

Ratio Syllabus for FPSC – Ratio MCQs with Solution FPSC Maths One Paper Questions Answers

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Ratio MCQs for FPSC

Ratio, in math, is a term that is used to compare two or more numbers. It is used to indicate how big or small a quantity is when compared to another. In a ratio, two quantities are compared using division. Here the dividend is called the 'antecedent' and the divisor is called the 'consequent'.

For example, in a group of 30 people, 17 of them prefer to walk in the morning and 13 of them prefer to cycle. To represent this information as a ratio, we write it as 17: 13. Here, the symbol ':' is read as "is to". So, the ratio of people who prefer walking to the people who prefer cycling is read as '17 is to 13'.

What is Ratio?

The ratio is defined as the comparison of two quantities of the same units that indicates how much of one quantity is present in the other quantity. Ratios can be classified into two types. One is part to part ratio and the other is part to whole ratio. The part-to-part ratio denotes how two distinct entities or groups are related. For example, the ratio of boys to girls in a class is 12: 15, whereas, the part-to-whole ratio denotes the relationship between a specific group to a whole. For example, out of every 10 people, 5 of them like to read books. Therefore, the part to the whole ratio is 5: 10, which means every 5 people from 10 people like to read books.

Ratio Formula

We use the ratio formula while comparing the relationship between two numbers or quantities. The general form of representing a ratio of between two quantities say 'a' and 'b' is **a: b**, which is read as '**a is to b**'.

The fraction form that represents this ratio is a/b . To further simplify a ratio, we follow the same procedure that we use for simplifying a fraction. $a:b = a/b$. Let us understand this with an example.

Solved Example of Ratio Questions for FPSC:

In a class of 50 students, 23 are girls and the remaining are boys. Find the ratio of the number of boys to the number of girls.

Total number of students = 50; Number of girls = 23.

Total number of boys = Total number of students - Total number of girls
 $= 50 - 23$
 $= 27$

Therefore, the desired ratio is, (Number of boys: Number of girls), which is **27:23**.



Mathematics MCQs by CSS MCQs

Calculation of Ratios

In order to calculate the ratio of two quantities, we can use the following steps. Let us understand this with an example. For example, if 15 cups of flour and 20 cups of sugar are needed to make fluffy pancakes, let us calculate the ratio of flour and sugar used in the recipe.

- **Step 1:** Find the quantities of both the scenarios for which we are determining the ratio. In this case, it is 15 and 20.
- **Step 2:** Write it in the fraction form a/b . So, we write it as $15/20$.
- **Step 3:** Simplify the fraction further, if possible. The simplified fraction will give the final ratio. Here, $15/20$ can be simplified to $3/4$.
- **Step 4:** Therefore, the ratio of flour to sugar can be expressed as 3: 4.

Use Cuemath's free online ratios calculator to verify your answers while calculating ratios.

How to Simplify Ratios?

A ratio expresses how much of one quantity is required as compared to another quantity. The two terms in the ratio can be simplified and expressed in their lowest form. Ratios when expressed in their lowest terms are easy to understand and can be simplified in the same way as we simplify fractions. To simplify a ratio, we use the following steps. Let us understand this with an example. For example, let us simplify the ratio 18:10.

- **Step 1:** Write the given ratio $a:b$ in the form of a fraction a/b . On writing the ratio in the fraction form, we get $18/10$.
- **Step 2:** Find the greatest common factor of 'a' and 'b'. In this case, the GCF of 10 and 18 is 2.
- **Step 3:** Divide the numerator and denominator of the fraction with the GCF to obtain the simplified fraction. Here, by dividing the numerator and denominator by 2, we get, $(18 \div 2)/(10 \div 2) = 9/5$.
- **Step 4:** Represent this fraction in the ratio form to get the result. Therefore, the simplified ratio is 9:5.

Use Cuemath's free online simplifying ratios calculator to verify your answers.

Tips and Tricks on Ratio:

- In case both the numbers 'a' and 'b' are equal in the ratio $a:b$, then $a:b = 1$.
- If $a > b$ in the ratio $a:b$, then $a:b > 1$.
- If $a < b$ in the ratio $a:b$, then $a:b < 1$.
- It is to be ensured that the units of the two quantities are similar before comparing them.

