



Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	TRAINS	Last updated on	25 January 2024

CONCEPT 1 – BASIC PROBLEMS.

1) The speed of the bus is 72 km/hr. The distance covered by the bus in 5 secs is ?

- a) 50 m.
- b) 100 m.
- c) 60 m.
- d) 745 m.

ANS: b) 100.

Explanation:

$$* 4 \left(\begin{array}{l} 18 \text{ km/hr} \longrightarrow 5 \text{ m/s.} \\ 72 \text{ km/hr} \longrightarrow 20 \text{ m/s.} \end{array} \right) * 4$$

$$A * 18 \text{ km/hr} = A * 5 \text{ m/s}$$

$$1 \text{ sec} - 20 \text{ m.}$$

$$5 \text{ sec} - 100 \text{ m.}$$

2) A train is travelling at a rate of 45 km/hr. How many seconds it will take to cover a distance of $\frac{4}{3}$ km.

- a) 36 s.
- b) 64 s.
- c) 90 s.
- d) 120 s.

ANS: b) 64 s.



Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	TRAINS	Last updated on	25 January 2024

Explanation:

- Distance = $\frac{4}{5}$ km = 4000 / 5 m = 800 m.

- Speed = 45 km/hr = $45 * \frac{5}{18}$ m/s = 12.5 m/s.

$$1 \text{ sec} - 12.5 \text{ m.}$$

$$x \text{ sec} - 800 \text{ m.}$$

$$x = 800 / 12.5 = 64 \text{ s.}$$

3) The speed of the bus is 10 m/s. The distance covered by the bus in 5 hours is .

- a) 108 km.
- b) 80 km.
- c) 180 m.
- d) 180 km.

ANS: d)180 km.

Explanation:

$$A * 18 \text{ km/hr} = A * 5 \text{ m/s}$$

$$10 \text{ m/s} = 5 * 2 \text{ m/s} = 18 * 2 \text{ km/hr} = 36 \text{ km/hr.}$$

$$1 \text{ hr} = 36 \text{ km.}$$

$$5 \text{ hrs} = 36 * 5 = 180 \text{ km.}$$



Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	TRAINS	Last updated on	25 January 2024

4) A train starts from place A at 6 a.m. and arrives at another place B at 4.30 p.m. on the same day. If the speed of the train is 40 km/hr, find the distance travelled by the train?

- a) 320 km.
- b) 230 km.
- c) 420 km .
- d) 400 km.

ANS: c) 420 km.

Explanation:

- Time = 10.5 hrs. (From 6:00 am to 4:30 pm).
- Speed = 40 km/hr.
- Distance travelled = $40 * 10.5 = 420$ km.

CONCEPT 2 – RELATIVE SPEED.

1.WHEN THE TWO OBJECTS TRAVEL IN SAME DIRECTION:

The speed of the first body is x km/hr.

The speed of the second body is y km/hr.

So, their relative speed is equal to $(x - y)$ km/hr ; $x > y$.

2.WHEN THE TWO OBJECTS TRAVEL IN OPPOSITE DIRECTION:

The speed of the first body is x km/hr.

The speed of the second body is y km/hr.

So, their relative speed is equal to $(x + y)$ km/hr.



Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	TRAINS	Last updated on	25 January 2024

CONCEPT 3 – TRAIN CROSSING A POLE/MAN, PLATFORM, TRAIN.

1.WHEN TRAIN PASSES A POLE OR STATIONARY MAN:

- Distance covered will be equal to the length of the train

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

- T – Crossing time.
L – Length of the train.
S – Speed of the train.

5) A train 110 m in length runs through a station at the rate of 36 km per hour. How long will it take to pass a pole?

- a) 11 sec.
- b) 12 sec.
- c) 13 sec.
- d) 15 sec.

ANS: a) 11 sec.

Explanation:

$$\text{Speed} = 36 \text{ km/hr} = 18 \times 2 \text{ km/hr} = 5 \times 2 \text{ m/s} = 10 \text{ m/s.}$$

$$10 \text{ m} = 1 \text{ sec}$$

$$110 \text{ m} = 11 \text{ sec.}$$



Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	TRAINS	Last updated on	25 January 2024

6) A train is running at a speed of 90 km/hr. If it crosses a signal in 10 sec. The length of the train (in metres) is

- a) 150 m.
- b) 324 m.
- c) 900 m.
- d) 250 m.

ANS: d) 250 m.

Explanation:

$$\text{Speed} = 90 \text{ km/hr} = 18 \times 5 \text{ km/hr} = 5 \times 5 \text{ m/s} = 25 \text{ m/s.}$$

$$1 \text{ sec} - 25 \text{ m}$$

$$10 \text{ sec} - 250 \text{ m. (Length of the train)}$$



Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	TRAINS	Last updated on	25 January 2024

2.WHEN TRAIN PASSES A BRIDGE / PLATFORM / TUNNEL:

- Distance covered will be equal to length of train + length of bridge/platform.

$$T = \frac{L_t + L_p}{S}$$

- T – Crossing time.

