



# MATHS

## BOOKS - VGS PUBLICATION-BRILLIANT

### DIRECT AND INVERSE PROPORTION

#### Exercise

1. Write five more such situations where change in one quantity leads to change in another quantity.



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2. Write three situations from your daily life in which you see direct proportion.



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3. Take a graph paper make same rectangles of same length and different width. Find the area for each. What can you conclude about the breadth and area?



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4. If the cost of 65 tea-packets of the same size is ₹2600, what is the cost of 75 such packets?



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5. A pole of 8 m height casts a 10m long shadow. Find the height of the tree that casts a 40 in long shadow under similar conditions.



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6. If a pipe can fill a tank of capacity 50 l in 5 hours. Then how long will it take to fill a tank of capacity 75 l.



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7. If the cost of 20m of a cloth is ₹ 1600, then what will be the cost of 24.5 m of that cloth.



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**8.** The cost of 5-meters of a particular quality of cloth is ₹210. Find the cost of 2 meters of cloth of the same quality.



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**9.** The cost of 5-meters of a particular quality of cloth is ₹210. Find the cost of 4 meters of cloth of the same quality.



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**10.** The cost of 5-meters of a particular quality of cloth is ₹210. Find the cost of 10meters of cloth of the same quality.



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**11.** The cost of 5-meters of a particular quality of cloth is ₹210. Find the cost of 13 meters of cloth of the same quality.



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**12.** 48 bags of paddy costs ₹ 16,800 then find the cost of 36 bags of paddy.



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**13.** The monthly average expenditure of a family with 4 members is ₹ 2,800. Find the monthly average expenditure of a family with only 3 members.



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**14.** In a ship of length 28 m, height of its mast is 12 m. If the height of the mast in its model is 9 cm what is the length of the model ship?



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**15.** A vertical pole of 5.6 m height casts a shadow 3.2 m long. At the same time find (i) the length of the shadow cast by another pole 10.5 m high



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**16.** A vertical pole of 5.6 m height casts a shadow 3.2 m long. At the same time find (ii) the " height of a pole which-casts a shadow 5 m long.



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**17.** A loaded truck travels 14 km in 25 minutes. If the speed remains the same, how far can it travel in 5 hours?



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**18.** If the weight of 12 sheets of thick paper is 40 grams, how many sheets of the same paper would weigh  $16\frac{2}{3}$  kilograms?



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**19.** A train moves at a constant speed of  $75\frac{m}{h}$ . (i) How far will it travel in 20 minutes?



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**20.** A train moves at a constant speed of  $75 \frac{m}{h}$ . (ii) Find the time required to cover a distance of 250 km.



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**21.** The design of a microchip has the scale 40:1. The length of the design is 18 cm, find the actual length of the microchip.



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**22.** The average age of consisting doctors and lawyers together is 40. If the doctors average age is 35 and the lawyers average age is 50, find the ratio of the number of doctors to the number of lawyers.



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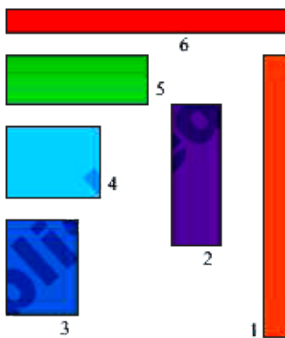
**23.** Write three situations from your day-to-day life where you see inverse proportion.



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**24.** To make rectangles of different dimensions on a squared paper using 12 adjacent squares. Calculate length and breadth of each of the rectangles so formed. Note down the values in the following table

Rectangle Number	Length (in cm)	Breadth (in cm)	Area (sq.cm)
1	$l_1$ .....	$b_1$ .....	.....
2	$l_2$ .....	$b_2$ .....	.....
3	$l_3$ .....	$b_3$ .....	.....
4	$l_4$ .....	$b_4$ .....	.....
5	$l_5$ .....	$b_5$ .....	.....
6	$l_6$ .....	$b_6$ .....	.....



What do you observe? As length increases, breadth decreases and vice-versa (for constant area).

Are length and breadth inversely proportional to each other?



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**25.** If 36 men can built a wall in 12 days, then 16 men can built the same wall iin \_\_\_\_\_ days.



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**26.** Ration is available for 100 students in a hostel for 40 days. How long will it be last, if

20 more students join in the hostel after 4 days?



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27. A car takes 4 hours to reach the destination by travelling at a speed of  $60k \frac{m}{h}$ .

