RD SHARMA

Solutions

Class 8 Maths

Chapter 14

Ex 14.4

Q1) The present population of a town is 28000. If it increases at the rate of 5% per annum, what will be its population after 2 years?

Solution:

Here,

P = Initial population = 28000

R = Rate of growth of population = 5% per annum

n = Number of years = 2

Therefore, Population after two years =

=

=

= 30870

Hence, the population after two years will be 30870.

Q2) The population of a city is 126000. If the annual birth rate and death rate are 5.5% and 9.5% respectively, calculate the population of city after 3 years.

Solution:

Here,

P = Initial population = 125000

Annual birth rate = R_1 = 5.5%

Annual death rate = R_2 = 3.5%

Net growth rate, R = ($R_1 - R_2$) = 2%

n = Number of years = 3

Therefore, Population after two years =

=

=

= 132651

Hence, the population after three years will be 132651.

Q3) The present population of a town is 25000. It grows at 4%, 5% and 8% during first year, second year and third year respectively. Find its population after 3 years.

Solution:

Here,

P = Initial population = 25000

= 4%

= 5%

= 8%

n = Number of years = 3

Therefore, Population after three years =

=

= 25000 (1.04) (1.05) (1.08)

= 29484

Hence, the population after three years will be 29484.

Q4) Three years ago, the population of a town was 50000. If the annual increase during three successive years be at the rate of 4%, 5% and 3% respectively, find the present population.

Solution:

Here,

P = Initial population = 50000

= 4%

= 5%

= 3%

n = Number of years = 3

Therefore, Population after three years =

=

= 50000 (1.04) (1.05) (1.03)

= 56238

Hence, the population after three years will be 56238.

Q5) There is a continuous growth in the population of a village at the rate of 5% per annum. If its present population is 9261, what it was 3 years ago?

Solution:

Population after three years =

9261 =

= 9261

P =

P = 8000

Thus, the population three years ago was 8000.

Q6) In a factory the production of scooters rose to 46305 from 40000 in 3 years. Find the annual rate of growth of the production of scooters.

Solution:

Let the annual rate of growth be R.

Therefore, Production of scooters after three years =

46305 =

1 + 0.01R = 1.05

0.01R = 0.05

R = 5

Thus, the annual rate of growth is 5%.

Q7) The annual rate of growth in the population of a certain city is 8%. If its present population is 196830, what it was 3 years ago?

Solution:

Population after three years =

196830 =

196830 =

P =

= 156250

Thus, the population three years ago was 156250.

Q8) The population of a town increases at the rate of 50 per thousand. Its population after 2 years will be 22050. Find its present population.

Solution:

Population after three years =

22050 =

22050 =

P =

= 20000

Thus, the population three years ago was 20000.

Q9) The count of bacteria in a culture grows by 10% in the first hour, decreases by 8% in the second hour and again increases by 12% in the third hour. If the count of bacteria in the sample is 13125000, what will be the count of bacteria after 3 hours?

Solution:

Given:

= 10%

= -8%

= 12%

P = Original count of bacteria = 13125000

We know that:

Therefore, Bacteria count after three hours =

= 13125000 (1.10) (0.92) (1.12)

= 14,876,400

Thus, the bacteria count after three hours will be 14,876,400.

Q10) The population of a certain city was 72000 on the last day of the year 1998. During next year it increased by 7% but due to an epidemic, it decreased by 10% in the following year. What was its population at the end of the year 2000?

Solution:
Population at the end of the year 2000 =

=

= 72000 (1.07) (0.9)

= 69,336

Thus, the population at the end of the year 2000 was 69,336.

Q11) 6400 workers were employed to construct a river bridge in four years. At the end of the first-year, 25% workers were retrenched. At the end of the second year, 25% of those working at that time were retrenched. However, to complete the project in time, the number of workers was increased by 25% at the end of the third year. How many workers were working during the fourth year?

Solution:

Number of workers = 6,400

At the end of the first year, 25% of the workers were retrenched.

Therefore, 25% of 6,400 = 1,600

Number of workers at the end of the first year = 6,400 – 1600 = 4,800

At the end of the second year, 25% of those working were retrenched.

Therefore, 25% of 4,800 = 1,200

Number of workers at the end of the second year = 4,800 – 1200 = 3,600

At the end of the third year, 25% of those working increased.

Therefore, 25% of 3,600 = 900

Number of workers at the end of the third year = 3,600 + 900 = 4,500

Thus, the number of workers during the fourth year was 4,500.

Q12) Aman started a factory with an initial investment of its 100000. In the first year, he incurred a loss of 5%. However, during the second year, he earned a profit of 10% which is the third year rose to 12%. Calculate his net profit for the entire period of three years.

Solution:

Aman's profit for three years =

=

= 100000 (0.95) (1.10) (1.12)

= 117040

Therefore, Net profit = Rs 117,040 – Rs 100,000

= Rs 17,040

Q13) The population of a town increases at the rate of 40 per thousand annually. If the present population be 175760, what was the population three years ago?

Solution:

Population after 3 years =

175760 =

175760 =

P =

= 156,250

Thus, the population three years ago was 156,250.

Q14) The production of a mixed company in 1996 was 8000 mixies. Due to increase in demand, it increases its production by 15% in the next two years and after two years its demand decreases by 5%. What will be its production after 3 years?

Solution:

Production after three years =

=

= 8000 $(1.15)^2$ (0.95)

= 10,051

Thus, the production after three years will be 10,051.

Q15) The population of a city increases each year by 4% of what it had been at the beginning of each year. If the population in 1999 had been 6760000, find the population of the city in

(i) 2001 **(ii) 1997**

Solution:

(i)

Population of the city in 2001 =

=

= 6760000 $(1.04)^2$

= 7311616

Thus, Population of the city in 2001 is 7311616.

(ii)

Population of the city in 1997 =

=

= 6760000 $(1.04)^{-2}$

= 6250000

Thus, Population of the city in 1997 is 6250000.

Q16) Jitendra set up a factory by investing Rs 2500000. During the first two successive years, his profits were 5% and 10% respectively. If each year the profit was on previous year's capital, compute his total profit.

Solution:

Profit at the end of the first year =

=

= 2,500,000 (1.05)

= 2,625,000

Profit at the end of the second year =

=

= 2,625,000 (1.1)

= 2,887,500

Total profit = Rs 2,887,500 – Rs 2,500,000 = Rs 387,500