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Ratio and Proportion Exam Preparation by [Mathqa22]

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Ratio:Â Ratio means the number of times one quantity contains another quantity of the same kind. The comparison is made by considering what part or multiply the first quantity of the second. In a simple words the ratio gives a relation between two quantities. The ratio of two quantitiesÂ aÂ andÂ bÂ in the same units, is the fractionÂ a/bÂ and we write it asÂ a:b.In the ratioÂ a:b,we callÂ aÂ as theÂ first termÂ orÂ antecedentÂ andÂ b, theÂ second termÂ orÂ consequent. Ex:Â The ratioÂ 3:7representsÂ 3/7Â antecedent=3 and consequent=7.Rule:The multiplication or division of each term of the ratio by the same non-zero number does not affect the ratio. Â Â Â Â

Proportion: The equality of two ratios is calledÂ proportion, that means if the two ratios are equal, then they make a proportion. IfÂ a:b=c:d,we write, a:b::c:dÂ and we sayÂ a, b, c, dÂ are in proportion. HereÂ aÂ andÂ dÂ are calledÂ extremes, whileÂ bÂ andÂ care calledÂ mean terms. Â Â Â Â Â Â Â Â Â Â

Product of means=product of extremes

Types of Ratios and Proportions

Types Of Ratios:

Ratios are classified in to six types:Â

1)Duplicate ratio: The ratio of the squares of the two numbers. Ex: 9:16 is theÂ duplicate ratioÂ of 3:4.Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â

2)Triplicate ratio: The ratio of the cubes of the two numbers. Ex: 27:64 is theÂ triplicate ratioÂ of 3:4. Â Â Â Â Â Â Â Â Â Â Â Â Â ÂÂ

3)Sub-duplicate ratio: The ratio between square root of the two numbers. Ex: 4:5 is theÂ sub-duplicate ratioÂ of 16:25.Â Â Â Â Â Â

4)Sub-triplicate ratio: The ratio between the cube roots of the two numbers. Ex: 4:5 is theÂ sub-triplicateÂ of 64:125.Â Â Â Â Â Â Â Â

5)Inverse ratio: If the two terms in the ratio interchange their places, then the new ratio is inverse ratio of the first. Ex: 9:5 Â is theÂ inverse ratioÂ of 5:9.Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â ÂÂ

6)Compound ratio: The ratio of the product of the first term to that of the second term of two or more ratios. Ex: 3/4,5/7,4/5 and 3/5 is 3/4 x 5/7 x 4/5 x 3/5 = 9/35.

Check this awesome Z-score Calculator i recently used.

Types Of Proportions:

1)Continued proportion: In the proportion 8/12=12/18, 8,12,18 are in the continued proportion.Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â ÂÂ

2)Fourth proportion: If a:b=c:x,then x is calledÂ forth proportionÂ of a,b and c. The fourth proportionÂ of

a,b.c =bc/aÂ Â Â Â Â Â Â Â Â Â Â

3)Third proportion: If a:b=b:x,then x is calledÂ third proportionÂ of a and b. Third proportion of a,b =b^2/aÂ Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â

4)Second or mean proportion: If a:x=x:b,then x is calledÂ second or mean proportionÂ of a and b. ThereforeÂ mean Â proportionÂ of a and b =Root of(ab)

Sample Examples on Ratio and Proportion for Exam Preparations

Example1:Find out the two quantities whose difference is 30 and the ratio between them is 5/11.? Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â

Answer:

The difference of quantities, which are in the ratio 5:11,is 6.

To make the difference 30,we should multiply then Â by 5. Â Â Â Â Â Â Â Â Â Â Â Â Â

Therefore 5:11=5x5:11x5=25:55.

Example2:What should be subtract from 15,28,20 and 38 so that the remaining numbers may be proportional? Â Â Â Â Â Â Â

Answer:Â Â If x is subtracted then, Â Â

(15-x)/(28-x)=(20-x)/(38-x) Â Â

(15-x)(38-x)=(28-x)(20-x) Â ÂÂ Â Â Â

x^2-53x+570=x^2-48x+560 Â Â

x^2-x^2-53x+48x=560-570 Â Â

5x=10 Â Â

x=2

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