How long will it take if the car travels at a speed of  $80k \frac{m}{h}$ ?



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**28.** 6 pumps are required to fill a tank in 1 hour 20 minutes. How long will it take if only 5 pumps of the same type are used?



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**29.** Siri has enough money to buy 5 kg of potatoes at the price of ₹8 per kg. How much can she buy for the same amount if the price is increased to ₹10 per kg ?



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**30.** A camp has food stock for 500 people for 70 days. If 200 more people join the camp, how long will the stock last?



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**31.** 36 men can do a piece of work in 12 days. In how many days 9 men can do the same work?



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**32.** A tank can be filled by 5 pipes in 80 minutes. How long it will take to fill the tank by 8 pipes of same size?



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**33.** A ship can cover a certain distance in 10 hours at a speed of 16 nautical miles per hour. By how much should its speed be increased so that it takes only 8 hours to cover the same distance? (A nautical mile is a unit of

measurement used at sea distance or sea water i.e.1852 metres).



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**34.** 5 pumps are required to fill a tank in  $1\frac{1}{2}$  hours. How many pumps of the same type are used to fill the tank in half an hour.



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**35.** If 15 workers can build a Wall in 48 hrs, how many workers will be Required to do the same work in 30 hrs?



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**36.** A school has 8 periods a day each of 45 minutes duration. How long would each period become, if the school has 6 periods a day? (assuming the number of school hours to be the same).





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**37.** If  $z$  varies directly as  $x$  and inversely as  $y$ .  
Find the percentage Increase in  $z$  due to an increase of 12% in  $x$  and a decrease of 20% in  $y$ .



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**38.** If  $x + 1$  men will do the work in  $x + 1$  days, find the number of days that  $(x+2)$  men can finish the same work.



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**39.** Consider the mess charges for 35 students for 24 days is ₹ 6300. How much will be the mess charges for 25 students for 18 days ?



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**40.** 24 workers working 6 hours a day can finish a piece of work in 14 days. If each worker works 7 hours a day, find the number of

workers to finish the same piece of work in 8 days.



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**41.** 12 painters can paint a wall of 180 m long in 3 days. How many painters are required to paint 200 m long wall in 5 days?



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**42.** Rice costing ₹ 480 is needed for 8 members for 20 days. What is the cost of rice required for 12 members for 15 days?



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**43.** 10 men can lay a road 75 km long in 5 days..  
In how many, days can 15 men lay a road 45 km long?



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**44.** 24 men working at 8 hours per day can do a piece of work in 15 days. In how many days can 20 men working at 9 hours per day can complete the same work?



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**45.** 175 men can dig a canal 3150 m long in 36 days. How many men are required to dig a canal 3900 m long in 24 days?



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46. If 14 typists typing 6 hours a day can take 12 days to complete the manuscript of a book, then how many days will 4 typists, working 7 hours a day, can take to do the same job?



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47. If  $x$  is directly proportional to  $y$  then which of the following is correct ?

A.  $x \propto \frac{1}{y}$

B.  $xy = \frac{1}{k}$

C.  $\frac{x}{y}=k$

D.  $X = y$

**Answer:**



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**48.** If  $x$  is inversely proportional to  $y$  then

Which of the following is true?

A.  $xy = k$

B.  $\frac{x}{y}=k$

C.  $\frac{1}{x} = \frac{1}{y}$

D.  $xy = x + y$

**Answer:**



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**49.** If the cost of 65 packets of tea is 2600, then the cost of 75 packets of tea is

A. 2000

B. 3000

C. 2500

D. 3500

**Answer:**



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**50.** If A pump can take 5 hrs to fill a 50 l of tank then how much time to take to fill a 75 litres of tank for the same pump?

A. 7 hrs

B.  $5\frac{1}{2}$ hrs

C.  $6\frac{1}{2}$ hrs

D.  $7\frac{1}{2}$ hrs

**Answer:**



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**51.** The cost of 20 m of cloth is 1600 then the cost of 24.5 m of cloth is

A. 1970

B. 1960

C. 1860

D. 1260

**Answer:**



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**52.** If 36 men can built a wall in 12 days, then 16 men can built the same wall iin \_\_\_\_\_ days.

A. 27

B. 18,

C. 35

D. 36

**Answer:**



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**53.** 6 pumps take 1 hr 20 minutes to fill a Tank.

