As outcomes, Year 8 pupils should, for example:

As outcomes, Year 9 pupils should, for example:

Understand upper and lower bounds. For example:

- For **discrete data** such as:

  > The population p of Sweden to the nearest million is 15 million.

  know that the least population could be 14 500000 and the greatest population could be 15499999; understand that this can be written as:

  $$14500000 \leq p < 15500000$$

- For **continuous data** such as measurements of distance:

  > The distance d km from Exeter to Plymouth is 62 km to the nearest km.

  know that the shortest possible distance is 61.5km and the longest possible distance is 62.5km, which can be written as:

  $$61.5 \leq d < 62.5$$

Round numbers to a given number of significant figures. Know, for example, that:

- 5.78 is 5.8 to two significant figures (2 s.f.).
- 34.743 is 35 to 2 s.f. and 34.7 to 3 s.f.
- 5646 is 6000 to 1 s.f., 5600 to 2 s.f. and 5650 to 3 s.f.
- 0.004 36 is 0.004 to 1 s.f. and 0.0044 to 2 s.f.

Know when to insert zeros as place holders to indicate the degree of significance of the number. For example, 1.4007 is 1.40 to 3 s.f.

Use numbers to a given number of significant figures to work out an approximate answer. For example:

- The area of a circle with radius 7 cm is approximately $3 \times 50\ \text{cm}^2$.
  Compare this answer with the approximations $^{22}/_{7} \times 7 \times 7\ \text{cm}^2$ and $3.14 \times 7 \times 7\ \text{cm}^2$,
  and with $\pi \times 7 \times 7\ \text{cm}^2$ calculated using the π key on a calculator.

Give answers to calculations to an appropriate number of significant figures. For example:

- $\dfrac{65 + 78}{41 \times 56} \approx 0.0623$ to 3 s.f.

- $5.84 + \dfrac{3.26 + 4.17}{1.23} \approx 12$ to 2 s.f.