1. Are the following numbers in proportion?

(a) 3, 7, 12, 10

(d) 48, 12, 4, 1

(c) 12, 6, 18, 2

(d) 6, 20, 8, 11

(e) 120, 50, 60, 5

(f) 250, 100, 10, 4

Solution: -

(d) 6, 20, 8, 11

Here , Product of extremes = 6 X 11 = 66

Product of means = 20 X 8 = 160

Since 66 # 160 , therefore 6, 20, 8, 11 are not in proportion.

2. Find the value of x in each of the following:

(a) 15:x:: 5:3   (b) x :9 :: 21 :27   (c) 81:x ::x : 36

Solution : -

If 15:x :: 5:3

Product of extremes = product of means

Or, 15 3 = 5 x

Or, 45 = 5x

Or, x = 45/5 = 9

(c) 81:x ::x : 36

Product of extremes = product of means

Or, 81 × 36 = x × x

Or, $x^2 = 2916$

Or, $x^2 = 54^2$

Or, x = 54

3. Verify if the following are proportional

(a) 28, 56, 10, 20

(b) 80, 16, 125, 25

(e) 3,7, 18, 126

 (d) 27, 3, 90, 10

(c) 4, 10, 32, 6

(f)   40, 4, 1000, 250

Solution: -

(e) 3,7, 18, 126

Product of extremes = 3 × 126 = 378

product of means = 7 × 18 = 126

Since 378 # 126 , therefore 3,7, 18, 126 are not in proportion.

4. Find the first term of the proportion where second, third and fourth terms are 18, 12 and 27, respectively

Let first term $= x$

then x, 18 , 12 , 27 are in proportion

Product of extreme = product of means

Or, x $\times$ 27 = 18 $\times$ 12

Or, x =

Or, x = 8

Therefore first term = 8

5. Find the second term of the proportion where first, third and fourth term are 17, 86, 172, respectively.

6. Find the mean proportion between 20 and 5.

Let x be the mean proportion.

20 : x :: x : 5

Product of extremes = Product of means

20 $\times$ 5 = x $\times$ x

x $\times$ x = 100

Or, x $\times$ x = 10 x 10

x= 10

Therefore mean proportion = 10

7. Find the third proportion to 36 and 12.

8. Find x such that the numbers 13, 12, 52 and x are in proportion.

9. The cost of a dozen Kiwi fruit is 96. What is the cost of 18 such Kiwis?

10. The weight of 12 similar pieces of Jaggery is 800 g. What is the weight of 21 such pieces of Jaggery?

11. Mahima read 100 pages of a book in 90 minutes. How long will she take to read 300 pages at the same pace?

Solution:-

To read 100 pages time taken = 90 minutes

To read 1 page time taken = 90/100 minutes

To read 300 pages time taken = (90 × 300)/100 minutes

$$= 270 \text{ Minutes} = 4 \text{ Hrs } 30 \text{ Minutes}$$

12. Five rolls of a ribbon had a total of 58 m. How many rolls would have 29 m?

13. The ratio of the expenditure to the income of a family is 4 : 9. Find the income of the family if their savings is ₹ 4500.

EXERCISE : 9.3

1. The cost of 20 pens is 240. Find the cost of 60 pens.

2. Paula bakes 30 mufins in one and a half hours. How long will she take to bake 18 muffins?

3. 70 kg of rice costs 4200. How much will 12 kg of rice cost?

4. Tim earns 18,500 in 17 days. How much will he earn in 51 days?

5. The cost of 6 headphones is 42,000. How many headphones can be bought for 98,000?

Solution:

No of headphones for 42,000 = 6

No of headphones for 1= 6/42,000

No of headphones for 98,000 = (6X98000)/42000

$$= 14$$

Therefore with Rs 98,000 we can buy 14 headphones.

6. 1200 kg of rice is packed in 18 sacks. How many sacks would 800 kg of rice require for packing?

7. A train covers 99 km in one and a half hours. What will be the distance covered by it in 4 hours?

Solution:

[One and a half hours = 90 minutes]

In 90 minutes the train covered a distance = 99 km

In 1 minute the train covered a distance = 99/90 km

In 240 minutes the train covered a distance = (99X 240)/90 km

$$= 264 \text{ km.}$$

8. The cost of 6 chairs is 5400. Find the cost of each chair.

9. Karan planted 88 saplings in 11 days. How many days will he take to plant 264 saplings? How many saplings will he plant in 20 days?

Solution :

To plant 88 saplings Karan took = 11 days

To plant 1 sapling Karan took = 11/88 day

To plant 264 saplings Karan took = (11X264)/88 days

$$= 11 \text{ X } 3 \text{ days} = 33 \text{ days}$$

Also / Second part

In 11 days Karan planted = 88 saplings

In 11 days Karan planted = 88/11 saplings

In 20 days Karan planted =(88X20)/11 saplings

= 160 saplings

10. Raghu did 24 pushups in 6 minutes. How much time will he take to do 52 pushups?

11. The cost of 3 dozen bananas is 45. How many bananas can be purchased for 15?

12. The cost of 30 pairs of socks is 600. Find the cost of 18 pairs of socks.

13. Seema spends 24,000 in 4 months. How many months will she take to spend 66,000?