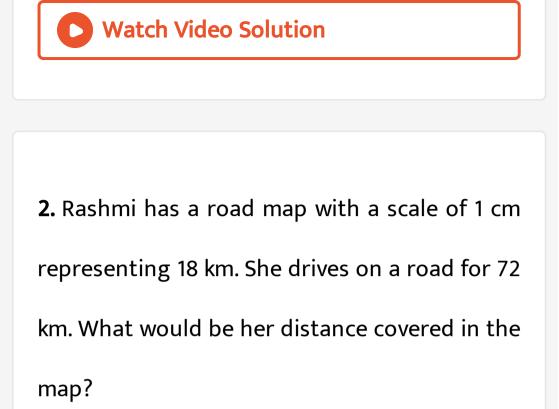# MATHS

NCERT - NCERT Maths(Hinglish)

DIRECT AND INVERSE PROPORTIONS

Exercise 13 1

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

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

3. A 5 m 60 cm high vertical pole casts a shadow 3 m 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 a pole which casts a shadow 5m long.

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

A. $21cm$

B. $22cm$

C. $20cm$

D. $26cm$

Answer: A

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5. Suppose 2 kg of sugar contains 9×10^6 crystals. How many sugar crystals are there in (i) 5 kg of sugar? (ii) 1.2 kg of sugar?

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

7. 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?

8. 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	...	...	...	...

9. In Question 2 above, if 1 part of a red pigment requires 75 mL of base, how much red pigment should we mix with 1800 mL of base?

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10. Following are the car parking charges near a railway station up to Check if the parking charges are in direct proportion to the parking time.

Exercise 13 2

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

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

(ii)   How many persons would be needed to fit the windows in one day?

2. A contractor estimates that 3 persons could rewire 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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3. A car takes 2 hours to reach a destination by travelling at the speed of 60km/h. How long will it take when the car travels at the speed of 80km/h?

4. 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?

5. 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 number of school hours to be the same?

6. Rehman is making a wheel using spokes. He wants to fix equal spokes n such a way that the angles between any pair of consecutive spokes are equal. Help him by completing the following table.

(i) Are the number of spokes and the angle

formed between the pairs of consecutive spokes in inverse proportion?

(ii) Calculate the angle between a pair of consecutive spokes on a wheel with 15 spokes.

(iii) How many spokes would be needed, if the angle between a pair of consecutive spokes is $40°$?

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

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7. 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	...	...	...	...	...

8. Which of the following are in inverse proportion?(i)   The number of workers on a job and the time to complete the job.(ii) The time taken for a journey and the distance travelled in a uniform speed.(iii)   Area of cultivated land and the crop harvested.(iv) The time taken for a fixed journey and the speed of the vehicle.(v)   The population of a country and the area of land per person.

9. 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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10. 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?
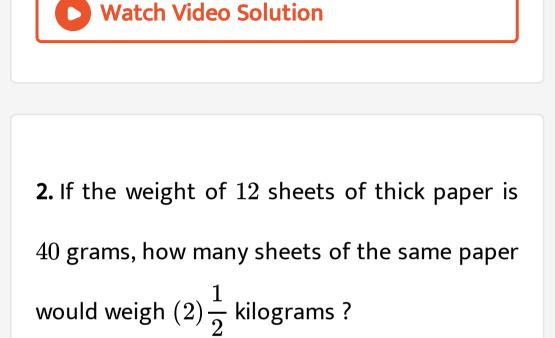
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11. If a box of sweets is divided among 24 children, they will get 5 sweets each. How many would each get, if the number of the children is reduced by 4?

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Solved Examples

1. The cost of 5 metres of a particular quality of cloth is Rs 210. Tabulate the cost of 2, 4, 10

and 13 metres of cloth of the same type.

2. If the weight of 12 sheets of thick paper is 40 grams, how many sheets of the same paper would weigh $(2)\dfrac{1}{2}$ kilograms ?

3. An electric pole, 14 metres high, casts a shadow of 10 metres. Find the height of a tree

that casts a shadow of 15 metres under similar conditions.

4. The scale of a map is given as 1:30000000. Two cities are 4 cm apart on the map. Find the actual distance between them.

5. A train is moving at a uniform speed of 75 km/hour. (i) How far will it travel in 20 minutes? (ii) Find the time required to cover a distance of 250 km.

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

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7. If 15 workers can build a wall in 48 hours, how many workers will berequired to do the same work in 30 hours?

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8. There are 100 students in a hostel. Food provision for them is for 20 days. How long will these provisions last, if 25 more students join the group?

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