

QUANTS-TRAIN SUMS

SOLUTIONS

1. A train covers 60 km at a speed of 80 km/h, 100 km at a speed of 90 km/h, and another 140 km at a speed of 120 km/h. Find the average speed for the complete journey. (Round to the nearest integer.)

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A. 99 km/h X B. 105 km/h

C. 90 km/h

D. 115 km/h

$$D = ST$$

$$AS = \frac{TD}{TT}$$

$$AS = \frac{TD}{TT} = \frac{300}{\left(\frac{360}{80}\right) + \left(\frac{100}{90}\right) + \left(\frac{140}{120}\right)} = \frac{300}{\frac{9}{2} + \frac{10}{9} + \frac{7}{6}} = \frac{300}{\frac{27+40+42}{36}} = \frac{300}{\frac{109}{36}}$$

$$\begin{aligned} N \uparrow \rightarrow Ans \uparrow &= \frac{300}{27+40+42} \\ D \uparrow \rightarrow Ans \downarrow &= \frac{300}{36} \end{aligned}$$

$$RS \begin{cases} \rightarrow Opp \rightarrow S_1 + S_2 \\ \rightarrow Same \rightarrow S_1 \sim S_2 \end{cases}$$

$$\frac{3 \times 36}{109}$$

(2) A 255-m-long train is running at a speed of 72 km/h. It crosses a platform of length 745 m
In: ssc CPO 27/06/2024 Tier I (Shift 2)

- A. 53 sec B. 40 sec C. 50 sec D. 51 sec

$$\boxed{\text{Time} = \frac{\text{Distance}}{\text{Speed}}} = S/T$$

$$T = \frac{D}{S}$$

$$= \frac{(745 + 255)}{72 \text{ kmph}} = \frac{1000 \text{ m}}{72 \times \frac{5}{18} \text{ m/s}}$$
$$= \frac{1000}{20} = 50 \text{ s}$$

3. A train covers a distance of 56 km in 35 minutes. Travelling at the same speed, in how many seconds will the train cover a distance of 720 metres? ssc CPO 27/06/2024 Tier 1 (Shift 3)

A. 24

B. 27 3

C. 30 5

D. 32

$$D = S \times T$$

$$T = \frac{D}{S}$$

$$= \frac{720 \text{ m}}{\frac{56 \text{ km}}{35 \text{ min}}}$$

$$= \frac{720 \text{ m}}{\frac{56 \times 1000 \text{ m}}{35 \text{ min}}} \times \frac{35 \text{ min}}{60 \text{ sec}}$$

$$= 27 \text{ sec}$$

$$S = \frac{D}{T}$$

$$= \frac{720 \text{ m}}{\frac{56 \times 1000 \text{ m}}{35 \text{ min}}} \times \frac{35 \text{ min}}{60 \text{ sec}}$$

$$= 27 \text{ sec}$$

4. Two trains 230 m and 270 m long are running in opposite directions at speeds of 42 km/h and 48 km/h, respectively. They cross each other in:

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A. 30 sec

B. 22 sec

C. 20 sec

D. 25 sec

$$T = \frac{D}{S} \rightarrow RS$$

$$= \frac{230 + 270 \text{ m}}{(42+48) \text{ km/hr}} = \frac{500 \text{ m}}{90 \text{ km/hr}}$$
$$= \frac{500 \text{ m}}{\frac{90 \times 5}{18} \text{ m/s}} \leftarrow$$
$$= 20 \text{ s}$$

5. The distance (d) a moving body travels varies directly with the time (t) when it moves. A train travels 72 km in 2 hours. Find the equation that relates d and t. ssc cpo 28/06/2024 Tier I (Shift 2)

A. $d = t + 36$

B. $d = t - 36$

C. $d = 36t$

D. $d = t/36$

$D = ST$

$D \propto T$

$D = S T$

$D \propto T$

$D = \left(\frac{72}{2}\right) T$

$D = 36T$

6. A train covers a distance of 850 metres in 45 seconds. Travelling at the same speed, how many kilometres will the train cover in an hour?

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A. 67.5

B. 69

C. 68 ³⁴

D. 67.2

$$S = \frac{170}{45} \times 2 \text{ km/hr}$$
$$= 68$$

Diagram showing the conversion factors:

- Distance: $\cancel{850 \text{ m}} \rightarrow 170 \text{ m}$
- Time: $\cancel{45 \text{ s}} \rightarrow 2 \text{ min}$
- Speed: $\frac{\text{km}}{\text{hr}}$

7. A train covers a distance of 72 km in 40 minutes. Travelling at the same speed, how many metres will the train cover in 6 seconds?

