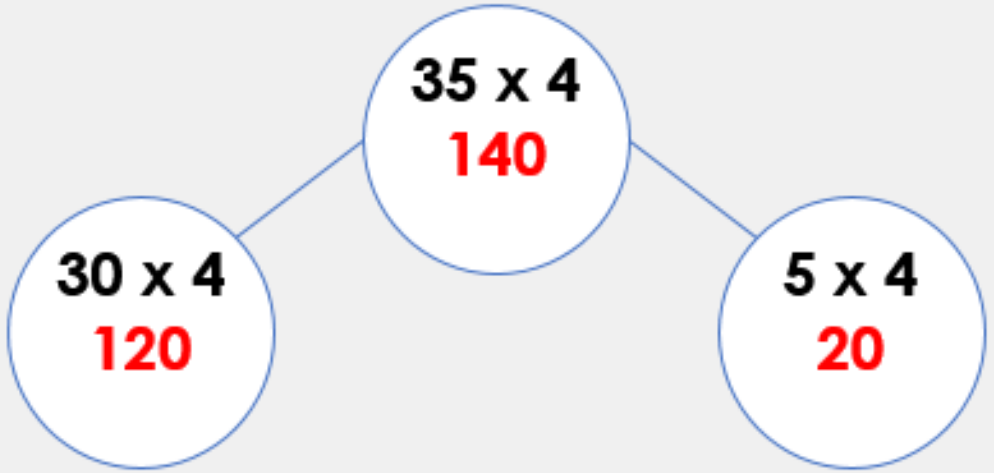



Use the part-whole model to work out the answer.

# Self-Assessment with different colour and a small tick.

True or false?

A part-whole model is an efficient way to calculate 35 x 4.




Use the part-whole model to work out the answer.

True

# Solve these word problems in your book.

Here is one batch of muffins.

A) Teddy bakes 11 batches of muffins. How many muffins does he have altogether?

B) In each batch there are 3 strawberry, 3 vanilla, 4 chocolate and 2 toffee muffins. How many of each type of muffin does Teddy have in 11 batches?

C) Teddy sells 5 batches of muffins. How many muffins does he have left?

## Self-Assessment with different colour and a small tick.

A)Teddy has 132 muffins altogether.

B) Strawberry: 33
Vanilla: 33
Chocolate: 44
Toffee: 22

C) 132 – 55 = 77 Teddy has 77 muffins left.

# We can use all the information we know to work out trickier problems:

6 x 4 x 10 =

I know that 4 x 6 = 24 and 24 x 10 = 240

So I also know that 6 x 4 x 10 = 240

Now try these in your book:

1. 3 x 4 x 4 =
2. 5 x 2 x 9 =
3. 3 x 9 x 5 =

## Self-Assessment with different colour and a small tick.

1. $3 \times 4 \times 4 = 48$

I know that $3 \times 4 = 12$ and $12 \times 4 = 48$

So I also know that $3 \times 4 \times 4 = 48$

2. $5 \times 2 \times 9 = 90$

I know that $5 \times 2 = 10$ and $10 \times 9 = 90$

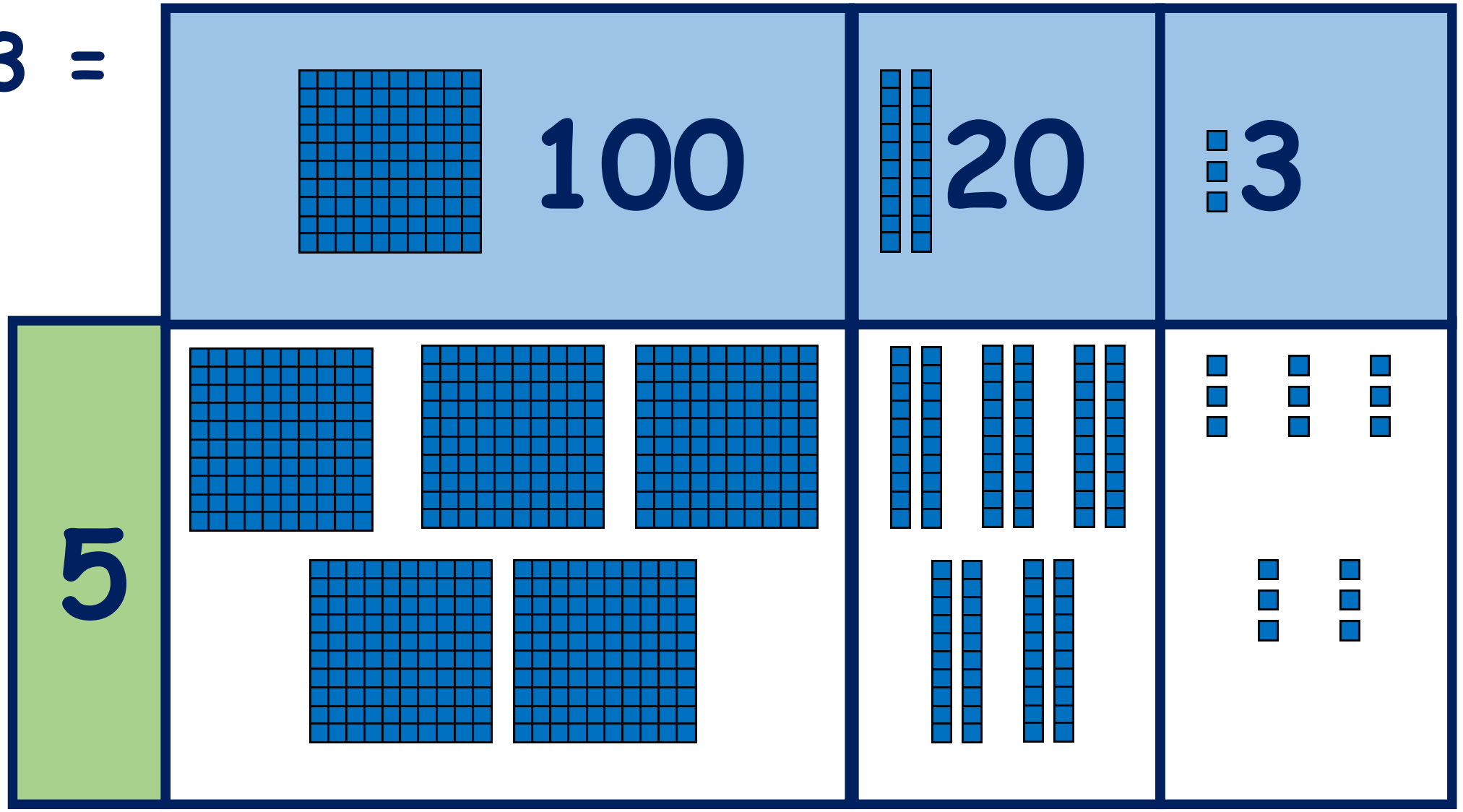
So I also know that $5 \times 2 \times 9 = 90$

3. $3 \times 9 \times 5 = 135$

I know that $9 \times 5 = 45$ and $45 \times 3 = (40 \times 3 + 5 \times 3) = 135$

