



## MATHS

### BOOKS - PEARSON IIT JEE FOUNDATION

### RATIO AND PROPORTION

#### Example

1. Write the following in their simplest forms.

(i)  $32 : 80$  (ii)  $\frac{8}{15} : \frac{7}{12}$

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2. Divide the amount ₹ 540 in the ratio 5 : 4

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3. 250 mL of water is added to 750 mL of milk. Find the ratio of milk and water in the solution.



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4. Check whether the following are in proportion or not :

(i) 2,4,6,8 (ii) 12, 18, 10 ,15



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5. Find the value of x, if 2, 16, 5 and x are in proportion.



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6. In a milk solution, water and milk are in the ratio of 2:15 . If the quantity of pure milk is 6L , then find the quantity of water in the solution.

A. 400ML

B. 900ML

C. 650ML

D. 800ML

**Answer:** *D*



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### Fill In The Blanks

1. A comparison between two quantities which is of the same kind and expressed in the same unit, it is obtained by dividing one of them by the other is called their \_\_\_\_\_.



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2. The simplest form of 8 :12 is \_\_\_\_\_



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3. The ratio of 15 cm to 12 cm is \_\_\_\_\_



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4. Consider the ratio 2:3 . Ther consequent and antecendent are doubled and tripled respectively. Ther resultant ratio is \_\_\_\_\_



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5. The ratio of  $3^2 : 3^0$  is \_\_\_\_\_



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6. Four quantities a,b,c d are siad to be proportion if \_\_\_\_\_



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7. If 1,2,3 x are in proportions then  $x =$  \_\_\_\_\_



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8. if p,q,r and s are in proportion then  $\frac{p}{q} =$  \_\_\_\_\_



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9. if 3, x, 6, 12 are in proportion , then  $x =$  \_\_\_\_\_



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10. if  $x : 5 :: 4 : 20$ , then  $x =$  \_\_\_\_\_



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1. Which of the following statement (s) is ? Are ture?

(A) Ratio has no units

(B)  $a : b$  is the same as  $b : a$

A. only A

B. only B

C. A and B

D. Neither A nor B

**Answer: A**



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2.  $\frac{2}{3} : \frac{4}{9}$  is equal to \_\_\_\_\_

A. 18:12

B. 6:4

C. 3:2

D. All of these

**Answer: D**



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3. Given that  $c > 0$ . Which of the following is equal to  $a:b$  ?

A.  $(a + b) : (b + c)$

B.  $(a-c) : (b-c)$

C.  $\frac{a}{c} : \frac{b}{c}$

D. All of these

**Answer: C**



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4. The ratio of 75 paise to ₹ 10 is \_\_\_\_

A.  $15:2$

B.  $3:40$

C.  $3:4$

D.  $75:1000$

**Answer: B**



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**5. The ratio of 10 m to 1 km is \_\_\_\_**

A.  $10:1$

B.  $1:10$

C.  $1:100$

D.  $100:100$

**Answer: C**



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6. Which of the following is true ?

A. 2,5,7,10 are in proportion.

B.  $4:3 :: 8:6$

C. if  $a : b : c : d$  , then  $b : c : x$  is

D. None of the above

**Answer: B**



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7. If  $x : 12 :: 12 : 18$ . then  $x$  is

A. 6

B. 8

C. 10

D. 4

**Answer: B**



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8. if  $\frac{1}{2}, \frac{1}{3}, \frac{1}{4} : x$  then x is \_\_\_\_\_

A.  $\frac{1}{8}$

B.  $\frac{1}{6}$

C.  $\frac{1}{12}$

D.  $\frac{1}{16}$

**Answer: B**



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9. The ratio of the areas of two squares is 1:4 .if the area of the first is 9 sq. units . The area of the first square is \_\_\_\_ ( in sq. units)

A. 16

B. 36

C. 64

D. 49

**Answer: B**



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10. The length and the breadth of a rectangle are in the ratio 12: 5. if the length of the rectangle is 48 cm , then the breadth of the rectangle is \_\_\_\_\_

