<u>L.O - Understanding relationships between calculations.</u>

<u>success criteria</u>
- To understand the how place value can be used to help solve multiplication calculations.
- To identify relationships between time tables.

- To use concrete and written strategies to reason and problem solve.

Does anybody know their 1 times tables?

1 x 1 = 1

2 x 1 = 2

3 x 1 = 3

4 x 1 = 4

I'm sure you do but lets have a look at how it can relate to other times tables.

5 x 1 = 5

6 x 1 = 6

7 x 1 = 7

8 x 1 = 8

9 x 1 = 9

10 x 1 = 10

Can anybody notice a trend between these two times tables?

1 x 1 = 1	1 x 10 = 10
2 x 1 = 2	2 x 10 = 20
3 x 1 = 3	3 x 10 = 30
4 x 1 = 4	4 x 10 = 40
5 x 1 = 5	5 x 10 = 50
6 x 1 = 6	6 x 10 = 60
7 x 1 = 7	7 x 10 = 70
8 x 1 = 8	8 x 10 = 80
9 x 1 = 9	9 x 10 = 90
10 x 1 = 10	10 x 10 = 100

Notice how the numbers in the calculations have got 10 times bigger and therefore the answers are 10 times bigger

Notice That the amount of zeros in the calculation is the same amount as in the answer too?

Let's use our times table knowledge to identify a relationship between these questions.

1 x 45 = 45

so

10 x 45 = _____

Let's use our times table knowledge to identify a relationship between these questions.

1x 45 = 45

so

10 x 45 = 450

450 is 10 times bigger than 45

Also there is one zero in 10 x 45 and only one zero in the answer 450

4 x 7=28

4 x 70 = 280

40 x 70 = 2800

What do you notice happens
 to the numbers?

Can you complete these calculations?

4 x 6 = 24

4 x 60 = ____

40 x 60 = ____

Can you complete these calculations?

8 x 4 = ____

8 x ___ = 320

__ x 40 = _____

a) Are there more noodles in total in the boxes or the bags?

b) Each jug holds 240 ml of juice.

The first jug of juice is shared equally between the red glasses.

The second jug of juice is shared equally between the blue glasses.

Does one red or one blue glass contain more juice?

Reasoning

I know that when multiplying 3 × 40, 40 is ten times bigger than 4, so my answer will also be ten times bigger.

Is Saif correct?
Prove it.

Chloe has 240 cakes to sell.
Boxes come in different sizes and can hold different multiples of 10
Which boxes could she use, making sure all boxes are full and there are no cakes left over?

10 20 30 40

50 60 80 100

True or false?

$$5 \times 30 = 3 \times 50$$

Prove it!

Answers

I know that when multiplying 3 × 40, 40 is ten times bigger than 4, so my answer will also be ten times bigger.

Is Saif correct?
Prove it.

Saif is correct. I know 3 × 4 = 12, so if he has 3 × 40 then his answer will be ten times bigger because 4 has become ten times bigger.

Chloe has 240 cakes to sell.
Boxes come in different sizes and can hold different multiples of 10
Which boxes could she use, making sure all boxes are full and there are no cakes left over?

10   20   30   40

50   60   80   100

Possible response:
She could use 10, 20, 30, 40, 60, 80 because 240 is a multiple of all of these numbers. E.g
$10 \times 24 = 240$
$20 \times 12 = 240$
$30 \times 8 = 240$
$40 \times 6 = 240$
$60 \times 4 = 240$
$80 \times 3 = 240$

True or false?

$$5 \times 30 = 3 \times 50$$

Prove it!

Possible response:

Children may represent it with place value counters.

True because they are equal.

Children may explore how it is different in a context though. For example, 5 lots of 30 apples compared to 3 lots of 50 apples.

Plenary

If I know that
3 x 7 = 21
and 3 x 70 = 210

what is the answer to 300 x 700 ?