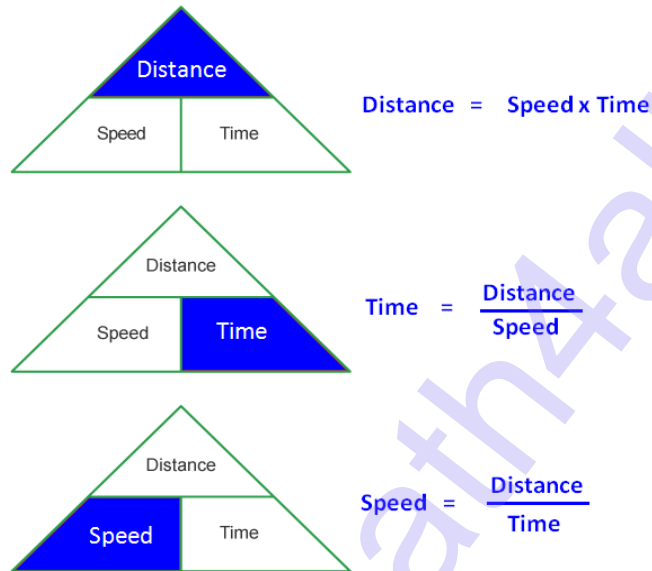# www.onlinemath4all.com

SPEED DISTANCE AND TIME SHORTCUTS & EXAMPLE PROBLEMS

Hint 1:

If the speed is given km per hour and we want to convert it in to meter per second, we have to multiply the given speed by 5/18.

Example:

90 km/hr = 90x(5/18) = 25 meter/sec

Hint 2:

If the speed is given meter per sec and we want to convert it in to km per hour, we have to multiply the given speed by 18/5.

Example:

25 meter/sec = 25x(18/5) = 90 km/hr

Hint 3:

If the ratio of speeds of two vehicles in the ratio a:b, then time taken ratio of the two vehicles would be b:a.

Example:

The ratio of speeds of two vehicles is 2:3. Then time taken ratio of the two vehicles to cover the same distance would be 3:2.

Hint 4:

If the ratio of speeds of two vehicles in the ratio a:b, then the distance covered ratio in the same amount of time would also be a:b.

Example:

The ratio of speeds of two vehicles is 2:3. Each vehicle is given one hour time. Then, the distance covered by the two vehicles would be in the ratio 2:3.

Hint 5:

If A is twice as fast as B, then the distance covered ratio of A and B in the same amount of time would be 2:1.

Example:

A is twice as fast as B and each given 1 hour time. If A covers 20 miles of distance in one hour, then B will cover 10 miles of distance in one hour.

Hint 6:

If one increase or decreases the speed of the vehicle in the ratio a:b,

then the new speed is = "b" of the original speed/a

More clearly, new speed = ("b" X original speed) / a

Example:

David travels at a speed of 56 miles per hour. If he reduces his speed in the ratio 7:6, find his new speed.

New speed = (6 X 56) / 7 = 48 miles per hour

Hint 7:

If a person covers a particular distance at a speed "a" miles per hour and comes backs to his original position at a speed of "b" miles per hour.

Then the average speed for the total distance covered = 2ab / (a+b) miles hour

Important condition: The distance covered in "a" miles per hour and the distance covered in "b" miles per hour must be same.

Example:

John travels 300 miles at the speed 45 miles per hour and travels another 300 miles at the speed of 55 miles per hour. Find the average speed for the whole journey.

Average speed for the whole journey = 2x45x55/(45+55)

= 4950/90

= 55 miles per hour

To get more ideas on speed distance and time, we have given some more examples. Please have a look on them.

Question : 1

If a person drives his car in the speed 50 miles per hour, how far can he cover in 2.5 hours

Solution :

The speed is 50 miles per hour.

The distance covered in 1 hour = 50 miles

Then, the distance covered in 2.5 hours is

= 50x2.5 miles

= 125 miles

Question : 2

If a person travels at a speed of 40 miles per hour. At the same rate, how long will he take to cover 160 miles distance ?

Solution :

Speed = 40 miles per hour.

Distance to be covered = 160 miles

Time = ?

Time = Distance / Speed

Time = 160 / 40

Time = 4 hours

Question : 3

A person travels at a speed of 60 miles per hour. How far will he travel in 4.5 hours?

Solution :

The speed is 60 miles per hour.

The distance covered in 1 hour = 60 miles

Then, the distance covered in 4.5 hours is

= 60x4.5 miles

= 270 miles

Question : 4

A person travels at a speed of 60 kms per hour. Then how many meters can he travel in 5 minutes?

Solution :

The speed is 60 kms per hour.

The distance covered in 1 hour = 60 kms or 60000 meters

That is, the distance covered in 60 min = 60000/60 = 1000 m

Then, the distance covered in 5 minutes is

= 1000x5

= 5000 meters

Question : 5

A person covers 108 kms in 3 hours. What is his speed in meter per second?

Solution :

108 kms = 108x1000 = 108000 meters

3 hours = 3x60x60 = 10800 seconds

Speed = Distance / Time

Speed = 108000 / 10800

Speed = 10 meter per second

Question : 6

A person covers 90 kms in 2 hours 30 minutes. Find the speed in meter per second.

Solution :

90 kms = 90x1000 = 90000 meters

2 hours 30 minutes = 150 min = 150x60 = 9000 seconds

Speed = Distance / Time

Speed = 90000 / 9000

Speed = 10 meter per second

Question : 7

A person travels at the rate of 60 miles per hour and covers 300 miles in 5 hours. If he reduces his speed by 10 miles per hour, how long will he take to cover the same distance ?

Solution :

Original speed = 60 miles per hour.

If the speed is reduced by 10 miles per hour,

then the new speed = 50 miles per hour

Distance to be covered = 300 miles

Time = Distance / Speed

Time = 300 / 50

Time = 6 hours

Question : 8

A person travels 50 kms per hour. If he increased his speed by 10 kms per hour, how many minutes will he take to cover 7500 meters?

Solution :

Speed = 50 kms per hour

If the speed is increased by 10 kms per hour,

then the new speed = 60 kms per hour

So, distance covered in 1 hour = 60 kms

Then, distance covered in 60 minutes = 60000 meters

Distance covered in 1 minute = 1000 meters

Then new speed = 1000 meter per minute

Distance to be covered = 7500 meters

Time = Distance / Speed = 7500 / 1000

Time = 7.5 minutes or 7 minutes 30 seconds

Question : 9

A person can travel at the speed of 40 miles per hour. If he increases his speed by 50%, how long will he take to cover 330 miles?

Solution :

Original speed = 40 miles per hour

If the speed is increased by 50%,

then the new speed = 150 % of 40 = 60 miles per hour

Distance to be covered = 330 miles

Time = Distance / Speed

Time = 330 / 60

Time = 5.5 hours or 5 hours 30 minutes

Question : 10

A person speed at a rate of 40 kms per hour. If he increases his speed by 20%, what is his new speed in meter per minute?

Solution :

Original speed = 40 kms per hour

If the speed is increased by 20%,

then the new speed = 120 % of 40 = 48 kms per hour

That is, distance covered in 1 hour = 48 kms

(or) Distance covered in 60 minutes = 48000 meters

(or) Distance covered in 1 minute = 800 meters

Hence, the speed = 800 meters per minute