TASK 2

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1 Round Off

1.1 Round off the following numbers to two decimal places: 2.3742, 81.255, 52.275, 48.21416

Given Data	Rounded Off Data
2.3742	2.37
81.255	81.26
52.275	52.28
48.21416	48.21

1.2 Round off the following numbers to four significant digits: 0.70029, 0.00022218, 2.36425, 38. 46235

Given Data	Rounded Off Data
0.70029	0.7003
0.00022218	0.0002222
2.36425	2.364
38.46235	38.46

1.3 Calculate (5/102 - 3/101) correct to four significant digits.

Solution:

$$\frac{5}{102} - \frac{3}{101} = \frac{199}{10302} = 0.01931663755$$

$$\therefore Rounded\ off\ answer = 0.01932$$

1.4 If 0.3333 is the approximate value of 1/3, find the absolute and relative errors.

Solution

Given:

Approximate value (X') = 0.3333

True value (X) = $\frac{1}{3}$

Then,

Absolute error (Ea) $= |\, TrueValue(X) - ApproximateValue(X') \,|$

or, Ea $= |\, \frac{1}{3} - 0.3333 \,|$

$\therefore$ Ea $= 0.000033333$

And,

Relative error (Er) $= \frac{Absolute\, Error(E_a)}{True\, Value(X)}$

or, Er $= \frac{0.00003333}{\frac{1}{3}}$

$\therefore$ Er $= 0.000099999$

1.5 Round Off the number 75462.45 to four significant digits and the calculate the absolute error and percentage error.

Solution

Given (True) Value (X) = 75462.45

Rounded Off (Approximate) Value (X') = 75460

Then,

Absolute error (Ea) $= |\, True\, Value(X) - Approximate\, Value(X') \,|$

or, Ea $= |\, 75462.45 - 75460 \,|$

$\therefore$ Ea $= 2.45$

And,

Percentage error(%) $= \frac{Absolute\, Error(E_a) \times 100}{True\, Value(X)}$

or, % error $= \frac{2.45 \times 100}{75462.45}$

$\therefore$ % error $= 0.003247$ %