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A. 180 m

B. 192 m

C. 210 m

D. 174 m

$$S = \frac{72 \text{ km}}{40 \text{ min}}$$
$$D = ST = \frac{72 \text{ km}}{\frac{40 \text{ min}}{60} \text{ hr}} \times 6 \text{ sec}$$
$$= \left(\frac{72}{2} \right) \times \frac{5}{18} \times \frac{m}{\cancel{6} \times \cancel{6}} = \frac{4 \times 5}{18} \times 3 \times 3 = 180 \text{ m}$$

8. Two trains are moving in the same direction at 60 km/h and 42 km/h.
The faster train crosses a man in the slower train in 36 seconds. Find
the length of the faster train. ssc CPO 28/06/2024 Tier I (Shift 3)

$$RS = 18 \text{ kmph}$$

A. 185 m

B. 180 m

C. 195 m

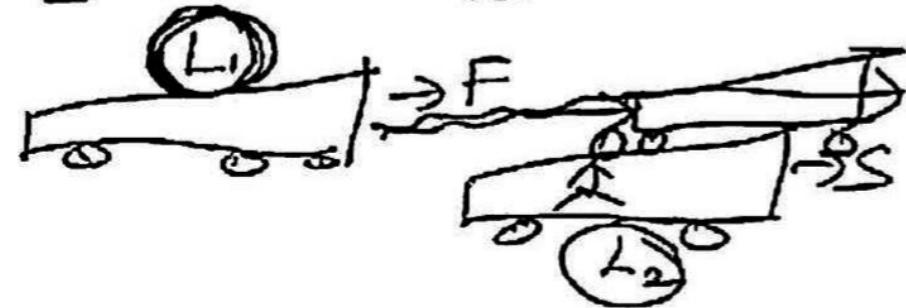
D. 175 m

$$D = S T$$

$$L_1 = 18 \frac{\text{km}}{\text{hr}} \times 36 \text{ s}$$

$$= 18 \times \frac{5}{18} \times 36$$

$$L_1 =$$



$$\text{Length} = [L_1 + \cancel{L_2}]$$

9. Two trains, 140 m and 120 m in length, are running in the same direction at the speeds of 60 km/h and 78 km/h respectively. In how much time will they completely cross each other?

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A. 52 sec

B. 58 sec

C. 48 sec

D. 65 sec

$$T = \frac{D}{S} = \frac{260 \text{ m}}{\cancel{18 \text{ km}} \times \frac{5}{18} \text{ m/s}}$$
$$= 52 \text{ s}$$

10. A 320 m long train completely crosses a 240 m long train, coming from the opposite direction, in y seconds. If the first train is travelling at the speed of 44 km/h and the second train is travelling at 56.8 km/h then what is the value of y ? ssc cpo 29/06/2024 Tier I (Shift 3)

- A. 21 ♂ B. 18 ♂ C. 20 ♂ D. 22 ♂ //

$$D = ST$$

$$T = D/S = \frac{560 \text{ m}}{100 \cdot 8 \times \frac{5}{18} \text{ s}} = \frac{560 \times 18}{500} = 20 \text{ s}$$

11. A 234 m long train passes a person running at 9 km/h in the opposite direction, in 6 seconds. In how much time (in seconds) will it pass another person who is moving at 23.4 km/h, in the same direction?

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A. 8

B. 7.8

C. 7.2

D. 8.4

$$D = S \times T$$

kmph, kmph

$$234 \text{ m} = (T \times S + 9) \times \frac{5}{18} \times \frac{1}{3} \quad (1)$$

$$TS + 9 = 234 \times \frac{3}{5} = \frac{702}{8 \times 10/2} = 140.4$$

$$TS = 131.4 \text{ km/hr}$$

$$RS = (131.4 - 23.4) \text{ km/hr}$$

$$T = \frac{D}{RS}$$

(2) $\frac{234}{131.4}$

$$= \frac{234}{108 - 0 \times \frac{5}{18}} \times \frac{1}{2}$$

$$= \frac{39}{8 \times 10/2} = 7.8 \text{ s}$$

12. Two trains, P and Q, are running on parallel tracks in opposite directions with lengths of 110 m and 140 m, respectively. Train P is running at a speed of 70 km/h and took 5 seconds to cross train Q. The speed of train Q is:

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- A. 120 km/h
- B. 110 km/h
- C. 90 km/h
- D. 100 km/h

$$\begin{aligned} \frac{10}{250 \text{ m}} &= \frac{S T}{D} \\ &= (70 + x) \times \cancel{\frac{1}{18}} \times \cancel{\frac{1}{18}} \\ 180 &= 70 + x \\ x &= 110 \text{ kmph} \end{aligned}$$