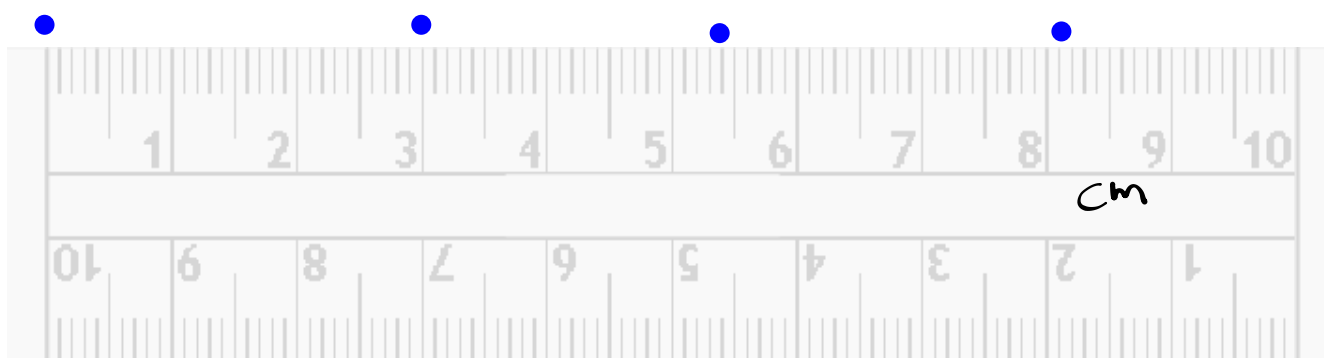


# Significant Digits

All of the certain digits, plus one, of a measurement are considered to be significant digits.

3.00 cm



You need to communicate how confident you are in your measurements in science. There is an international agreement about the correct way to record measurements and this is using significant digits.

There are certain rules that must be followed when calculating significant digits.

## Significant Figures

### Rules for Counting Sig. Fig.

1. **All** non-zero digits are significant

17 (2)

2. Zeros

a) zeros between non-zero digits are significant

Ex. 507 (3)

5007 (5)

b) leading zeros are not significant

Ex. 0.00004 (1)

c) Trailing zeros to the right of a number are significant **if the number has a decimal point**. If the number ends in zero and has no decimal point, we assume that the trailing zeros are not significant.

Ex. 480.0 (4 sig figs)

Ex. 4800 (2 sig figs)

How many significant figures in the following?

a)  $\checkmark\checkmark\checkmark\checkmark\checkmark$  38.4703 mL - 6 sig. figs

b) 0.0052 g - 2 sig. figs

c)  $\checkmark\checkmark\checkmark\checkmark$  0.05700 s - 4 sig. figs

d) 6.19 x 10<sup>8</sup> years - 3 sig. figs

399.50 - 400.4

400.

400.00

400

350 - 449

# Lets Try a Few

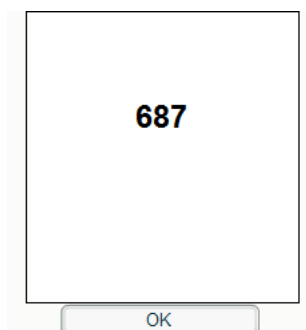
6



2



8



## Significant Figures and Calculations

### 1. Multiplication and Division

The result of the operation is reported as having as many significant figures as the measurement with the fewest significant figures.

Ex. Find the area of a rectangle with dimensions of

6.221 cm and 5.2 cm.

(4)            (2)

32.3492

$$A = l \times w$$

$$A = (6.221 \text{ cm}) \times (5.2 \text{ cm})$$

$$A = 32 \text{ cm}^2$$

5.15 - 5.24