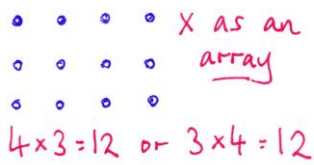
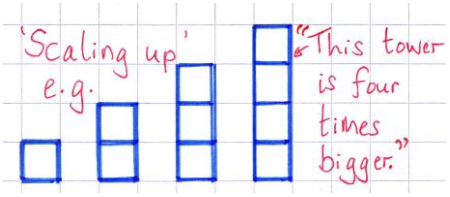
× Multiplication at Firbeck Academy

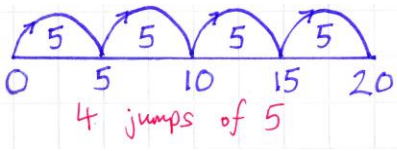
Step 1: grouping and counting objects, e.g. "Here are three groups of two cars. How many are there altogether?"
Step 2: counting aloud in steps, e.g. "2, 4, 6, 8…"; "5, 10, 15, 20…"
Step 3: pictorial representation with teacher possibly scribing using conventional labels and symbols. At this stage we will also show multiplication as **arrays** and **scaling** (see examples.)

3 x 4 = 12





Step 4: repeated addition on a number line supported by counting aloud, e.g.



5 + 5 + 5 + 5 = 20

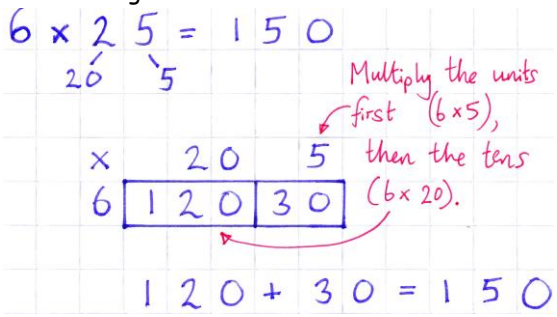
4 x 5 = 20

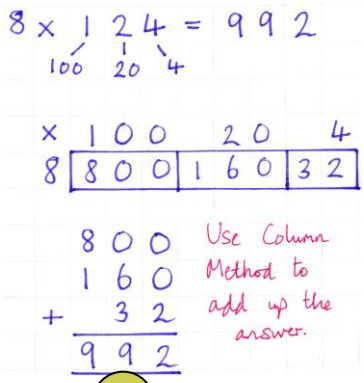
At this point, you should be starting to learn times tables, beginning with the 10s, 5s and 2s. Before using a number line to record a multiplication problem, you should be asking yourself, "Can I use a times tables fact to solve this mentally?"

Before learning the **Grid Method**, it is helpful to know all your times tables and to be able to multiply any whole number by 10 or 100 (e.g. know that 17x10 = 170; 17x100 = 1700.)

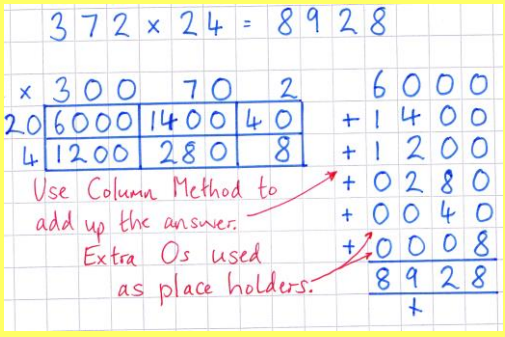
Step 5: the **Grid Method** for **short multiplication** (multiplying by a one-digit number). The Grid Method works well for problems involving TU x U and HTU x U. It can also be adapted to solve more complex problems, e.g. those involving decimals.

a) Draw a grid.
b) Partition any number with more than one digit.
c) Put the numbers around the outside of the grid.
d) Starting with the units, multiply the numbers together and write the answers in the grid spaces.
e) Add up all the numbers inside the grid to find the answer. Use a Column Method if there are more than two numbers, or if you are not sure.





If you are very confident using the Grid Method for UxTU and UxHTU, you can extend it to **long multiplication** (multiplying by a two-digit number or greater.) However, at this point you will also be ready to try the **formal written methods of short and long multiplication** (see ***Advanced Multiplication***.)



If you are using the Grid Method to **multiply decimals**, you need to be confident partitioning and multiplying decimals mentally, e.g.

Challenge! Standard Compact Method

If you are very confident with the Grid Method, wish to move on to the Standard Compact multipl method (sometimes called long multiplication), e.g