Year 6 Decimals Knowledge Organiser

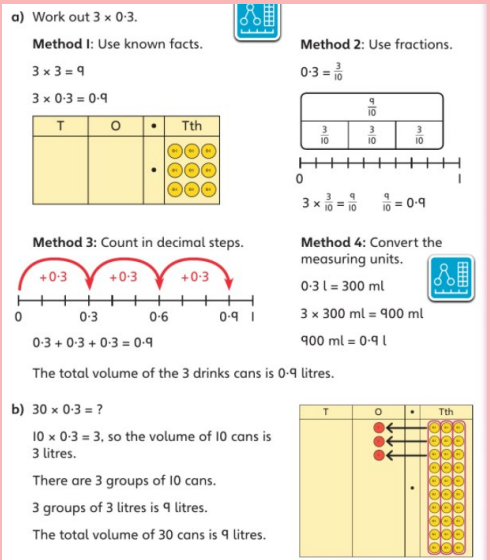
Star Vocabulary

Decimal	A decimal number is a number that consists of a whole number and a fractional part. The decimal point separates the whole number from the fractional part.
Placeholder	A zero placed in a column to ensure that the other digits are in the correct columns.
Recurring decimal	A decimal which has repeating digits or a repeating pattern of digits.
Product	The answer when more than one number has been multiplied by another.

I know how to multiply and divide whole numbers by powers of 10 and I can understand place value of decimals up to three decimal places.

I can multiply and divide decimals by multiples of 10, 100 and 1,000. I can also convert between fractions and decimals; and multiply and divide decimals by whole numbers.

Multiplying and Dividing Decimals


a) Work out 3 × 0·3.

Method 1: Use known facts.

3 × 3 = 9

3 × 0·3 = 0·9

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Method 2: Use fractions.

$0{\cdot}3 = \frac{3}{10}$

$\frac{9}{10}$ = $\frac{3}{10}$ $\frac{3}{10}$ $\frac{3}{10}$

0 1

$3 \times \frac{3}{10} = \frac{9}{10}$ $\frac{9}{10} = 0{\cdot}9$

Method 3: Count in decimal steps.

+0·3 +0·3 +0·3

0 0·3 0·6 0·9 1

0·3 + 0·3 + 0·3 = 0·9

Method 4: Convert the measuring units.

0·3 l = 300 ml

3 × 300 ml = 900 ml

900 ml = 0·9 l

The total volume of the 3 drinks cans is 0·9 litres.

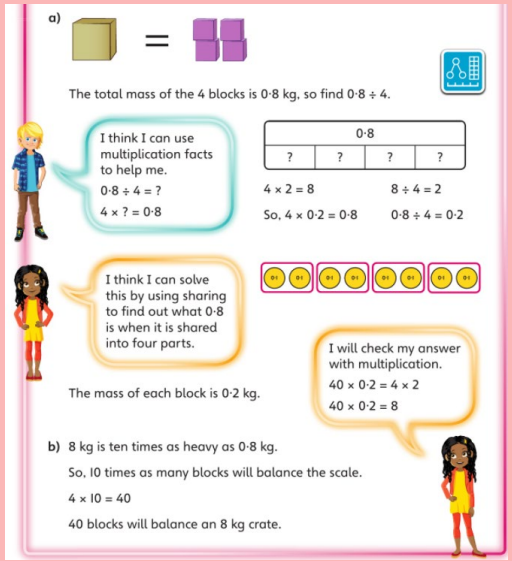
b) 30 × 0·3 = ?

10 × 0·3 = 3, so the volume of 10 cans is 3 litres.

There are 3 groups of 10 cans.

3 groups of 3 litres is 9 litres.

The total volume of 30 cans is 9 litres.


a) =

The total mass of the 4 blocks is 0·8 kg, so find 0·8 ÷ 4.

I think I can use multiplication facts to help me.
0·8 ÷ 4 = ?
4 × ? = 0·8

0·8			
?	?	?	?

4 × 2 = 8 8 ÷ 4 = 2

So, 4 × 0·2 = 0·8 0·8 ÷ 4 = 0·2

I think I can solve this by using sharing to find out what 0·8 is when it is shared into four parts.

The mass of each block is 0·2 kg.

I will check my answer with multiplication.
40 × 0·2 = 4 × 2
40 × 0·2 = 8

b) 8 kg is ten times as heavy as 0·8 kg.

So, 10 times as many blocks will balance the scale.

4 × 10 = 40

40 blocks will balance an 8 kg crate.

Sentence Stems

It can't be… because…
I noticed that…
It must be … because…
If…then…
This is different because…
This is the same because…
This is true here because…
I already know that… so…

Misconceptions: Why?

COMMON MISCONCEPTIONS

When multiplying and dividing decimals, children may fail to add necessary placeholders or to omit those that are not needed.

Children may incorrectly compare numbers with different decimal places, e.g. 0·5 < 0·48, by applying the idea that the more digits there are in a number, the larger it is.

Factual & Conceptual Fluency progression

- Addition and subtraction within 10.
- Addition and subtraction across 10.
- Secure and maintain fluency in addition and subtraction within and across 10, through continued practice.
- Recall the 10 and 5 multiplication tables, and corresponding division facts.
- Recall the 2, 4 and 8 multiplication tables, and corresponding division facts.
- Recall the 3, 6 and 9 multiplication tables, and corresponding division facts.
- Recall the 7-multiplication table, and corresponding division facts.
- Recall the 11 and 12 multiplication tables, and corresponding division facts.
- Secure and maintain fluency in all multiplication tables, and corresponding division facts, through continued practice.