Equivalent Ratios

Equivalent ratios are similar to equivalent fractions. If the antecedent (the first term) and the consequent (the second term) of a given ratio are multiplied or divided by the same number other than zero, it gives an equivalent ratio. For example, when the antecedent and the consequent of the ratio 1:3 are multiplied by 3, we get, $(1 \times 3) : (3 \times 3)$ or 3:9. Here, 1:3 and 3:9 are equivalent ratios. Similarly, when both the terms of the ratio 20:10 are divided by 10, it gives 2:1. Here, 20:10 and 2:1 are equivalent ratios. An infinite number of equivalent ratios of any given ratio can be found by multiplying the antecedent and the consequent by a positive integer.

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Ratio Examples

1. **Example 1: There are 49 boys and 28 girls in a school auditorium. Express the ratio of the number of boys to that of girls.**

Solution:

Given, the number of boys = 49; and the number of girls = 28. The GCF of 49 and

28 is 7. Now, to simplify, divide the two terms by their GCF which is 7. This means, $(49 \div 7)/(28 \div 7) = 7/4$. Therefore, the ratio of the number of boys to that of girls = 7:4.

1. **Example 2: A music class has 30 students. 10 of them were adults and the rest were children. What is the ratio of the number of children to the total number of students in the music class?**

Solution:

Given, the total number of students in the music class = 30 and the total number of adults = 10. Therefore, the number of children who attended the music class = 30 - 10, which is equal to 20. The ratio of the total number of children to the total number of students in the music class = 20: 30, which when simplified gives 2:3.

1. **Example 3: Simplify the given ratio, 87:75.**

Solution:

In order to simplify the given ratio, we will first find the GCF of 87 and 75, which is 3. Then, we will divide each term by 3. This means, $(87 \div 3)/(75 \div 3) = 29/25$. Thus, the ratio 87:75 in the simplest form is 29:25.

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More on Ratio

What is Ratio in Math?

A ratio can be defined as the relationship or comparison between two numbers of the same unit to check how bigger is one number than the other one. For example, if the number of marks scored in a test is 7 out of 10, then the ratio of marks obtained to the total number of marks is written as 7:10.

What are the Ways of Writing a Ratio?

A ratio can be written by separating the two quantities using a colon (:) or it can be written in the fractional form. For example, if there are 4 apples and 8 melons, then the ratio of apples to melons can be written as 4:8 or $\frac{4}{8}$, which can be further simplified as 1:2.

How to Calculate the Ratio Between Two Numbers?

In order to calculate the ratio of two quantities, we can use the following steps. Let us understand this with an example. For example, if 14 cups of butter and 28 cups of sugar are needed to make a frosting cream, what is the ratio of butter and sugar?

- **Step 1:** Note the quantities of both the ingredients for which we are determining the ratio. In this case, it is 14 and 28.
- **Step 2:** Write it in the fraction form $\frac{a}{b}$. So, we write it as $\frac{14}{28}$.
- **Step 3:** Simplify the fraction further, if possible. The simplified fraction will give the final ratio. Here, $\frac{14}{28}$ can be simplified to $\frac{1}{2}$.
- **Step 4:** Therefore, the ratio of butter to sugar can be expressed as 1: 2.

How to Find Equivalent Ratios?

Two ratios are said to be equivalent if they represent the same value when simplified. This concept is similar to equivalent fractions. For example, when the ratio 1: 4 is multiplied by 2, it means multiplying both the terms in the ratio by 2. So, we get, $(1 \times 2) / (4 \times 2) = \frac{2}{8}$ or 2: 8. Here, 1:4 and 2:8 are equivalent ratios.

Similarly, the ratio 30: 10, when divided by 10, gives the ratio as 3:1. Here, 30:10 and 3:1 are equivalent ratios. So, equivalent ratios can be found by using the multiplication or division operation depending on the numbers.

What is a Ratio Table?

A ratio table shows a list of equivalent ratios that are obtained either by multiplying or dividing both the quantities by the same value. For example, if the ratio table starts with the ratio 1 : 3, then the successive rows will have 2:6, 3:9, 4:12, and so on. When these ratios are simplified, they represent the same value, that is, 1: 3.

What is the Golden Ratio?

A golden ratio is a distinct number whose value is approximately equal to 1.618. The symbol for this is a Greek letter 'phi' represented as ϕ . It is a special attribute and is used in art, geometry, and architecture because it is believed that the golden ratio makes the most pleasing and beautiful shape. It is also known as a divine proportion that exists between two quantities and the relationship for calculating the golden ratio is represented as $\phi = a/b = (a + b)/a = 1.61803398875...$ where a and b are the dimensions of two quantities and a is the larger between the two.

