Error = true value – measured value

Absolute error

delta a\_{1} = abs(a\_{mean} – a\_{1})

delta a\_{2} = abs(a\_{mean} – a\_{2})

delta a\_{n} = abs(a\_{mean} – a\_{n})

mean absolute error = 1/n sum(i = 1)^n delta a\_{i}

final value a = a\_{mean} plusminus delta s\_{mean}

relative error(Delta)/fractional error

Delta a = (delta a\_{mean})/a\_{mean}

Percentage error(%)

%a = (delta a\_{mean})/a\_{mean} \*100%

Error in sum ofr ddifference

Delta z = plusminus (delta A + delta B)

For z = A + B or z = A – B

For product and division

(delta z)/z = plusminus((delta A)/A + (delta B)/B)

For z = AB or Z =A/B

Maximum fractional error = sum of individual fractional errors

Error in raised to the power

(delta z)/z = (mdeltaA)/A + (ndeltaB)/B

For z = A^mB^n or z =A^m/B^n

Example L = 7.6

Absolute error is its least count

Delta L =0.1

1 astronmical unit(AU) = 1.49 \*10^11

1 light year = 9.46 \*10^11

1 par sec = 3.08 \*10^16 = 3.24 light year

Significant figure

1. All non- zero digits are significant
2. Zeroes between two non- zero digits are significant.

eg 6.025 has 4 signifant figures

1. Zeroes after decimal are significant.

eg 6.400 has 4 significant figures

1. Powers of 10 are not significant.

eg 1.4 \*10^2 has only 2 significant figures

1. All zeros to the left of last non-zero digit are not significant.

Eg 0.0045 has only 2

1. change of unit of a quantity does not change significant figures
2. Terminal zeroeswithout decimal point are not significant

Eg 26400 has only 3

1. Exact measurements have infite significant figures

Eg 10 banana in a basket

Doubt solution

8.200 has 4 significant figures

8200 has 2 significant figures

8.2 \*10^(-4) has 2 signifcant figures

Based on how the question write the answer

Round off