If 5 pumps are opened then they fill the tank in

\_\_\_\_\_ mins.



A. 106

B. 86

C. 96

D. 92

**Answer:**



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**54.**  $111: 125 = \text{-----}\%$

A. 88.8

B. 16.8

C. 81.8

D. 171

**Answer:**



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**55.** The ratio of present ages of P and Q is 3:8 and after 6 years their ages ratio is 4:9 then the age of P at present is \_\_\_\_\_ Years,

A. 16

B. 19

C. 18

D. 20

**Answer:**



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**56.** Consider the mess charges for 35 students for 24 days is ₹ 6300. How much will be the mess charges for 25 students for 18 days ?

A. 3375

B. 3475

C. 3385

D. 3365

**Answer:**



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**57.** 24 men can do a work in 14 days by working 6 hours a day. If' the work is to be completed

in 8 days by working to \*7 hours per day how many men are required?

A. 16

B. 36

C. 27

D. 46

**Answer:**



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58. No. of painters and the length of a wall are in \_\_\_\_\_ proportion.

A. Equal

B. Directed

C. Inverse

D. None

**Answer:**



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59. Number of workers  $\alpha$  \_\_\_\_\_

A.  $\frac{I}{\text{Number of days}}$

B. No. of days

C.  $\frac{7}{\text{Number of days}}$

D. None

**Answer:**



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60. Distance =

A.  $Time \frac{e}{s} speed$

B. Time  $\times$  2

C. Time  $\times$  Speed

D. None

**Answer:**



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61. If  $x \propto \frac{1}{y} \Rightarrow xy = k$  then  $k$  is a \_\_\_\_\_

A. Speed



B. Zero

C. 10

D. Constant

**Answer:**



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**62.** If,  $x_1y_1 = x_2y_2$  and  $x_1, y_1, x_2, y_2$  are any 4 observations then they are in \_\_\_\_\_ Proportion.

A. Equal

B. Inverse proportion

C. Direct proportion

D. None

**Answer:**



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**63.** If a car travels 60 kmph then it reaches the destination in 4 hours. If the car. Travels at 80 kmph then the time taken by car is \_\_\_\_\_ hrs

A. 10

B. 4

C. 6

D. 3

**Answer:**



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**64.** A camp has food stock for 500 people for 70 days. If 200 more people join the camp, how long will the stock last?

A. 50

B. 60

C. 70

D. 90

**Answer:**



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**65.** If  $(a+A)$  workers (In number) will do a Work in  $(a+A)$  days then in how many days will  $(a+2x)$  members of workers do the work ?

A.  $\frac{a + 2}{(a + 1)^2}$

B.  $\frac{(a + 1)^2}{a}$

C.  $\frac{a + 1}{a + 2}$

D.  $\frac{(a + 1)^2}{a + 2}$

**Answer:**



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**66.** If 15 workers can build a Wall in 48 hrs, how many workers will be Required to do the same

work in 30 hrs?

A. 24

B. 10

C. 19

D. 20

**Answer:**



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67. 48 bags of paddy costs ₹ 16,800 then find the cost of 36 bags of paddy.

A. 10300

B. 11600

C. 10600

D. 12600

**Answer:**



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68. Area of rectangle= \_\_\_\_\_ sq. units.

A.  $l^2 + b$

B.  $l + b$

C.  $\frac{l}{b}$

D.  $lb$

**Answer:**



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**69.** Which of the following situation is in direct proportion ?

A. Number of students and teachers in A school

B. Number of workers: length of wall constructed

C. Number of animals, the quantity of food they eat

D. All the above

**Answer:**



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**70.** Identify Inverse proportion in the  
Following

A. Time – speed

B. Time – ability to do the work

C. Distance – speed

D. All the above

**Answer:**



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71. Inverse ratio of 5:6 is \_\_\_\_\_

A. 0.0451388888888889

B. 0.253472222222222

C. 0.2125

D. 0.250694444444444

**Answer:**



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72. Mean proportion of 1.2 and 4.8 is \_\_\_\_\_

A. 2.4

B. 4.2

C. 3.2

D. 4.1

**Answer:**



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73. If 2.8, 7, 12 and  $x$  are in proportion then  $x =$

A. 20

B. 31

C. 30

D. 40

**Answer:**



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74. 3 minutes: 50 seconds= \_\_\_\_\_

A. 0.75

B. 3.6

C. 0.045

D. 0.085

**Answer:**



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75. The cost of 5 litres of petrol is 110 then the cost of 8 litres is \_\_\_\_\_

A. 671

B. 176

C. 186

D. 216

**Answer:**



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**76.** A car reaches 300 km in 6 hours then how much distance is travelled by the car in 8 hours ?

