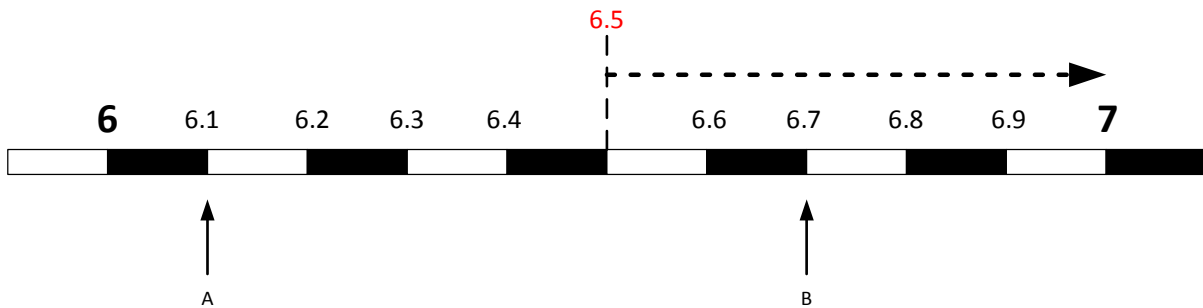


# Maths Intervention: Rounding, Bounds and Intervals.

## Rounding

“Five or more goes up,” is a mantra we use to help us to round numbers.



If we were rounding to the nearest whole number, on this diagram, A which is at 6.1 would round down to 6 as 6.1 is less than 6.5. B would round up to 7 as 6.7 is greater than 6.5.

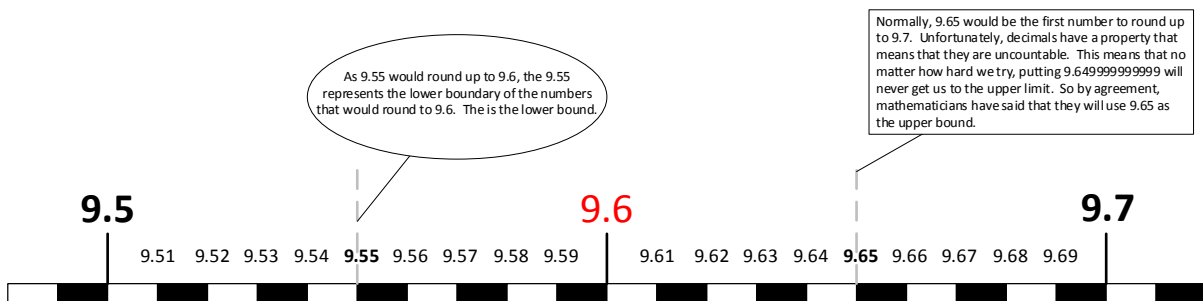
## Exercise 1 Rounding

- |   |                     |    |                 |
|---|---------------------|----|-----------------|
| 1 | 6.7 (10) → 10       | 7  | 524.93 (1)      |
| 2 | 97.8 (1) → 98       | 8  | 384.424 (1)     |
| 3 | 29.831 (0.1) → 29.8 | 9  | 2839.29 (0.1)   |
| 4 | 108 (10)            | 10 | 39.2938 (0.1)   |
| 5 | 1823 (100)          | 11 | 4.923 (10)      |
| 6 | 1829 (10)           | 12 | 48293.983 (0.1) |

## Bounds

If a number, say  $k$ , is 9.6 when it is rounded to the nearest tenth, we sometimes want to know what the lowest number or the highest number it could have been originally.

The lowest number it could have been is called the **lower bound**. The highest number it could have been is called the **upper bound**.



So in this diagram, the lower bound is 9.55 and the upper bound is 9.65.

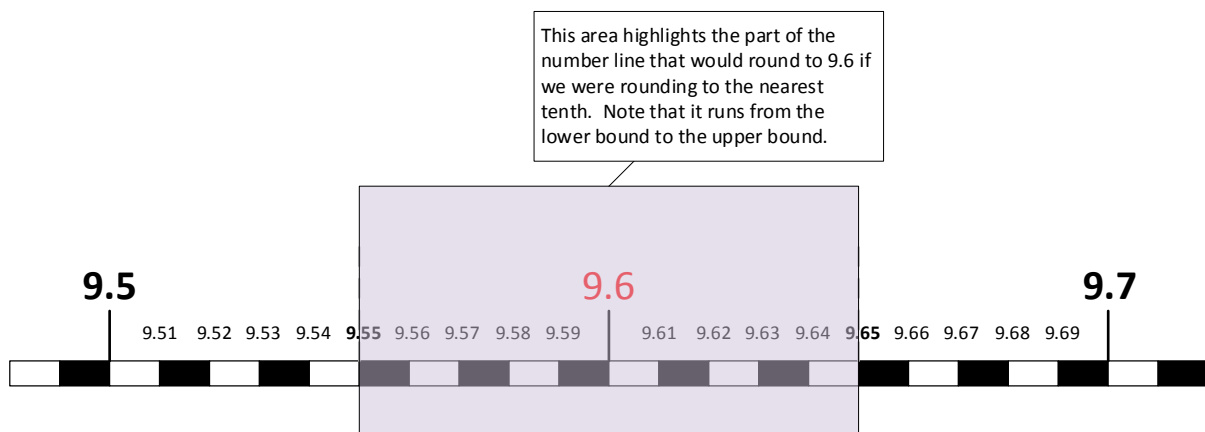
## Exercise 2 Bounds

Write the upper bound and the lower bound for each of the following numbers when they have been rounded to the degree of accuracy shown in the brackets.

1	7.6 (0.1)	7	827.02 (0.01)
2	18.5 (0.1)	8	378.72 (0.001)
3	178 (1)	9	500 (10)
4	90 (10)	10	500 (100)
5	82 (1)	11	500 (0.1)
6	82 (0.1)	12	500 (0.0001)

## Intervals

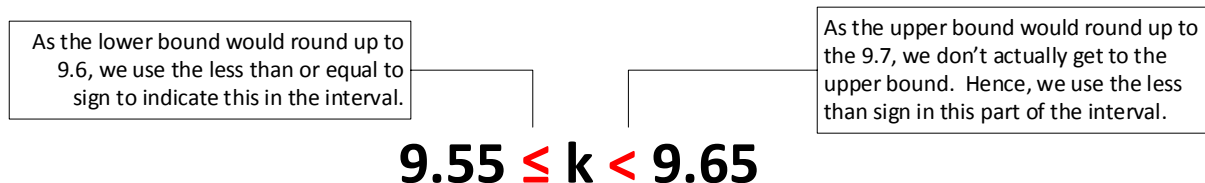
Intervals basically tell us what part of the number line will round to a particular value.



Important Bit:

When we write an interval, if we say that we are rounding a number,  $k$ , to the nearest tenth and it rounds to 9.6, we need to be careful about the inequalities we use.

The interval for this problem would be  $9.55 \leq k < 9.65$ .



## Exercise 3 Intervals

1	4.2 (0.01) $\rightarrow 4.195 \leq k < 4.205$	6	80 (1)
2	6.7 (0.01)	7	80 (0.1)
3	11.8 (0.01)	8	80 (0.001)
4	5 (1)	9	507.938 (0.001)
5	80 (10)	10	301 (0.1)