

08-03-2022

Tuesday, March 8, 2022 10:01 AM

Unit IV

Point Estimation : Definition, Unbiased Estimators, Consistent Estimators, Sufficient Estimator, MLE (Method of Maximum Likelihood), Efficiency of estimations, Properties of Maximum likelihood

Unit V

Hypothesis Testing : Types of Error, Goodness of a Fit, Student t-test, Chi-Square Test, Z-test, F-test

Unit VI

Correlation and Regressions : Scatter plots, Coefficient of Correlation, Coefficient of Correlation for bi-variate data, Spearman's Rank Correlation Coefficient, Linear Regression, Properties of Regression Coefficients, Fitting of a curve

If selling price is doubled, the profit triples. Find the profit percent.

A. $66\frac{2}{3}$

☒ B. 100

1) A train moving at speed of 80 km/hr crosses a pole in 7 seconds. Find the length of the train.

- A. 150 m
- B. 165 m
- C. 175 m
- D. 170 m

$$x = 3x - y$$

$$\Rightarrow 2x = y$$

$$\frac{x}{x} \times 100\%$$

$$= 100\%$$

$$\text{m/sec}$$

$$C.P = x \quad S.P = y$$

$$\text{Profit} = y - x$$

$$y \rightarrow 2y$$

$$2y - x \rightarrow \text{Profit}$$

$$C.P = S.P - \text{profit}$$

$$= 2y - (3y - 3x)$$

$$= 3x - y$$

$$= x$$

1) A train moving at speed of 90 km/hr crosses a pole in 7 seconds. Find the length of the train.

- A. 150 m
- B. 165 m
- ☒ C. 175 m
- D. 170 m

$$90 \text{ km/hr} = 90 \times \frac{5}{18} \text{ m/sec}$$

$$= 25 \text{ m/sec.}$$

$$\text{Speed} = \frac{D}{T}$$

D. 170 m

$$\text{Speed} = \frac{D}{T}$$

$$D = 25 \times 7$$

$$= 175 \text{ sec. } \underline{\underline{m}}$$

21) A man sitting in a train which is running at a speed of 100 km/hr saw a goods train which is running in opposite direction towards him. The goods train crosses the man in 8 seconds. If the length of goods train is 300 meters, find its speed.

A. 45 Km/hr

B. 50 km/hr

✓ C. 35 Km/hr

D. 60 Km/hr

X Km/hr - speed of goods train

$$\text{relative speed} = \frac{300}{8} \text{ m/sec} = 135 \text{ Km/hr.}$$

$$135 = 100 + X$$

$$\Rightarrow X = 35$$

What is the sum of two consecutive even numbers, the difference of whose squares is 84?

A. 34

B. 38

✓ C. 42

D. 46

$$x \quad x+2$$

$$(x+2)^2 - x^2 = 84$$

$$\Rightarrow 4x + 4 = 84$$

$$\Rightarrow 4x = 80$$

$$\Rightarrow x = 20$$

$$20 + 22 = 42$$

25) A train crosses a pole and a bridge of length 280 meters in 6 seconds and 20 seconds respectively. At what speed the train is running?

A. 62 km/hr

B. 65 km/hr

C. 70 km/hr

✓ D. 72 km/hr

X = length Y speed

$$\frac{X}{Y} = 6 \Rightarrow X = 6Y$$

$$\frac{X+280}{Y} = 20$$

$$\rightarrow 6Y + 280 = 20Y$$

✓ D. 72 km/hr

$$\begin{aligned} & \Rightarrow 6y + 280 = 20y \\ & \Rightarrow 14y = 280 \\ & \Rightarrow y = 20 \text{ m/sec} \\ & = 20 \times \frac{18}{5} \\ & = 72 \text{ km/hr} \end{aligned}$$

4. A is thrice as good as workman as B and therefore is able to finish a job in 60 days less than B. Working together, they can do it in:

- A. 20 days
- ✓ B. $22\frac{1}{2}$ days
- C. 25 days
- D. 30 days

$$\begin{aligned} A & : 1 \\ B & : 3 \end{aligned}$$