A. 100 km

B. 200 km

C. 900 km

D. 400 km

**Answer:**



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77. The cost of 12 fruits is 27 then the Cost of 18 fruits of same type is \_\_\_\_\_

A. 1

B. 20

C. 16

D. None

**Answer:**



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78. A tailor will stitch 9 shirts in 4 days then in 16 days how many shirts he will stitch?

A. 30

B. 36

C. 12

D. 19

**Answer:**



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79. A train travels  $2\frac{1}{2}$  hrs at 90 kmph to travel the same distance how much speed is required for the train?

A.  $112\frac{1}{2}k\frac{m}{h}rs$

B.  $110k\frac{m}{h}rs$

C.  $141\frac{1}{2}km/hrs$

D. None

**Answer:**



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80. In  $x$  24% value is 48, then  $x =$  \_\_\_\_\_

A. 100

B. 200

C. 150

D. 110

**Answer:**



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81. The compound ratio of 3:4 and 5:6 is

-----

A. 2:3

B. 4:3

C. 5:8

D. 7:8

**Answer:**



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82. The cost of ₹25 kg potatoes is 125 then for ₹15 how many kilograms can be Purchased?

A. 9

B. 1

C. 3

D. 4

**Answer:**



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**83.** 30 labourers can built a wall in 9 days. If the same wall is to be built by 20 labourers how many days they will take to complete it?

A. 14

B.  $13\frac{1}{2}$

C. 16

D.  $19\frac{1}{2}$

**Answer:**



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84. 9% = \_\_\_\_\_

A. 0.09

B. 0.9

C. 0.9

D. 9

**Answer:**



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85. A:B=5: 8 and B: C= 16: 25 then A:C= \_\_\_\_\_

A. 0.089

B. 0.38

C. 0.4

D. 0.670

**Answer:**



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86.  $X:6:: 5:3$  then  $x$  \_\_\_\_\_

A. 9

B. 3

C. 6

D. 10

**Answer:**



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87. The cost of 9 toys is ₹333 then the cost of 16 such toys is \_\_\_\_\_

A. 592

B. 612

C. 169

D. 181

**Answer:**



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**88.** 48 men can dig a trench in 14 days then how many days will be taken by 28 men to dig the same trench?

A. 13

B. 16

C. 24

D. 42

**Answer:**



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**89.** 21 cows will take the food which is equal to the amount of food taken by 15 buffalo's then how many cows will take the food that is taken by 35 buffalo's?

A. 10

B. 2

C. 3

D. None

**Answer:**



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**90.** To travel a distance of  $255 \text{ km}$  a car needs  $15 \text{ litres}$  of petrol. If the car has to travel a distance of  $374 \text{ km}$  how many *litres* of petrol is required?

A. A.) 10

B. B.) 22

C. C.) 16

D. D.) 9

**Answer:**



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91. The Value of  $300:40 = \underline{\hspace{2cm}}$  .

A. A.) 0.044444

B. B.) 0.1673611

C. C.) 0.08541667

D. D.) 7.50

**Answer:**



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**92.** For a group of 500 members is a food provision for 24 days. If 300 more Joined in the group for how many days the food will be sufficient?

A. 15

B. 10

C. 9

D. 4

**Answer:**





93. A train takes 45 minutes to travel 51 kms. If the same train travels 221 kms, how much time is taken by it?

A. A.) 16 hrs 12 min

B. B.) 3 hrs 15 min

C. C.) 3 hrs 20 min

D. D.) 2 hrs 20 min

**Answer:**



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94. Mean proportion of 8 and 18 is \_\_\_\_\_

A. 10

B. 16

C. 12

D. 9

**Answer:**



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95. The cost of half meter cloth is ₹ 30 then the cost of  $2\frac{3}{5}$  m is \_\_\_\_\_

A. 10

B. 20

C. 16

D. None

**Answer:**



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96.  $37.5\% = \underline{\hspace{2cm}}?$

A.  $\frac{1}{2}$

B.  $\frac{9}{8}$

C.  $\frac{3}{8}$

D.  $\frac{8}{3}$

**Answer:**



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