**Percentage**

**Important formula:**

1. **Concept of Percentage:**

By a certain **percent**, we mean that many hundredths.

Thus, *x* percent means *x* hundredths, written as *x*%.

|  |  |  |
| --- | --- | --- |
| To express *x*% as a fraction: We have, *x*% = | *x* | . |
| 100 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Thus, 20% = | 20 | = | 1 | . |
| 100 | 5 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| To express | *a* | as a percent: We have, | *a* | = | https://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | *a* | x 100 | https://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif%. |
| *b* | *b* | *b* |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Thus, | 1 | = | https://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 1 | x 100 | https://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif% | = 25%. |
| 4 | 4 |

1. **Percentage Increase/Decrease:**

If the price of a commodity increases by R%, then the reduction in consumption so as not to increase the expenditure is:

|  |  |  |  |
| --- | --- | --- | --- |
| https://www.indiabix.com/_files/images/aptitude/1-sym-obracket-h1.gif | R | x 100 | https://www.indiabix.com/_files/images/aptitude/1-sym-cbracket-h1.gif% |
| (100 + R) |

If the price of a commodity decreases by R%, then the increase in consumption so as not to decrease the expenditure is:

|  |  |  |  |
| --- | --- | --- | --- |
| https://www.indiabix.com/_files/images/aptitude/1-sym-obracket-h1.gif | R | x 100 | https://www.indiabix.com/_files/images/aptitude/1-sym-cbracket-h1.gif% |
| (100 - R) |

1. **Results on Population:**

Let the population of a town be P now and suppose it increases at the rate of R% per annum, then:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1. Population after *n* years = P | https://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 1 + | R | https://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | n |
| 100 |

|  |  |
| --- | --- |
| 2. Population *n* years ago = | P |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | https://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 1 + | R | https://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | n | | 100 | |

1. **Results on Depreciation:**

Let the present value of a machine be P. Suppose it depreciates at the rate of R% per annum. Then:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1. Value of the machine after *n* years = P | https://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 1 - | R | https://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | n |
| 100 |

|  |  |
| --- | --- |
| 2. Value of the machine *n* years ago = | P |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | https://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 1 - | R | https://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | n | | 100 | |
|  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 3. If A is R% more than B, then B is less than A by | https://www.indiabix.com/_files/images/aptitude/1-sym-obracket-h1.gif | R | x 100 | https://www.indiabix.com/_files/images/aptitude/1-sym-cbracket-h1.gif%. |
| (100 + R) |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4. If A is R% less than B, then B is more than A by | https://www.indiabix.com/_files/images/aptitude/1-sym-obracket-h1.gif | R | x 100 | https://www.indiabix.com/_files/images/aptitude/1-sym-cbracket-h1.gif%. |
| (100 - R) |