L_t – Length of the train ; L_p – Length of the platform/bridge/tunnel.

S – Speed of the train.

7) A train 540 m long is running at a speed of 72 km/hr. In what time will a tunnel 160 m long pass ?

- a) 40 sec.
- b) 30 sec .
- c) 35 sec .
- d) 42 sec.

ANS: c) 35 sec.

Explanation:

Total distance = (540 + 160) m = 700 m.

Speed: 72 km/ hr = $18 \times \frac{5}{18}$ km/hr = $5 \times \frac{5}{18}$ m/s = 20 m/s.

20 m – 1sec

700 m – 35 sec.



Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	TRAINS	Last updated on	25 January 2024

3.WHEN TRAIN PASSES ANOTHER TRAIN IN SAME DIRECTION:

- Distance covered will be equal to the length of 2 trains.

$$T = \frac{L_1 + L_2}{S_1 \sim S_2}$$

- T – Crossing time.

L_1 – Length of the train1 ; L_2 – Length of the train2.

S_1 – Speed of the train1 ; S_2 – Speed of the train2.

8) A train 110 m in length runs through a station at the rate of 36 km per hour. How long will it take to pass another train 240 m in length that runs at a rate of 57 km/hr in the same direction?

- a) 60 sec.
- b) 50 sec.
- c) 65 sec.
- d) 70 sec.

ANS: d)70 sec.

Explanation:

Total distance = (110 + 240) m = 350 m.

Speed 1 = 36 km/hr = 10 m/s ; Speed 2 = 57 km/hr = 15 m/s.

Relative Speed = $S_1 \sim S_2$ = 5 m/s.

5 m – 1 sec

350 m – 70 sec.



Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	TRAINS	Last updated on	25 January 2024

9) Two trains start from a certain place on two parallel tracks in the same direction. The speed of the trains are 45 km/hr and 40 km/hr respectively. The distance between the two trains after 45 minutes will be

- a) 3.75 km.
- b) 2.75 km.
- c) 1.75 km.
- d) 4.75 km.

ANS: a) 3.75 km.

Explanation:

Time = 45 mins = $\frac{3}{4}$ hr.

Distance = Relative Speed * Time

$$= 5 * (\frac{3}{4})$$

$$= 3.75 \text{ km.}$$

4. WHEN TRAIN PASSES ANOTHER TRAIN IN OPPOSITE DIRECTION:

- Distance covered will be equal to the length of 2 trains.

$$T = \frac{L_1 + L_2}{S_1 + S_2}$$

- T – Crossing time.

L_1 – Length of the train1 ; L_2 – Length of the train2.

S_1 – Speed of the train1 ; S_2 – Speed of the train2.



Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	TRAINS	Last updated on	25 January 2024

10) A train 230 m in length runs through a station at the rate of 90 km/hour. How long will it take to pass another train 370 m in length that runs at a rate of 180 km/hr in the opposite direction?

- a) 25 sec.
- b) 26 sec.
- c) 24 sec.
- d) 30 sec.

ANS: c) 24 sec.

Explanation:

Total distance = (230 + 370) m = 600 m.

Speed 1 = 90 km/hr = 25 m/s ; Speed 2 = 180 km/hr = 50 m/s.

Relative Speed = $S_1 + S_2 = 25 + 50 = 75$ m/s.

$$25 \text{ m} - 1 \text{ sec}$$

$$600 \text{ m} - 24 \text{ sec.}$$

5.WHEN A TRAIN PASSES A PERSON SITTING IN ANOTHER MOVING TRAIN:

- Distance covered will be equal to the length of the train.

$$T = \frac{L}{\text{RELATIVE SPEED}}$$

- T – Crossing time.

L – Length of the train.

S_1 – Speed of the train1 ; S_2 – Speed of the train2.



Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	TRAINS	Last updated on	25 January 2024

11) A person sitting in a train travelling at a speed of 72 km/hr is crossed by another train of length 525 m travelling in the opposite direction in 15 seconds, then find the speed of the second train in km/hr?

- a) 36 km/hr.
- b) 54 km/hr.
- c) 60 km/hr.
- d) 66 km/hr.

ANS: b) 54 km/hr.

Explanation:

Relative Speed = $525 / 15 = 35 \text{ m/s} = 5 \times 7 \text{ m/s} = 18 \times 7 \text{ k/hr} = 126 \text{ km/hr.}$

$$S_1 + S_2 = 126 \text{ km/hr.}$$

$$S_2 = 126 - 72 = 54 \text{ km/hr.}$$

NOTE: From question number 12 - 18 use the formula to save your valuable time



Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	TRAINS	Last updated on	25 January 2024

12) If a train crosses a standing man/a pole in '4' sec time and crosses '150' meter long platform in '10' sec time, then length of the train is

- a) 120 m.
- b) 180 m.
- c) 200 m.
- d) 100 m.

ANS: d) 100 m.