$5 \times 123 =$

$$\begin{array}{r} 500 \\ 100 \\ +\ 15 \\ \hline 615 \end{array}$$




https://www.youtube.com/watch?v=ukgyLS1YIk0&feature=embtitle

$$5 \times 123 = 615$$

100 20 3

$$(5 \times 100) + (5 \times 20) + (5 \times 3)$$

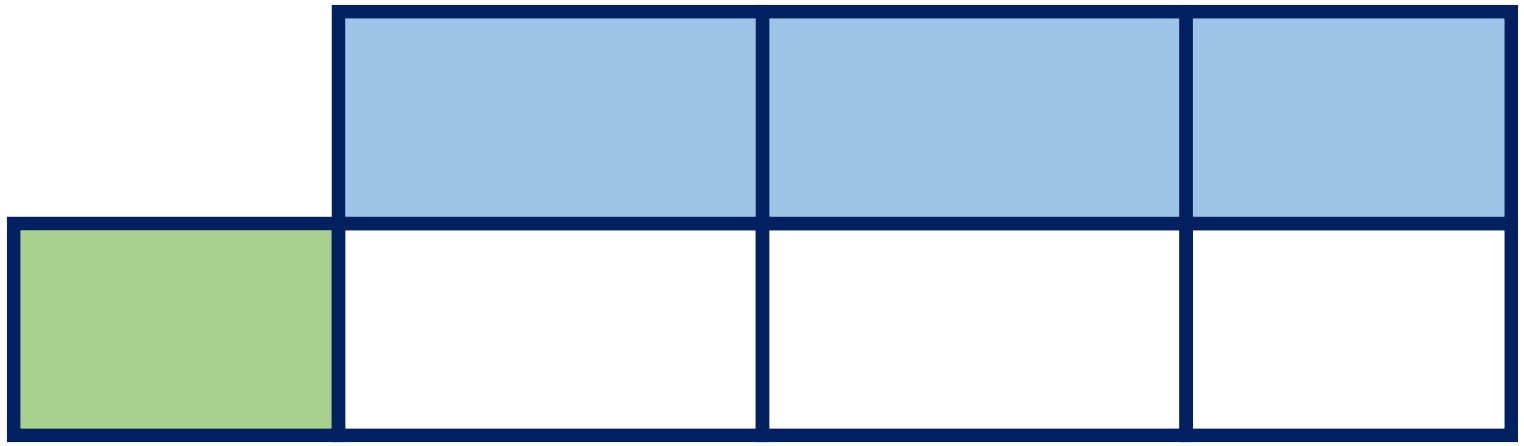
| | 100 | 20 | 3 |
|---|---|---|---|
| 5 | 500 | 100 | 15 |

$$500 + 100 + 15 = 615$$

Now complete this in your book.

# 4 x 234 =

(. x …) + (.x ..) + (. x .4)



… + … + .. = …

$$4 \times 234 = 936$$

200 30 4

Self-Assessment with different colour and a small tick.

$$(4 \times 200) + (4 \times 30) + (4 \times 4)$$

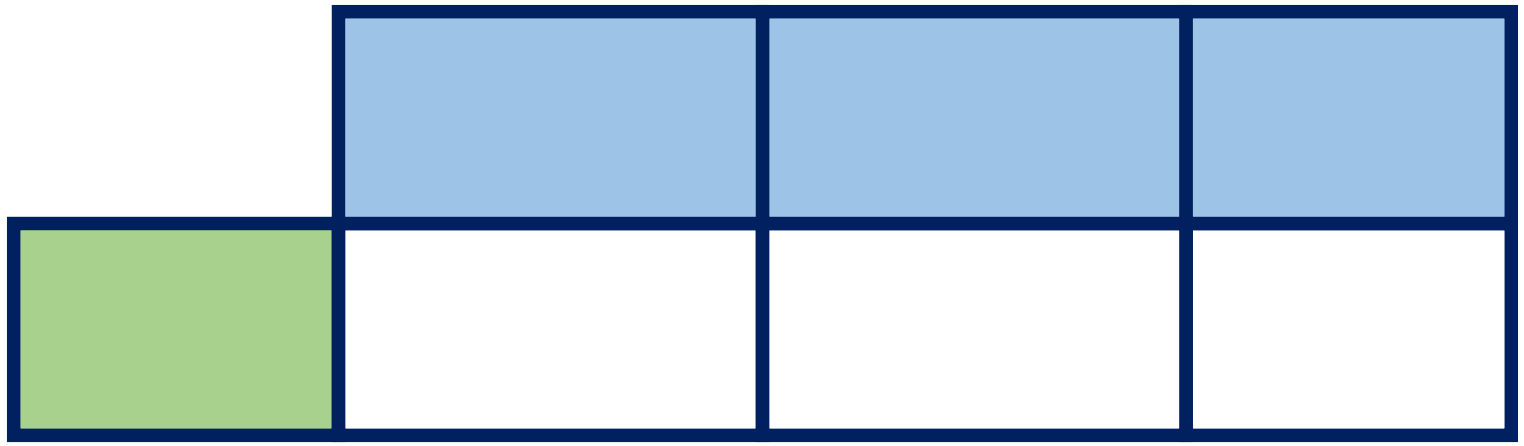
| | 200 | 30 | 4 |
|---|---|---|---|
| 4 | 800 | 120 | 16 |

