Multiplying & Dividing Decimals

Decimals are a way of expressing numbers that are a **portion of a whole**.

A **decimal number** is a number that contains decimals, such as **2.315**. We use a **decimal point** to separate any whole numbers (**2**) from any decimals (**0.315**).

Ones	.	Tenths	Hundredths	Thousandths
1 1	.	0.1 0.1 0.1	0.01	0.001 0.001 0.001 0.001 0.001
2	.	3	1	5

Multiplying Decimals

Let's multiply 1.12 by 2.3!

1 **Remove the decimal points** for now - we'll add them back in later! Start by **multiplying** the numbers as if they were **whole numbers**.

Use **long multiplication** to solve 112 x 23. We multiply 112 by 20 and then by 3 and adding the products together:

112 x 3 = **336** 112 x 20 = **2240**.

		1	1	2	
	x		2	3	
		3	3	6	← 112 x 3
+	2	2	4	0	← 112 x 20
	2	5	7	6	

2 **Add** up the **number of digits** that are **after the decimal point** in each of the original numbers.

1.**12** has **2 digits** after the decimal point and 2.**3** has **1 digit**. So there are **3 digits** after the decimal point in total.

3 Place the **decimal point** in your answer from earlier. Starting from **the right**, count the number of places that were after the decimal point.

We count **3 places from the right** to place the decimal point: 2.576

4 1.12 x 2.3 = **2.576**

Dividing Decimals

Let's divide 0.5 by 0.25!

1 Move the **decimal points** to the right until both decimals are **whole numbers**.

0.25 → **25** **0.50** → **50**

! Make sure the decimal point moves the **same number of places** in each number. You may need to add some zeros as a placeholder.

2 Divide the whole numbers as normal.

50 ÷ 25 = 2

3 That's our answer!

We don't have to add the decimal point back into our answer because we multiplied our dividend and our divisor by the same number (100) so they cancel each other out!

$$0.5 \div 0.25 = \frac{0.5}{0.25} \overset{\times 100}{=} \frac{50}{25} = 50 \div 25 = 2$$

Example Question

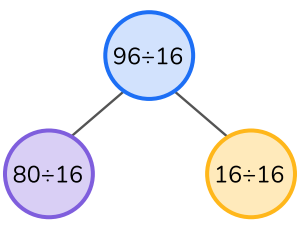
Ato has started long-distance running. Their runs always last 1.6 hours.

If Ato ran for 9.6 hours last week, how many runs did they do?

A 3 B 4 C 5 D 6 E 7

1 The question asks us to find out how many times **1.6** goes into **9.6**. In other words, we are dividing 9.6 by 1.6.

9.6 ÷ 1.6 is the same as **96 ÷ 16**. To solve this division, let's **partition** our number into 80 and 16.



	8	0	÷	1	6	=	5	
	1	6	÷	1	6	=	1	+
							6	✓

From this, we can deduce that **9.6 ÷ 1.6 = 6**.

2 Let's check our answer using **multiplication**!

	1	6	
x		6	
	9^{3}	6	✓

✓ The correct answer is **D**. Ato went for 6 runs last week.