

# DECIMALS

Remember to be aware of place value

0. **2** **8** **3**  
 ↓        ↓        ↓  
 tenths    hundredths    thousandths

0.2 → 2 tenths →  $\frac{2}{10}$

0.08 → 8 hundredths →  $\frac{8}{100}$

0.003 → 3 thousandths →  $\frac{3}{1000}$

Note 0.2 is bigger than 0.08  
 as  $\frac{2}{10}$  is bigger than  $\frac{8}{100}$

## Multiplying by 10 & 100

When a number is multiplied by 10 the number moves one place value higher

$3.2 \times 10 = 32$        $3 \times 10 = 30$        $\therefore 3.2 \times 10 = 32$   
 $0.2 \times 10 = 2$

Dividing and the number moves a place lower

$28.5 \div 10 \Rightarrow 2.85$

$17.3 \div 100 \Rightarrow 0.173$

$\div 100$  moves the number 2 places

## Multiplying Decimals

$0.2 \times 0.3$

① ignore decimal points & multiply whole numbers

$2 \times 3 = 6$

② Put same amount of decimal places into answer as was in question

$0.2 \times 0.3 = 0.06$

→ 2 decimal places

$1.5 \times 0.03$

$15 \times 3 = 45$

$1.5 \times 0.03 = 0.045$

→ 3 decimal places

## Dividing with Decimals

$8 \div 0.2$

can't divide easily by a decimal

$\times 10$  ↓       $\times 10$  ↓      ① multiply both sides by 10 to get rid of decimal

$80 \div 2 = 40$

② work out!

note, when you  $\div$  by a decimal the number gets bigger

$\times 10$  (  $2.4 \div 0.6$  )  $\times 10$   
 $24 \div 6 = 4$

$\times 100$  (  $2 \div 0.05$  )  $\times 100$   
 $200 \div 5 = 40$

# ROUNDING

## Round to nearest 10

62 look at the digit in the units column  
if it's **smaller than 5** then keep the tens  
if it's **5 or greater** then round the tens up  
↓  
2 is less than 5 therefore 62  $\xrightarrow{\text{rounds to}}$  60

76 rounded to nearest 10  $\rightarrow$  80  $\leftarrow$  greater than 5 so rounds up  
253  $\rightarrow$  250

## Round to nearest 100

793 exactly the same as above but looking at digit in the tens column  
 $\rightarrow$  9 is greater than 5 793  $\rightarrow$  800

## Round to 1 decimal place

This time look to the number in the 2nd decimal place to see whether to round up or down

0.143 4 is less than 5  $\therefore$  does not affect the 0.1  
first decimal place  $\uparrow$   
0.143  $\rightarrow$  0.1 (1 d place)

## Round to 3 decimal places

look to 4th decimal place

2.35164  $\rightarrow$  2.352  
6 is greater than 5 so pushes the 1 up to 2

## Rounding to Significant Figures

The same as with decimal places but including ALL the numbers

Round 27,432 to 1 significant figure = 30,000

1st sig fig  $\uparrow$  took to 2nd significant figure - greater than 5 so pushes 2 up to 3

Round 8,321 to 3 significant figures = 8,320

3rd sig fig  $\uparrow$  look to 4th - less than 5 so 2 is unaffected