$$800 + 120 + 16 = 936$$

$7 \times 586 =$

Now complete this in your book.

( x ) + ( x ) + ( x )



\+ + =

Is there another way to represent this calculation?

$$7 \times 586 = 4102$$

500 80 6

Self-Assessment with different colour and a small tick.

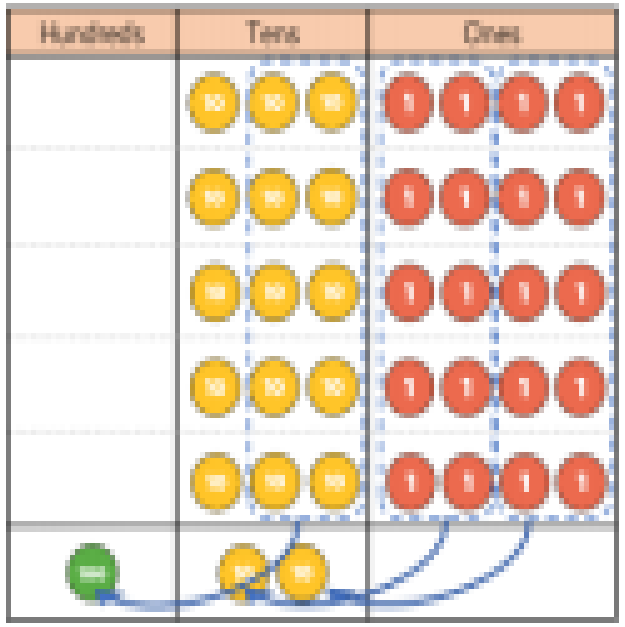
$$(7 \times 500) + (7 \times 80) + (7 \times 6)$$

| | 500 | 80 | 6 |
|---|---|---|---|
| 7 | 3500 | 560 | 42 |

$$3500 + 560 + 42 = 4102$$

# Expanded columnar multiplication method.
# Please copy this example in your book

## Whitney uses place value counters to calculate 5 x 34




| | H | T | O | |
|---|---|---|---|---|
| | | 3 | 4 | |
| x | | | 5 | |
| | | 2 | 0 | (5 X 4) |
| + | 1 | 5 | 0 | (5 X 30) |
| | 1 | 7 | 0 | |

Please use expanded columnar multiplication to solve these problems.

5 x 42

23 x 6

48 x 3

https://www.youtube.com/watch?v=FJ5qLWP3Fqo

# Self-Assessment with different colour and a small tick.

42
X 5
10 (2 X 5)
200 (40 X 5)
210

23
X 6
18 (3 X 6)
120 (20 X 6)
138

48
X 3
24 (8 X 3)
120 (40 X 3)
144

# Compact columnar multiplication method.

## Ron also uses place value counters to calculate 5 x 34


| | H | T | O | | |
|---|---|---|---|---|---|
| | | 3 | 4 | | |
| x | | | 5 | | |
| | 1 | 7 | 0 | | |
| | 1 | 2 | | | |

Please solve these in your book using the compact columnar multiplication method.

| | T | O |
|---|---|---|
| | 4 | 3 |
| x | | 3 |
| | | |

| | T | O |
|---|---|---|
| | 3 | 6 |
| x | | 4 |
| | | |

| | T | O |
|---|---|---|
| | 7 | 4 |
| x | | 5 |
| | | |

# Self-Assessment with different colour and a small tick.

| | T | O |
|---|---|---|
| | 4 | 3 |
| x | | 3 |
| 1 | 2 | 9 |

1

| | T | O |
|---|---|---|
| | 3 | 6 |
| x | | 4 |
| 1 | 4 | 4 |

1 2

| | T | O |
|---|---|---|
| | 7 | 4 |
| x | | 5 |
| 3 | 7 | 0 |

3 2

Here are three incorrect multiplications.
Please correct the multiplications in your book.

