SPEED & TIME & DISTANCE

SAMPLE:

A train can travel 50% faster than a car. Both start from point A at the same time and reach point B 75 kilometres away from A at the same time. On the way, however, the train lost about 12.5 minutes while stopping at the stations. The speed of the car is _____.

A. 100 kmph B. 110 kmph C. 120 kmph D. 130 kmph

Step 1, Given data

Speed of the train is 50% more than the speed of the car

Distance = 75 km

Time lost by the train = 12.5 min = $\frac{12.5}{60}$h

Step 2, Finding the speed

Let the speed of the car be x km/hr Then speed of the train

$= x + \frac{50}{100}x = \frac{150x}{100}$km/hr $= \frac{3x}{2}$km/hr

Time taken by car to reach point B = $\frac{75}{x}$hrs

Time taken by train to reach point B = $\frac{75}{\frac{3}{2}x}$hrs

Given $\frac{75}{x} - \frac{75}{\frac{3}{2}x} = \frac{12.5}{60}$

$\Rightarrow \frac{75}{x} - \frac{50}{x} = \frac{125}{10 \times 60} = \frac{5}{24}$

$\Rightarrow \frac{25}{x} = \frac{5}{24}$

$\Rightarrow\Rightarrow x = \frac{25 \times 24}{5} = 120$ km/hr

Hence the speed of the car is 120 km/h

PRACTICE: **SPEED** $= \frac{DISTANCE}{TIME}$

LIVEWORKSHEETS

Question 1:

A train can travel **50% faster** than a bus. Both **start** from point A *at the same time* and **reach** point B, 75 kms away from A *at the same time*. On the way, however, ***the train lost*** about ***12.5 minutes*** while stopping at the stations. The speed of the bus is _____.

A. 80 kmph **B. 120 kmph** **C. 125 kmph** **D. 150 kmph**

Let the speed of the bus x km/h, then the speed of the train is $\frac{150}{100}x$ km/h = $\frac{3}{2}x$ km/h

Time taken by bus to reach point B: $\frac{75}{x}$ hours

Time taken by train to reach point B: $\frac{75}{\frac{3}{2}x}$ hours

The train lost about 12.5 minutes (or $\frac{12.5}{60}$ hours = $\frac{125}{60\times10}$ hours) while stopping at the stations

$$\frac{75}{x}-\frac{75}{\frac{3}{2}x}=\frac{125}{60\times10}$$

$$\frac{75}{x}-\frac{50}{x}=\frac{5}{24}$$

X = _____ kmph

Question 2:

A car can travel **50% faster** than a train. Both start from point A at the same time and reach point B, **50 kms** away from A at the same time. On the way, however, the car lost about **25 minutes** while stopping at the petrol pump. The speed of the train is _____.

A. 22 kmph **B. 24 kmph** **C. 25 kmph** **D. 60 kmph**

Let the speed of the train x km/h, then the speed of the car is $\frac{150}{100}x$ km/h = $\frac{3}{2}x$ km/h

Time taken by train to reach point B: $\frac{50}{x}$ hours

Time taken by car to reach point B: $\frac{50}{\frac{3}{2}x}$ hours

The car lost about 25 minutes (or $\frac{25}{60}$ hours = $\frac{5}{12}$ hours) while stopping at the petrol pump

$$\frac{50}{x}-\frac{50}{\frac{3}{2}x}=\frac{5}{12}$$

$$\frac{75}{x}-\frac{50}{x}=\frac{5}{12}$$

X = _____ kmph

LIVEWORKSHEETS

Question 3:

A train travels **50% faster** than a car. Both start from point A at the same time and reach point B, **150km** away at the same time. On the way the train takes **25 minutes** for stopping at the stations. What is the speed (in km/h) of the train?

A. 120 kmph B. 124 kmph C. 125 kmph D. 160 kmph

Let the speed of the car x km/h, then the speed of the train is $\frac{150}{100}x$ km/h = $\frac{3}{2}x$ km/h

Time taken by car to reach point B: $\frac{150}{x}$ hours

Time taken by train to reach point B: $\frac{150}{\frac{3}{2}x}$ hours

The train takes about 25 minutes (or $\frac{25}{60}$ hour = $\frac{5}{12}$ hour) for stopping at the stations

$$\frac{150}{x} - \frac{150}{\frac{3}{2}x} = \frac{5}{12}$$

$$\frac{150}{x} - \frac{100}{x} = \frac{5}{12}$$

X = _____ kmph

Question 4:

A train moves at a speed, which is **50% more** than the speed of a car. Both start from the point P simultaneously and arrive at a point Q, **120 km** away from P at the same time. While on the way, however, the train lost about **half an hour** while taking halt at the stations. The speed of the car is _____.

A. 120 kmph B. 80 kmph C. 60 kmph D. 30 kmph

Let the speed of the car x km/h, then the speed of the train is $\frac{150}{100}x$ km/h = $\frac{3}{2}x$ km/h

Time taken by car to arrive at point Q: $\frac{120}{x}$ hours

Time taken by train to arrive at point Q: $\frac{120}{\frac{3}{2}x}$ hours

The train lost about **half an hour** (or $\frac{30}{60}$ hour = $\frac{1}{2}$ hour) while taking halt at the stations

$$\frac{120}{x} - \frac{120}{\frac{3}{2}x} = \frac{1}{2}$$

$$\frac{120}{x} - \frac{80}{x} = \frac{1}{2}$$

X = _____ kmph

LIVEWORKSHEETS

Question 5:

The speed of the plane is **75% faster** than bus. Both start from point K at the same time and reach point L which is **131.25 kms** away from K at the same time. On the way, however, the plane lost about **37.5 minutes** while stopping at the airports. What is the speed of the bus?

A. 70 kmph B. 80 kmph C. 90 kmph D. 120 kmph

Let the speed of the bus x km/h, then the speed of the plane is $\frac{175}{100}x$ km/h = $\frac{7}{4}x$ km/h

Time taken by bus to arrive at point L: $\frac{131.25}{x}$ hours

Time taken by plane to arrive at point L: $\frac{131.25}{\frac{7}{4}x}$ hours

The plane lost about 37.5 minutes (or $\frac{37.5}{60}$ hours =$\frac{5}{8}$ hours)

$$\frac{131.25}{x} - \frac{131.25}{\frac{7}{4}x} = \frac{5}{8}$$

$$\frac{131.25}{x} - \frac{75}{x} = \frac{5}{8}$$

X = _____ kmph

Question 6:

A car can travel **25% faster** than a train. Both start from point A at the same time and reach point B **50 kms** away from A at the same time. On the way, however, the car lost about **25 minutes** while stopping at the petrol pump. The speed of the train is _____.

A. 22 kmph B. 23 kmph C. 24 kmph D. 25 kmph

Let the speed of the train x km/h, then the speed of the car is $\frac{125}{100}x$ km/h = $\frac{5}{4}x$ km/h

Time taken by train to arrive at point B: $\frac{50}{x}$ hours

Time taken by car to arrive at point B: $\frac{50}{\frac{5}{4}x}$ hours

The car lost about 25 minutes (or $\frac{25}{60}$ hours =$\frac{5}{12}$ hours) while stopping at the petrol pump

$$\frac{50}{x} - \frac{50}{\frac{5}{4}x} = \frac{5}{12}$$

$$\frac{50}{x} - \frac{40}{x} = \frac{5}{12}$$

X = _____ kmph

LIVEWORKSHEETS