Why are Ratios Important?

Ratios are important because they allow us to express quantities in such a way that they are easier to interpret. It is a tool that is used to compare the size of two or more quantities with respect to each other. For example, if there are 30 girls and 20 boys in a class. We can represent the number of girls to the number of boys with the help of the ratio which is 3: 2 in this case.

What is the Ratio Formula?

The ratio formula is used to compare the relationship between two numbers or quantities. The general form of representing a ratio of between two quantities say 'a' and 'b' is **a: b**, which is read as '**a is to b**'.

What is Ratio and Proportion?

The ratio is the relationship or comparison between two quantities of the same unit to check how bigger is one number than the other one. It is written as a/b or $a : b$ where b is not equal to zero. A proportion is an equality of two ratios. Proportions are used to write equivalent ratios which helps to solve the unknown quantities. For example, a proportion is expressed as, $a : b = c : d$

How to Compare Ratios?

There are various methods to compare ratios. For example, let us compare $1 : 2$ and $2 : 3$ using the LCM method.

- Step 1: Write the ratios in the form of a fraction. Here, it means $1/2$ and $2/3$.
- Step 2: Reduce the fractions separately. Here, both the fractions $1/2$ and $2/3$ are already in their reduced form.
- Step 3: Now, compare $1/2$ and $2/3$ by finding the LCM (Least Common Multiple) of the denominators. The LCM of 2 and 3 is 6.
- Step 4: Make the denominators equal by multiplying the numerator and denominator of the first fraction by 3, that is, $(1 \times 3)/(2 \times 3) = 3/6$. Then, multiply the numerator and denominator of the second fraction by 2, that is, $(2 \times 2)/(3 \times 2) = 4/6$.
- Step 5: Now, $3/6$ and $4/6$ can be easily compared. This shows that $4/6$ is greater than $3/6$. Therefore, $2:3 > 1:2$.

How to Convert Ratios to Fractions?

Ratios can be written in the form of fractions in a very simple way. The antecedent is written as the numerator and the consequent is written as the denominator. For example, if we take the ratio $3 : 5$. Here, 3 is the antecedent, and 5 is the consequent. So, we can write it as $3/5$.

How to Convert Fractions to Ratios?

Fractions can be written in the form of ratios after simplification. This means, we first reduce the given fraction to its lowest terms and then write the numerator as the antecedent and the denominator as the consequent. For example, the fraction $16/48$ will first be reduced to $1/3$ and then it can be expressed in the form of a ratio as $1 : 3$.

How to Convert Ratios to Decimals?

Ratios can be easily converted to decimals by writing the ratio in the form of a fraction, and then the fraction is converted to a decimal by dividing the numerator by the denominator. For example, 3:7 can be written as $\frac{3}{7}$. Now, $\frac{3}{7} = 0.428$.

How to Convert Ratios to Percentages?

Ratios can be converted to percentages using the following steps. For example, let us convert 5: 6 in the form of a percentage.

- Step 1: Write the ratio in the form of a fraction. Here, 5: 6 can be written as $\frac{5}{6}$.
 - Step 2: Multiply this fraction by 100 and add the percentage symbol. In this case, $\frac{5}{6} \times 100 = 83.33\%$.
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Ratio And Proportion Maths MCQs FPSC, PPSC, NTS, KPPSC, SPSC & Other Tests

What is the ratio of Faheem's salary to Imran's salary to Naveed's salary if Faheem makes 80,000 rupees ,Imran 70,000 rupees and Naveed makes 50,000 rupees ?

- A. 4:7:5
- B. 8:7:5**
- C. 80:70:60
- D. 7:8:5

Two numbers are in the ratio 5:4 and their difference is 10.What is the largest number?



- A. 60
- B. 50**
- C. 40
- D. 30

In what ratio should the profit be divided if M, N, O invests capital in ratio 2:3:5 and their timing of their investments are in the ratio 4:5:6.

- A. 8:15:30**
- B. 4:5:6
- C. 5:18:28
- D. 2:3:5

A bag contains 50 paise, 1 rupee and 2 rupee coins in the ratio 2:5:8. If the total amount is Rs. 352, find the total number of coins in the bag.

- A. 200
- B. 160
- C. 250
- D. 240**

Three quantities X, Y and Z are such that $XY=kZ$ where k is constant. Initially, X was at 4 and $X:Y:Z$ was 2:3:4. If the value of Y is changed to 12 and Z is kept constant, find the value of X.

