Using Decomposition to Multiply Large Numbers

* Decomposition means to break down.
* We decompose numbers into their place value.

 Examples: We decompose 68 into 60 and 8

 156 into 100 and 50 and 6

* When we decompose we end up with zeros and zeros are easy to do math with.
* When we multiply by 10s we add a 0 to the factor. Ex: 30 x 5 = 150

 (3 x 5 = 15 then add a 0)

* When we multiply by 100s we add 2 0s to the factor. Ex: 300 x 5 = 1500

 (3 x 5 = 15 then add 2 0s)

21 x 7

Step 1: decompose 21 20 1

Step 2: multiply both parts by 7 20 1

 X 7 x7

 2x7 = 14, add the 0 = 140 7

Step 3: add the two parts back together 140 + 7 = 147

 So 21 x 7 = 147

472 x 9

Step 1: decompose 472 400 70 2

Step 2: multiply both parts by 7 400 70 2

 X 9 x 9 x 9

 3600 630 18

Step 3: add the parts back together 3600 + 630 + 18 = 3 6 0 0

 6 3 0

 + 1 8

 3 0 0 0

 1 2 0 0

 4 0

 8

 4 2 4 8 so 472 x 9 = 4 248