

# Multiplication and Division using Powers of 10

## Number Slides:

A number slide demonstrates an important feature of multiplying and dividing by powers of ten (ie 10, 100, 1000 etc):

It is the digits that move rather than the decimal point.  
The decimal point is permanently fixed to mark the ones column.

## Investigation of multiplication

- 1 Find the answers to:  $3 \times 8$ ,  $30 \times 8$ ,  $3 \times 80$  and  $30 \times 80$
- 2 Enter these results into the correct cells of the table below.
- 3 Note the position of the 2 cells containing 240. Predict which 2 other cells are also 240. Check with a calculator and then enter 240 into these cells.
- 4 Repeat step 3 for 2400 (There are 2 more again).
- 5 Repeat step 3 for 24 (There are 4 this time).
- 6 Complete the rest of the table, by first **predicting** and then checking on your calculator.

X	0.008	0.08	0.8	8	80	800
0.003						
0.03						
0.3						
3						
30						
300						

- 7 Write as many of these as you can (then swap & check your partner's). Notice the patterns! Can you make up your own?

$24 = 3 \times 8$	$2.4 = 3 \times 0.8$
$24 = 30 \times 0.8$	$2.4 = 0.3 \times 8$
$24 =$	$2.4 =$

## Investigation of Division

- 1 Find the answers to:  $24 \div 3$ ,  $240 \div 3$ ,  $240 \div 30$  and  $2400 \div 3$
- 2 Enter these results into the correct cells of the table below.
- 3 Note the position of the 2 cells containing 8. Predict which 3 other cells are also 8. Check with a calculator and then enter 8 into these cells.
- 4 Repeat step 3 for 80 (There are 4 more.)
- 5 Complete the rest of the table, by first **predicting** and then checking on your calculator.

$\div$	0.24	2.4	24	240	2400	24000
0.003						
0.03						
0.3						
3						
30						
300						

- 6 Write as many of these as you can (then swap & check your partner's). Notice the patterns! Can you make up your own?

$8 = 24 \div 3$	$0.8 = 24 \div 30$
$8 = 240 \div 30$	$0.8 = 2.4 \div 3$
$8 =$	$0.8 =$

## Linking Multiplication and Division

- 1 Write down a multiplication fact that you know (eg  $5 \times 3 = 15$ )
- 2 Now write down 5 multiplication problems (for your partner to do) that are based on this fact (eg  $5 \times 30 = 150$ )
- 3 Now write down 5 division problems (for your partner to do) that are based on this fact (eg  $15 \div 3 = 5$ )
- 4 Swap the 10 problems with your partner and try to use the ideas in this sheet to decide on an answer.
- 5 Swap back and discuss answers. Then confirm with a calculator.