Unit 1: Number Sets, Scientific Notation (Standard Form), Rounding, Estimate & % error, Unit & Conversion, Speed, Temperature, Time, Density, Volume, Area & Perimeter (Prior-Learning)

From Text Book:

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Page 9 : EX 1D : #2	Page 34-36 : All paper 1-style questions.

1. If $x = 3.1 \times 10^4$ and $y = 2.4 \times 10^{-7}$, calculate the values of the following, expressing your answers in the form $a \times 10^k$, where $1 \leq a < 10$ and $k \in$.

    (a) x^2

    (b)

	Answers:
	(a) _____
	(b)

(Total 4 marks)

2. A rectangle has length 2.6×10^4 and width 1.9×10^4. Find each of the following, giving your answer in the form $a \times 10^k$, where $1 \leq a < 10$ and $k \in$.

    (a)   The area of the rectangle;

    (b)   The perimeter of the rectangle.

	Answers:
	(a) _____
	(b)

<div align="right">(Total 8 marks)</div>

3. Arthur needs to calculate a value from a trigonometric formula. He uses his calculator to find the value of r given by $r =$.

    (a)   Calculate the value of r, correct to three significant figures.

    (b)   Arthur makes the mistake of rounding both of the sines to three significant figures **before** taking their difference. Calculate the value of r found by Arthur. Call this value r_A.

    (c)   Calculate the percentage error E in Arthur's calculation, given by the formula

$$E =$$

<div align="right">(Total 8 marks)</div>

4. (a) Convert 0.001673 litres to millilitres (ml). Give your answer to the nearest ml.

The SI unit for energy is Joules. An object with mass m travelling at speed v has energy given by mv^2 (Joules).

(b) Calculate the energy of a comet of mass 351 223 kg travelling at speed 176.334 m/sec. Give your answer correct to **six** significant figures.

In the SI system of units, distance is measured in metres (m), mass in kilograms (kg) and time in seconds (s). The momentum of an object is given by the mass of the object multiplied by its speed.

(c) Write down the correct combination of SI units (m, kg, s) for momentum.

(Total 8 marks)

5. Five pipes labelled, "6 metres in length", were delivered to a building site. The contractor measured each pipe to check its length (in metres) and recorded the following;

5.96, 5.95, 6.02, 5.95, 5.99.

(a) (i) Find the mean of the contractor's measurements.

(ii) Calculate the percentage error between the mean and the stated, **approximate** length of 6 metres.

(b) Calculate , giving your answer

(i) correct to the nearest integer;

(ii) in the form $a \times 10^k$, where $1 \le a < 10$, k .

(Total 6 marks)