- A. 2**
- B. 5
- C. 3
- D. 6

Find the mean proportion between 5 and 45.

- A. 25
- B. 15**
- C. 9
- D. 50

If $X:Y = 2:3$, $Y:Z = 4:5$. Find $X:Y:Z$.

- A. 2:8:5
- B. 8:12:15**
- C. 2:3:5
- D. 2:7:5

The ratio of two numbers a and b is 3:5. If 2 is added to both the numbers, the ratio becomes 2:3. Find b.

- A. 8
- B. 10**
- C. 15
- D. 5

The plan for a rectangular area is drawn to a scale of 1:500. If the length and breadth in the plan is 30 cm and 20 cm, find the actual area.

- A. 1500 m²
- B. 1200 m²
- C. 12000 m²
- D. 15000 m²**

The length and breadth of a rectangle are in the ratio 5:4. Find its perimeter if its area is 180 cm²

- A. 54 cm**
- B. 12 cm
- C. 27 cm
- D. 15 cm

In what ratio should the profit of Rs.8000 be divided if X starts a business with an investment of Rs. 20000, Y invests Rs.7500 for 4 months and Z invests Rs.15000 after 3 months from the start of the business.

- A. 8 : 3 : 6
- B. 16 : 2 : 3
- C. 16 : 2 : 9**
- D. 6 : 9 : 1

M:N = 3:4, N:O = 5:7 and O:P = 7:9. Then M:P = _____?



- A. $\frac{7}{9}$
- B. $\frac{1}{3}$
- C. $\frac{5}{12}$**
- D. None of these

The perimeter of a triangle is 81 cm. If the sides are in the ratio 4:3:2, find the length of the largest side.

- A. 40 cm
- B. 45 cm
- C. 36 cm**
- D. 27 cm

The ratio of boys and girls in a class was 11:13. 8 girls and 4 boys join the class from this academic year and the ratio becomes 4:5. Find the strength of the class.

- A. 68
- B. 96
- C. 72
- D. 108**

A class has 90 students. If the ratio of boys and girls is 7:8, find the number of boys in the class.

- A. 60
- B. 42**
- C. 48
- D. 70

In a partnership for a business, Changaz invests Rs.6000 for complete year & Nasir invests Rs.3000 for 6 months. What is Nasir's share if they earn Rs.240 as profit?

- A. 80
- B. 120
- C. 192
- D. 48**

If $x\%$ of 200 = $y\%$ of 250, find $y:x$.

- A. 5:2
- B. 5:4
- C. 2:5
- D. 4:5**

A bag contains 1 rupee, 2 rupee and 5 rupee coins amounting to Rs.264. If the ratio of the number of these coins is 3:5:4, find the number of 1 rupee coins.

- A. 48
- B. 66
- C. 24**
- D. 8

Divide Rs.2000 into two shares in the ratio 3:2.

- A. Rs.1200, Rs.800**
- B. Rs.1500, Rs.500
- C. Rs.800, Rs.1200
- D. Rs.1100, Rs.900

The ratio of two numbers is 5:9. If each number is decreased by 5, the ratio becomes 5:11. Find the numbers.

- A. 21, 37
- B. 30, 19
- C. 15, 34
- D. 15, 27**

The third proportional to 3.5, 5.6 is:_____?

- A. 8.96**
- B. 4.5
- C. 8
- D. 6.2

According to a recipe, 400 grams of flour should be mixed with 500 grams

of sugar to bake cookies. If I have only 300 grams of flour, how much sugar should I mix to maintain the same proportion?

- A. 380
- B. 360
- C. 375**
- D. 400

X, Y and Z are quantities of the same kind such that $X:Y=5:8$ and $Y:Z=4:7$. Find X:Z.

- A. 67:56
- B. 32:35
- C. 5:14**
- D. 5:7

Two kinds of rice, 1st costs Rs.13 per kg and 2nd costs Rs.19 per kg are mixed together. Find the ratio in which the 2 types are mixed so that the mixture costs Rs.14.2 per kg?

- A. 3:4
- B. 4:1**
- C. 3:1
- D. 4:3

A, B, C and D divide a sum of money among themselves in the ratio 7:4:3:2. If D gets Rs. 500 less than A, find the total amount.

- A. Rs.700
- B. Rs.100
- C. Rs.1600**
- D. Rs.2000

x is 20% more than z and y is 80% more than z. Find x:y.