A. 20 cm

B. 30 cm

C. 40 cm

D. 50 cm

**Answer: A**



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**Match Column A And B**

Column A

Column B

$$(a) \frac{1}{3} : \frac{2}{5}$$

$$(p) 20 : 3$$

1.  $(b) \frac{3}{4} : \frac{5}{2}$

$$(q) 3 : 10$$

$$(c) \frac{2}{3} : \frac{3}{5}$$

$$(r) 5 : 6$$

$$(d) \frac{4}{3} : \frac{1}{5}$$

$$(s) 10 : 9$$



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column A      column B

(a)  $x:5::2:3$     (p)  $\frac{6}{5}$

2. (b)  $2:x::4:3$     (q)  $\frac{15}{2}$

(c)  $2:5::x:3$     (r)  $\frac{10}{3}$

(d)  $2:5::3:x$     (s)  $\frac{3}{2}$



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### Short Answer Type

1. Find the ratio of the following and express them in the simplest form

(i) 360 mL , 500 mL (ii) 4 h 20 min , 6 h



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2. Express the following in the simplest form.

(i)  $4\frac{1}{2}:2\frac{3}{4}$  (ii)  $2\frac{3}{8}:3\frac{5}{6}$



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3. find the greatest ratio of the following 1 : 6 , 3: 8 (ii) 9: 16: 5 : 12



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4. Shantan got 68 marks in English and 85 marks in Mathematics. Find the ratio of the marks scored in English to the Matematics.



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5. A sweet maker mixes sugar, milk and other ingredients in the ratio 4: 9:3. in 2 Kg of such sweet. Find the quantity of sugar.



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6. Mr Arunachalam earned ₹ 48,800 in a month. He spent ₹24,000. find the ratio of (i) the earnings to expenditure and (ii) expenditure to savings.

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7. Mr Mallanna wants to distribute watermelon to his three daughters in the ratio 2:3:4. such that the eldest daughter gets the highest share . If the eldest daughter gets least share. If the eldest daughter gets 250 g more than that of the youngest then find the total weight of the watermelon distributed.

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8. A vegetable seller sells tomato, bringal and cauliflower in the ratio 1 : 3 : 5. If their total wight is 178 kg, then find the weight of cauliflower.

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9. There are three numbers which are in the ratio  $3 : \frac{4}{7} : \frac{2}{5}$  if the sum of the numbers is 278 , then find the three numbers.

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**10.** In a school, there are 720 students. If there are 300 boys, then find the ratio of the number of girls to that of boys.



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**11.** Check whether the following sets of numbers are in proportion or not in the given order.

(i) 2, 3, 2016, 2019

(ii) 12, 15, 32, 40



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**12.** Find the value of  $x$  in each of the following proportions.

(i)  $17: 68 :: 7 : x$  (ii)  $14 : 42 :: x: 27$



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**13.** Arrange the followings sets of numbers in the order such that they should be in proportion. Hence, find the product of extremes.

(i) 40, 18, 63, 20 (ii)  $\frac{1}{4}, \frac{2}{3}, \frac{1}{3}, \frac{1}{8}$



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**14.** In Rahul's house every person eats 3 mangoes. There are 8 members in Rahul's house. If Rahul brings 24 mangoes, what is the ratio of the numbers representing the persons and the mangoes in proportions ?



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**15.** A student Gaurav of weight 50 kg secured 150 marks. Another student Saurav of weight 40 kg proportion to their marks, how much did Saurav score the exam ?



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**16.** A and B's savings are in proportion to the ratio of their incomes. A's income is ₹12,000. and his savings is ₹ 4000. if B's savings is ₹12,000, then find the income of B.



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**17.** Mr Kalyan and his wife Mrs Ahalya use different two- wheelers. The quantity of petrol they use in liters is in proportion to the ratio of the number of kilometers they travel in a month. Mr kalyan uses 24 L of petrol and he travels a distance of 1200 km. if Mrs Ahalya travls 800 km, then find the number of liters of petrol that she uses in a month.



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**18.** At a given point of time, the heights of trees are in proportion to the lengths of the shadows of the trees. A tree of height 25.6 m casts a shadow of 32 m. if the shadow of another tree at that point of time is 48m, then find the height of that tree.

