# DECIMALS

## What do I need to be able to do?

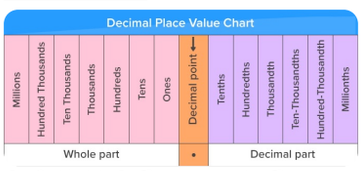
You should be able to:

- Understand place value and the number system
- Read and write decimal numbers
- Order decimals of any size
- Use inequality symbols
- Add and subtract decimals
- Multiply and divide decimals
- Use related calculations to find the answers to questions

## Key Words

- Place Value: the value of a digit depending on its place in a number
- Place Holder: we use 0 as a place holder to show there are none of a particular place in a number
- Integer: a whole number that is positive or negative
- Decimal: a number with a decimal point used to separate ones, tenths, hundredths etc...
- Inequality: compares two values and indicates which is larger

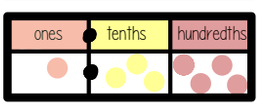
## Place Value




3 2 4 7 3 5 1 • 1 4 5

"Three million, two hundred and forty seven thousand, three hundred and fifty one point one four five"

## Decimal Place Value




1 one, 3 tenths and 4 hundredths

1 + 0.1 + 0.1 + 0.1 + 0.01 + 0.01 + 0.01 + 0.01

= 1 + 0.3 + 0.04

= 1.34

We say "one point three four"

## Inequalities

> greater than

< less than

≥ greater than or equal to

≤ less than or equal to

= equal to

≠ not equal to

Examples

5 > 3 — 5 is greater than 3

2 + 2 = 4 — 2+2 is equal to 4

5 - 3 x 2 ≠ 4 — 5-3x2 is not equal to 4

x ≤ 3 — x is less than or equal to 3

## Ordering Decimals

Example

WHICH IS BIGGER, 1.6 OR 1.66?

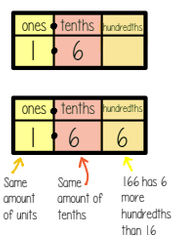
Method 1:

Compare both numbers with the same number of decimal places

1.60
1.66

We can clearly see that 1.66>1.6

Method 2:



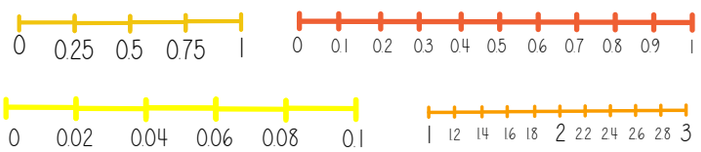

Therefore 1.66>1.6

Example WHICH IS BIGGER, 0.304 or 0.034?

We call this 0 a place holder

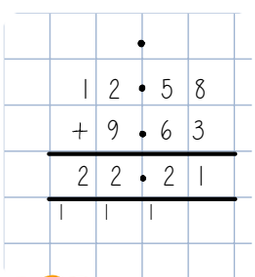
By looking, we can see that 0.304 > 0.034 as it has 3 tenths compared to 0

## Decimal intervals on a number line




## Adding Decimals

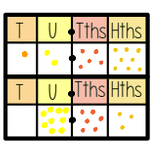
Formal written method:



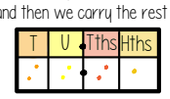

Tths = tenths
Hths = hundredths

Visual Prompt

12.58+9.63




We can only fit 10 in each box and then we carry the rest

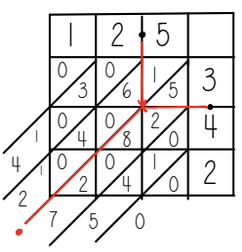



22.21

## Multiplying Decimals

12.5 x 3.42

You can use any method to multiply but this way is very clear and fun!




= 42.75

## Related Calculations

Example 1

If I know that 5 x 2 = 10, what is 0.5 x 2?

÷10 ↓ 5 x 2 = 10 ↓ ÷10

0.5 x 2 = 1

Example 2

19 x 900 = 17 100

19 x 90 = 1710 — 90 ÷ 10 = 90 therefore we need to divide 1710 by 10!

19 x 9 = 171

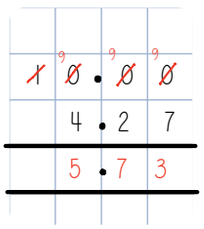
19 x 0.09 = 1.71 — ÷ 100

19 x 0.0009 = 0.171

## Subtracting Decimals

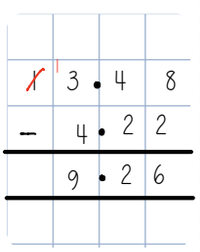
Worded Problem

I have a £10 note and spent £4.27 on sweets. How much do I have left?




£5.73 left

Formal Written Method




## Dividing Decimals

The place holder is very important in division.

All of these give the same solution:

1.5 ÷ 0.05 → 15 ÷ 0.5 → 150 ÷ 5

Multiply both values until the divisor becomes an integer

Method 1

0.12 ÷ 0.003 (×10)
12 ÷ 0.03 (×10)
12 ÷ 0.3 (×10)
120 ÷ 3 (×10)
= 40

Method 2

Remember that a divide sign is just an empty fraction!

0.12 ÷ 0.003 becomes $\frac{0.12}{0.003}$

Which we can rewrite as $\frac{120}{3}$ = 40

## ✔EXAMPLES

Related calculations to 6 x 8 = 48

0.6 x 8 = 4.8
0.6 x 0.8 = 0.48
48 ÷ 8 = 6
4.8 ÷ 0.6 = 8

## Key Points

- Keep the values in proportion.
- If you are stuck with a division, write it as a fraction and simplify that