1.

| | T | O |
|---|---|---|
| | 6 | 1 |
| x | | 5 |
| | 3 | 5 |

2.

| | T | O |
|---|---|---|
| | 7 | 4 |
| x | | 7 |
| 4 | 9 | 8 |

3.

| | T | O |
|---|---|---|
| | 2 | 6 |
| x | | 4 |
| 8 | 2 | 4 |

# Self-Assessment with different colour and a small tick.

1.

| | T | O |
|---|---|---|
| | 6 | 1 |
| x | | 5 |
| 3 | 0 | 5 |

3

2.

| | T | O |
|---|---|---|
| | 7 | 4 |
| x | | 7 |
| 5 | 1 | 8 |

2

3.

| | T | O |
|---|---|---|
| | 2 | 6 |
| x | | 4 |
| 1 | 0 | 4 |

2

https://www.youtube.com/watch?v=FJ5qLWP3Fqo

# Always, sometimes, never.
# Please answer/prove these questions in your book.

A) When multiplying a two-digit number by a one-digit number, the product has 3 digits.

B) When multiplying a two-digit number by 8 the product is odd.

C) When multiplying a two-digit number by 7 you need to exchange.

# Self-Assessment with different colour and a small tick.

A) Sometimes: 12 × 2 has only two-digits; 23 × 5 has three digits.

B) Never: all multiples of 8 are even.

C) Sometimes: most two-digit numbers need exchanging, but not 10 or 11

Spot the mistake Alex and Dexter have both completed the same multiplication.

Alex

| | H | T | O |
|---|---|---|---|
| | 2 | 3 | 4 |
| x | | | 6 |
| 1 | 2 | 0 | 4 |
| | 2 | 2 | |

Dexter

| | H | T | O |
|---|---|---|---|
| | 2 | 3 | 4 |
| x | | | 6 |
| 1 | 4 | 0 | 4 |
| | 2 | 2 | |

A) Who has the correct answer?
B) What mistake has been made by one of the children?

# Self-Assessment with different colour and a small tick.

A) Dexter has the correct answer.

B) Alex has forgotten to add the two hundreds he exchanged from the tens column.

# Now solve this in your book.

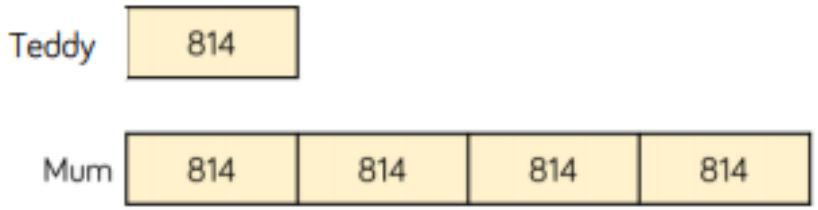
Teddy and his mum were having a reading competition.

In one month, Teddy read 814 pages. His mum read 4 times as many pages as Teddy.

A) How many pages did they read altogether?

B) How many fewer pages did Teddy read?

Use the bar model to help.



# Self-Assessment with different colour and a small tick.

A) 814

× 5

20 (4 X 5)

\+ 50 (10 X 5)

4 0 0 0 (800 X 5)

4 0 7 0

Answer: They read 4,070 pages altogether.

B) 814

× 3

2 4 4 2

**2 4 1**

Answer: Teddy read 2,442 fewer pages than his mum.

https://www.youtube.com/watch?v=RVYwunbpMHA