MATHS

BOOKS - ASHOK PUBLICATION ASSAM

Direct and Inverse Proportions

Example

1. Following are the car parking charges near railway station upto

4	hours	Rs.	60
8	hours	Rs.	100
12	hours	Rs.	140
24	hours	Rs.	180

Check if the parking charges are in direct proportion to the parking tiime.

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2. A mixture of paint is prepared by mixing 1 part of red pigments with 8 parts of base. In the following table, find the parts of base that

need to be added.

Parts of red pigment	1	4	7	12	20
Parts of base	8	...	....	...	...

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3. If 1 part of a red pigment requires 75 ml of base, how much red pigment should we mix for 1800 mL of base?

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4. A machine in a soft drink factory fills 840 bottles in six hours. How many bottles will it fill in five hours?

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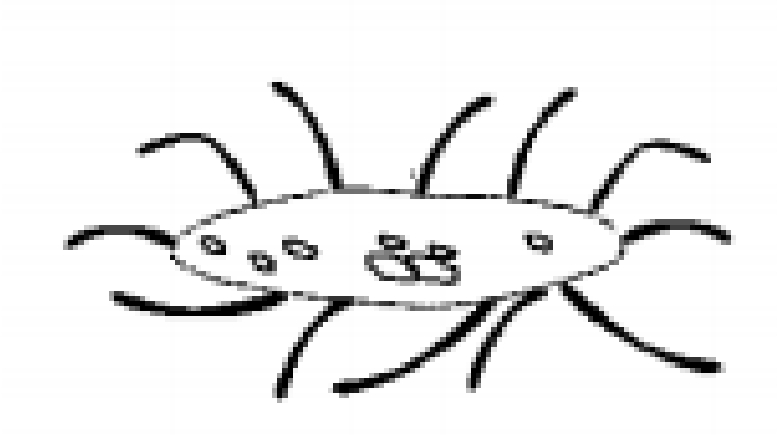
5. A photograph of a bacteria enlarged 50,000 times attains a length of 5 cm as shown in the diagram. What is the actual length of the bacteria? If the photograph is enlarged 20,000

times only, what would be its enlarged length?



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6. In a model of ship, the mast is 9 cm high, while the mast of the actual ship is 12 m high. If the length of the ship is 28m, how long is

the model ship?

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7. Suppose 2 kg of usgar contains 9×10^6 crystals. How many sugar crystals are there in 5 kg of sugar?

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8. Suppose 2 kg of usgar contains 9×10^6 crystals. How many sugar crystals are there in 1.2 kg of sugar?

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9. Rashmi has a road map with a scale of 1cm representing 18 km. She drives on a road for 72 km. What would be her distance covered in the map?

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10. A 5m 60 cm high vertical pole caste a shadow 3m 20 cm long. Find at the same time (i) the length of the shadow cast by another pole 10 m 50 cm high (ii) the height of apole which caste a shadow 5m long.

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

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12. Which of the following are inverse proportion?

The number of workers on a job and the time to complete the job.

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13. Which of the following are inverse proportion?

The time taken for a journey and the distance travelled in a uniform speed.

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14. Which of the following are inverse proportion?

Area of cultivated land and the crop harvested.

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15. Which of the following are inverse proportion?

The time taken for a fixed journey and the speed of the vehicle.

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16. Which of the following are inverse proportion?

The population of a country and the area of land per person.

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17. In a Television game show, the prize money of Rs. 1,00,000 is to be divided equally amongst the winners. Complete the following table and find whether the prize money given to an individual winner is directly or inversely proportional to the number of winners?

Number of winners	1	2	4	5	8	10	20
Prize for each winner (in Rs)	1,00,000	50,000	...				

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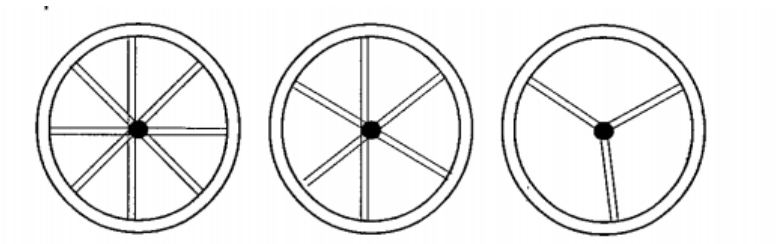
18. Rehman is making a wheel using spokes. He wants to fix equal spokes are equal. Help him by completing the following table.



Number of spokes	4	6	8	10	12
Angle between a pair of consecutive spokes	90°	60°	...	...	...

Are the number of spokes and the angles formed between the pairs of consecutive sopkes in inverse proportion?

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19. Rehman is making a wheel using spokes. He wants to fix equal spokes are equal.Calculate the angle between a pair of consecutive spokes on a wheel with 15 spokes.

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20. Rehman is making a wheel using spokes. He wants to fix equal spokes are equal.How many spokes would be needed, if the angle between a pair of consecutive spokes is 40°?

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21. If a box of sweets is divided among 24 children, they will get 5 sweets each. How many would each get, if the number of the children is reduced by 4?

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22. A farmer has enough food to feed 20 animals in his cattle for 6 days. How long

would the food last if there were 10 more animals in his cattle?

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23. A contractor estimates that 3 persons could wire Jasminder's house in 4 days. If he uses 4 persons instead of three, how long should they take to complete the job?

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24. A batch of bottles were packed in 25 boxes with 12 bottles in each box. If the same batch is packed using 20 bottles in each box, how many boxes would be filled?

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25. A factory requires 42 machines to produce a given number of articles in 63 days. How many machines would be required to produce the same number of articles in 54 days?

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26. A car takes 2 hours to reach a destination by travelling at the speed of 60 km/h. How long will it take when the car travels at the speed of 80 km/h?

