

## Lesson 6 – Dividing by Powers of 10

### Starter

- 1)  $0.2 \times 1000$
- 2)  $0.078 \times 10$
- 3)  $34 \times \underline{\quad} = 34000$
- 4)  $0.009 \times \underline{\quad} = 90$
- 5)  $0.87 \times 0.1 =$

### Starter Answers

- 1) 200    2) 0.78    3) 1000    4) 10000    5) 0.087

Every column is **10 times smaller** than the one before it.  
 So, when we divide by **10**, the digits move **one** place to the right.  
 When we divide by **100**, the digits move **two** places to the right.  
 When we divide by **1000**, the digits move **three** places to the right.

	100,000	10,000	1,000	100	10	1	0.1	0.01	0.001	0.0001	0.00001
	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	tenths	hundredths	thousandths	ten-thousandths	hundred-thousandths

### Example 1

1)  $23 \div 10 = 2.3$

Th	H	T	U	•	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$	$\frac{1}{10000}$
		2	3	•				
			2	•	3			

2)  $345 \div 100 = 3.45$

Th	H	T	U	•	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$	$\frac{1}{10000}$
	3	4	5	•				
			3	•	4	5		

3)  $0.2 \div 1000 = 0.0002$

Th	H	T	U	•	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$	$\frac{1}{10000}$
			0	•	2			
			0	•	0	0	0	2

### Your go

- 1)  $78 \div 10 =$
- 2)  $3.2 \div 100 =$
- 3)  $3 \div 1000 =$
- 4)  $0.36 \div 10 =$

### Answers

- 1) 7.8      2) 0.032      3) 0.003      4) 0.036

### Dividing by 0.1, 0.01, 0.001

Look at the calculations below. Can you spot a pattern?

$$\begin{aligned}56 \div 1000 &= 0.056 \\56 \div 100 &= 0.56 \\56 \div 10 &= 5.6 \\56 \div 1 &= 56 \\56 \div 0.1 &= ? \\56 \div 0.01 &= ? \\56 \div 0.001 &= ?\end{aligned}$$

If you divide by a **smaller** number, the answer will get **bigger**.

The number we are dividing by is getting **ten times smaller** each time.

So, the answer is getting **ten times bigger** each time.

$56 \div 0.1 = 560$ ,  $56 \div 0.01 = 5600$  and  $56 \div 0.001 = 56000$ .

### Example 2

1)  $67 \div 0.1 = 670$   
 $67 \div 10 = 6.7$   
 $67 \div 1 = 67$   
 $67 \div 0.1 = 670$

2)  $0.5 \div 0.01 = 50$   
 $0.5 \div 10 = 0.05$   
 $0.5 \div 1 = 0.5$   
 $0.5 \div 0.1 = 5$   
 $0.5 \div 0.01 = 50$

3)  $723 \div 0.001 = 723000$   
 $723 \div 10 = 72.3$   
 $723 \div 1 = 723$   
 $723 \div 0.1 = 7230$   
 $723 \div 0.01 = 72300$   
 $723 \div 0.001 = 723000$

**NOTE:** Notice how dividing by something less than 1 makes the number **bigger**.