



INVESTIGATION



Under 30

4

9

0

x

7

5

3

6

=

2

x

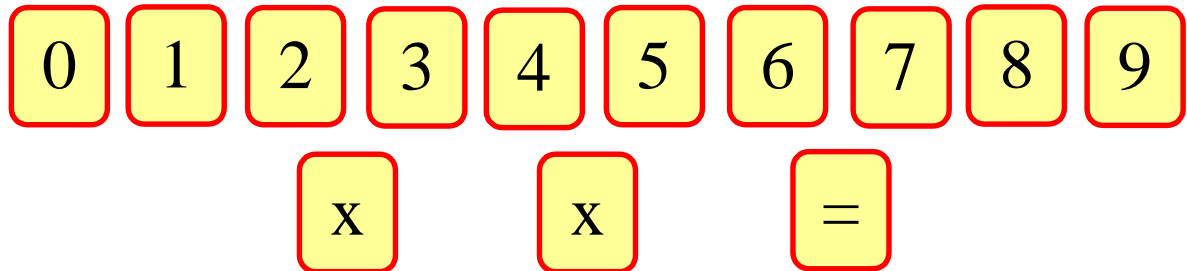
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MathSphere

Under 30 Investigation

Starter



Choose three different numbers and multiply them together.

Easy eh!



Hold on a minute!

Not quite so easy!!

All the answers have got to be under 30!

Yes! You can only have answers which are under 30.

Have a go!



I've got one to start you off:

$$1 \times 2 \times 3 = 2 \times 3 = 6$$

Some Ideas

Have a go at making some multiplication sums using three numbers such as $2 \times 3 \times 4 = 24$

Work in a methodical way, recording your results carefully as you go.

What is the best way of recording your results?

For example: have you found all the possibilities of using a 2 in your sum?

**What happens if you include a 0 in your sum,
such as $5 \times 0 \times 6$?**

**What happens if you include a 1 in your sum,
such as $4 \times 5 \times 1$?**

Can you make some rules for this?

What would happen if you used two digits to make a teens number and then multiply:

such as $14 \times 2 = ?$

Can you think of other ways of investigating this problem?

Answer Guide

This could be a calculator activity or a non calculator activity, depending on what aspect of maths you would like to concentrate on.

If the main purpose is multiplication practice, then non-calculator: if you would rather concentrate on working in a systematic way and looking to see what happens when numbers are multiplied together, then this would be a good calculator investigation.

It is probably a good idea to start this with a class introduction and have the children brainstorm some possibilities, some of which will come to more than 30.

Then they can work individually or in pairs, trying to work in a systematic way to cover all possibilities.

What happens when a nought is involved in any multiplication sum should be explored and discussed as this is an important concept - a reminder that multiplication means 'lots of' and it does not matter how many lots of nothing you have, you will still have nothing!

Multiplying by 1 should also be explored and discussed.

They should be encouraged to write down simple rules, such as,

"When you multiply by nought the answer is always nought."

Odd or even numbers could be explored.

Some children may like to go on to combine numbers to make sums such as $10 \times 2 = 20$

There are many ways of developing this investigation, including:

- a. The starter number could be made smaller or larger
- b. 4 numbers could be used rather than 3.
- c. Digits could be used twice.