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27. Two persons could fit new windows in a house in 3 days.

One of the persons fell ill before the work started. How long would the job take now?

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28. Two persons could fit new windows in a house in 3 days.

How many persons would be needed to fit the windows in one days?

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29. A school has 8 periods a day each of 45 minutes duration. How long would each period be, if the school has 9 periods a day, assuming the nuber of school hours to be the same?

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30. Observe the following tables and find if x and y are directly proportional.

x	20	17	14	11	8	5	2
y	40	34	28	22	16	10	4

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31. Observe the following tables and find if x and y are directly proportional.

x	6	10	14	18	22	26	30
y	4	8	12	16	20	24	28

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32. Observe the following tables and find if x and y are directly proportional.

x	5	8	12	15	18	20
y	15	24	36	60	72	100

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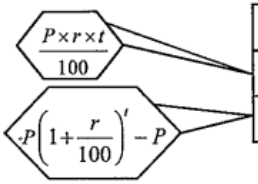
33. Principal = Rs 1000, Rate = 8% per annum. Fill in the following table find which type of interest (simple or compound) changes in direct proportion with time period.



Time period	1 year	2 years	3 years
Simple Interest (in Rs)			
Compound Interest (in Rs)			

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34. If we fix time period and the rate of interest, simple interest changes proportionally with principal. Would there be a similar relationship for compound interest? Why?

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35. On a squared paper, draw five squares of different sides. Write the following information in a tabular form.

	Square-1	Square-2	Square-3	Square-4	Square-5
Length of a side (L)					
Perimeter (P)					
$\frac{L}{P}$					
Area(A)					
$\frac{L}{A}$					

Find whether the length of a side is in direct proportion to :

The perimeter of the square.

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36. On a squared paper, draw five squares of different sides. Write the following information in a tabular form.

	Square-1	Square-2	Square-3	Square-4	Square-5
Length of a side (L)					
Perimeter (P)					
$\frac{L}{P}$					
Area(A)					
$\frac{L}{A}$					

Find whether the length of a side is in direct proportion to :

The area of square.

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37. The following ingredients are required to make halwa for 5 persons : Suji/Rawa = 250 g, Sugar = 300 g, Ghee = 200 g, Water = 500 ml.

Using the concept of proportion, estimate the changes in the quantity of ingredients, to prepare halwa for one person.

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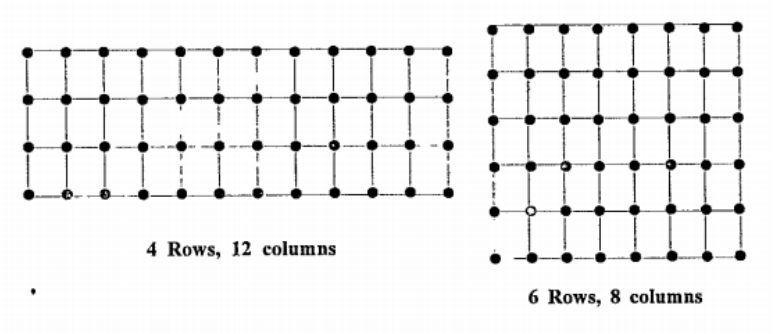
38. Take a squared paper and arrange 48 counters on it in different number of rows as shown below.



Number of Rows, (R)	(R_1)	(R_2)	(R_3)	(R_4)	(R_5)
	2	3	4	6	8
Number of Columns (C)	(C_1)	(C_2)	(C_3)	(C_4)	(C_5)
	...	...	12	8	...

What do you observe? As R increases, C decreases.

$Is R_1 : R_2 = C_2 : C_1?$

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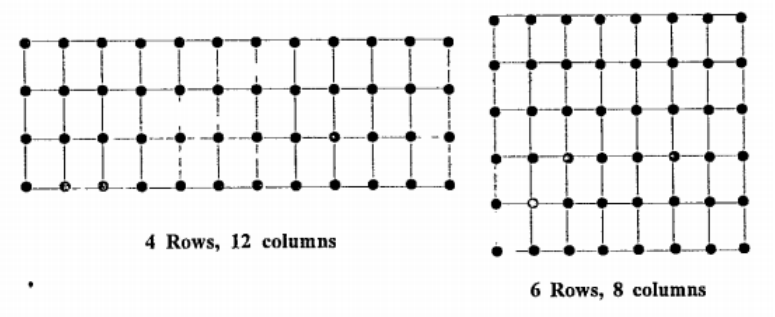
39. Take a squared paper and arrange 48 counters on it in different number of rows as shown below.



Number of Rows (R)	(R_1)	(R_2)	(R_3)	(R_4)	(R_5)
	2	3	4	6	8
Number of Columns (C)	(C_1)	(C_2)	(C_3)	(C_4)	(C_5)
	...	...	12	8	...

What do you observe? As R increases, C decreases.

Is $R_3 : R_4 = C_4 : C_3$?

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40. Observe the following tables and find which pair of variables (here x and y) are in inverse proportin.

x	50	40	30	20
y	5	6	7	8

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41. Observe the following tables and find which pair of variables (here x and y) are in inverse proportin.

x	100	200	300	400
y	60	30	20	15

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42. Observe the following tables and find which pair of variables (here x and y) are in inverse proportin.

x	90	60	45	30	20	5
y	10	15	20	25	30	35

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43. If $\frac{a}{b} = \frac{c}{d}$, show tha ad = bc

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44. If $\frac{a}{b} = \frac{c}{d}$, show that $\frac{a+b}{b} = \frac{c+d}{d}$

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45. What is the inverse ratio of m:n?

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46. Find the ratio of 1 cm and 1 m.

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