- A. 3:4
- B. 1:4
- C. 1:3
- D. 2:3**



Solve for x

$$2x:25 = 6:(x/3)$$

- A. 12
- B. 15**
- C. 18
- D. 5

Two natural numbers whose sum is 72 cannot be in the ratio:

- A. 3:5
- B. 1:2
- C. 1:3
- D. 3:4**

A journey of 750 km was covered partly by car(x km) and partly by train(y km). If the distance travelled by train was 150 km more than the distance travelled by car, find x:y.

- A. 2:3**
- B. 3:4
- C. 3:2
- D. 4:3

p is 50% more than q. Find the ratio of p to q.

- A. 3:2**
- B. 1:5
- C. 1:2
- D. 2:1

The sum of squares of three numbers is 280. If the numbers are in the ratio 3:5:6, find the greatest number.

- A. 6
- B. 8
- C. 12**
- D. 18

If a flat costs Rs.4500 per sq. ft, and a commercial space costs Rs.9500 per sq. ft, then what is the ratio of their areas if the total cost of both are the same?

- A. 15:28
- B. 19:9**
- C. 9:19
- D. 28:15

The sum of three numbers is 172. The ratio of the first and second numbers is 8:11. The ratio of the second and third is 5:7. Find the second number.

- A. 66
- B. 55**
- C. 44
- D. 77

4 singers, 5 dancers and 3 comperes divide an amount of Rs.130000 among themselves such that 3 comperes get as much as 2 dancers and 3 dancers get as much as 2 singers. Find the amount received by a singer.

- A. Rs.13000
- B. Rs.18000
- C. Rs.15000**
- D. Rs.10000

The sum of cubes of two numbers is 280. If the numbers are in the ratio 2:3, find the smallest number.

- A. 4**
- B. 3
- C. 6
- D. 2

Find the value of x when $y = 5$, if x varies directly as $4y-1$ and $x = 14$ when $y = 2$.

- A. 38**

- B. 10
- C. 35
- D. 28

The number of seats available for Biology and Computer Science in a school is in the ratio 5:8. They are to be increased by 30% and 25% . Find the new ratio.

- A. 3:4
- B. 13:20**
- C. 6:10
- D. 35:33

A:B=2:3, B:C=3:4, A:D=4:5. Find C:D.

- A. 4:5
- B. 2:5
- C. 6:5
- D. 8:5**

Find the fourth proportion to 3, 7 and 9.

- A. 31
- B. 63
- C. 21**
- D. 27

If 40% of a number is equal to two-third of another number, what is the ratio of first number to the second number ?

- A. 3 : 7
- B. 2 : 5
- C. 5 : 3**
- D. 7 : 3

Seats for Mathematics, Physics and Biology in a school are in the ratio 5 : 7 : 8. There is a proposal to increase these seats by 40%, 50% and 75% respectively. What will be the ratio of increased seats ?

- A. 2 : 3 : 4
- B. 6 : 8 : 9
- C. 6 : 7 : 8
- D. None of these

In a bag, there are coins of 25 p, 10 p and 5 p in the ratio of 1 : 2 : 3. If there is Rs. 30 in all, how many 5 p coins are there?

- A. 100
- B. 50
- C. 150
- D. 200

Two numbers are in the ratio 3 : 5. If 9 is subtracted from each, the new numbers are in the ratio 12 : 23. The smaller number is : _____?

- A. 33
- B. 27
- C. 49
- D. 55

Two numbers are respectively 20% and 50% more than a third number. The ratio of the two numbers is : _____?

- A. 3 : 5
- B. 2 : 5
- C. 4 : 5
- D. 6 : 7

A sum of money is to be distributed among A, B, C, D in the proportion of 5 : 2 : 4 : 3. If C gets Rs. 1000 more than D, what is B's share ?

- A. Rs. 1500
- B. Rs. 500
- C. Rs. 2000
- D. None of these

The ratio of the number of boys and girls in a college is 7 : 8. If the percentage increase in the number of boys and girls be 20% and 10%



respectively, what will be the new ratio ?

- A. 17 : 18
- B. 8 : 9
- C. 21 : 22**
- D. Cannot be determined

The sum of three numbers is 98. If the ratio of the first to the second is 2 : 3 and that of the second to the third is 5 : 8, then the second number is : _____?

- A. 48
- B. 30**
- C. 20
- D. 58

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