

Answer on Question #85570 – Math – Statistics and Probability

Question

The price of petrol per litre has risen by 5%, 10%, 12%, 15% and 18% in each of five year successive years. Determine the geometric mean rise.

Solution

The geometric mean rise is given by

$$\left(\prod_{i=1}^n (1 + r_i) \right)^{\frac{1}{n}} - 1 = \sqrt[n]{(1 + r_1) \times (1 + r_2) \times \dots \times (1 + r_n)} - 1$$

So, in our case we have the next result:

$$\begin{aligned} & \sqrt[5]{(1 + 0.05) \times (1 + 0.1) \times (1 + 0.12) \times (1 + 0.15) \times (1 + 0.18)} - 1 \\ & = \sqrt[5]{1.755} - 1 \approx 0.12 = 12\% \end{aligned}$$

Answer: The geometric mean rise is 12%.