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19. In the construction of a building , the volume of the walls is in proportion to the cost of construction. If a wall of volume  $24m^3$  cost ₹ 18,600. then find the cost of construction of a wall of volume  $36m^3$

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### Concept Application

1. P and Q's expenditures are in proportion to the ratio of their incomes. P's income is ₹ 32000 and his expenditure is ₹ 24000. if Q's expenditure is ₹ 36000, then find the income of Q.

A. ₹ 42000

B. ₹ 39000

C. ₹ 48000

D. ₹ 45000

**Answer: c**



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2. If  $x + 1$ ,  $x-3$ ,  $x+6$  and  $x$  are in proportion, then  $x =$  \_\_\_\_

A. 9

B. 12

C. 7

D. 4

**Answer: A**



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3. If we distribute 57 chocolates to three friends, A,B and C in the ratio respectively, then find the number of chocolates received by C.

A. 19

B. 27

C. 24

D. 15

**Answer: B**



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4. if  $3 \text{ kg } 500\text{g} : 7 \text{ kg} :: 27 \text{ kg} : m \text{ kg}$ , then  $m = \underline{\hspace{2cm}}$

A. 36

B. 360

C. 540

D. 54

**Answer: D**



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5. In an exam the marks secured by Manish and Nagesh are in the ratio 5:4 , if Manish secured 12 marks more than Nagesh, then how many marks did Nagesh secure in that exam?

A. 108

B. 48

C. 60

D. 16

**Answer: B**



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1. Find the ratio of the following

(i) 36 g, 54 g (ii) 24 L, 20 L 800 mL



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2. The angles of a triangle are  $40^\circ$ ,  $60^\circ$  and  $80^\circ$ . Find the ratio of the angles in the same order of the triangle .



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3. Divide ₹ 3600 in the ratio 7:5



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4. The ratio of the ages of A and B is 3:8, if B's age is 24 years, then find the age of A.



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5. In a basket, the number of blue, red and green balls are in the ratio 4 : 5:9. if there are a total of 960 balls, then find the number of green balls.



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6. Check the following sets of numbers , whether they are in propotion.

(i) 2,3,6,9 (ii)  $\frac{2}{3}, \frac{3}{4}, \frac{5}{6}, \frac{3}{5}$



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7. Find the value of x in each of the following

(i) 2 : 5 :: x : 20 (ii) x : 10 :: 15 : 30



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8. In a class, there are 70 students. If the ratio boys to girls is 5:2, then find the number of girls in the class.





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9. the amount with A is ₹250 and his age is 25 years. Amount with B is ₹ 400. if the ratio of the amounts of A and B are in proportion to the ratio of their ages, then find the age of B.



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10. In a proportion the product of extremes is 144. if one of the means is 9, then find the other.



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11. Can the following measures be compared using the concept of ratio ?

(i) The length ( in cm) of the soft drink can in the freezer and temperature inside the freezer in  $^{\circ}C$

(ii) Average weight ( in kg) of boys in a class and average weight (in kg) of girls in that class.



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**12.** Find the ratio of the following.

(i) 12 g and 120 g

(ii) 360 L and 540 L



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**13.** Ram and Sham are told by their mother to divide 68 chocolates in the ratio 6: 11. How many chocolates do each one of them get?



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**14.** Are the following ratio in proportion ?

(i) 3.2: 4 and 8 : 10

(ii) 1:2 and 2:1



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15. find the value of the term a in the following proportion.

$6: 18 :: a : 54$

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Crossword

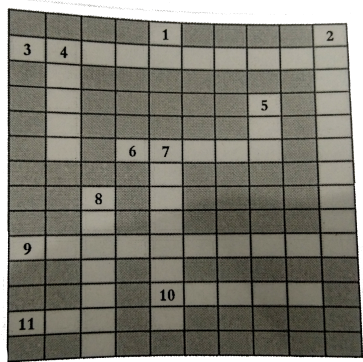
1.

Across

- 3. the equality of ratios
- 6. b and c in  $a:b :: c:d$
- 9. b in  $a:b$
- 10. The ratios 4 :6 and 6:9 are
- 11.  $a:b$  is in its lowest terms, the HCF of a and b is

Down

- 1. Does ratio have u
- 2. a in  $a :b$
- 4. comparison of simil
- 5. Are 12.15.20 and 25
- 7. a and d in  $a: b::c:d$  i
- 8. Two-fifth of 250is





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