Explanation:

Speed of the train = Length of the train / 4 = [Length of the (Train + Platform)] / 10

$$L_T * 10 = (L_T + L_P) * 4$$

$$L_T * 6 = 150 * 4$$

$$L_T = 100 \text{ m.}$$

ALTERNATIVE :

- If a train crosses a standing man/a pole in 't1' sec time and crosses 'P' meter long platform in 't2' sec time, then

$$\text{Length of the train} = \frac{P * t1}{t1 \sim t2}$$

$$L_T = \frac{150 * 4}{4 \sim 10} = \frac{150 * 4}{6} = 100 \text{ m.}$$



Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	TRAINS	Last updated on	25 January 2024

13) Two trains of equal length take 15 seconds and 25 seconds respectively to cross a telegraph post. If the length of each train is 150 meters. In what time (in seconds) will they cross each other in the same direction?

- a) 37.5 sec.
- b) 75 sec.
- c) 35 sec.
- d) 65 sec.

ANS: b) 75 sec.

Explanation:

Time taken by both the trains to cross each other,

$$T = \frac{2 * \text{Product of Time}}{\text{Difference of time}}$$

$$T = \frac{2 * 15 * 25}{10}$$

$$T = 75 \text{ sec.}$$



Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	TRAINS	Last updated on	25 January 2024

14) Two trains of equal length take 10 seconds and 15 seconds respectively to cross a telegraph post. If the length of each train is 120 meters. In what time (in seconds) will they cross each other in opposite directions?

- a) 20 sec.
- b) 12 sec.
- c) 15 sec.
- d) 10 sec.

ANS: b) 12 sec.

Explanation:

Time taken by both the trains to cross each other,

$$T = \frac{2 * \text{Product of Time}}{\text{Sum of time}}$$

$$T = \frac{2 * 10 * 15}{25}$$

$$T = 12 \text{ sec.}$$



Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	TRAINS	Last updated on	25 January 2024

15) Two trains starting from stations A and B and travel towards each other at 50 km/hr and 60 km/hr respectively. At the time of their meeting the second train had travelled 120 km more than the first. The distance between A and B is

- a) 990 km.
- b) 1200 km.
- c) 1320 km.
- d) 1440 km.

ANS: c) 1320 km.

Explanation:

Distance between A and B is,

$$D = \frac{\text{Sum of Speeds}}{\text{Difference of Speeds}} * \text{Extra distance covered.}$$

$$D = \frac{110}{10} * 120$$

$$D = 1320 \text{ km.}$$



Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	TRAINS	Last updated on	25 January 2024

16) Without any stoppage a person travels a certain distance at an average speed of 42 km/hr, and with stoppages he covers the same distance at an average speed of 28 km/hr. How many minutes per hour does he stop ?

- a) 14 mins.
- b) 15 mins.
- c) 28 mins.
- d) 20 mins.

ANS: d) 20 mins.

Explanation:

$$\text{Stoppage time/hr} = \frac{\text{Difference of Speeds}}{\text{Speed without stoppage}}$$

$$\text{Stoppage time/min} = \frac{\text{Difference of Speeds}}{\text{Speed without stoppage}} * 60$$

$$T = \frac{14}{42} * 60$$

Stoppage time/min = 20 mins.



Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	TRAINS	Last updated on	25 January 2024

17) Two trains, A and B, start from stations X and Y towards each other. They take 4 hours 48 minutes and 3 hours 20 minutes to reach Y and X respectively after they meet if train A is moving at 45 km/hr, then the speed of train B is.

- a) 3 : 1
- b) 3 : 2
- c) 1 : 1
- d) 2 : 1

ANS: c) 1:1.

Explanation:

$$\frac{S_A}{S_B} = \sqrt{\frac{T_B}{T_A}}$$

$$T_A = 4 \text{ hrs } 48 \text{ mins} = 4 \left(\frac{4}{5}\right) = \frac{24}{5} \text{ hrs.}$$

$$T_B = 3 \text{ hrs } 20 \text{ mins} = 3 \left(\frac{1}{3}\right) = \frac{10}{3} \text{ hrs.}$$

$$\frac{45}{S_B} = \sqrt{\frac{10}{3}} * \sqrt{\frac{5}{24}}$$

$$\frac{45}{S_B} = \sqrt{\frac{25}{36}}$$

$$S_B = 54 \text{ km/hr.}$$



Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	TRAINS	Last updated on	25 January 2024

18)The distance between Station A and Station B is 778 km.What is the average speed of a train that travels from station A to station B at a uniform speed of 40 kmph and returns to the initial station at 60 kmph.

- a) 48 kmph.
- b) 40 kmph.
- c) 24 kmph.
- d) 60 kmph.

ANS: a)48 kmph.

Explanation:

$$\begin{aligned} \text{AVERAGE SPEED} &= \frac{2 * S_1 * S_2}{S_1 + S_2} \\ &= \frac{2 * 40 * 60}{100} \end{aligned}$$

Average Speed = 48 kmph.



Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	TRAINS	Last updated on	25 January 2024

19) The ratio between the speeds of two trains is 5 : 7. If the first train covers 300 km in 3 hours, then the speed of the second train is

- a) 140 km/hr.
- b) 150 km/hr.
- c) 120 km/hr.
- d) 130 km/hr.

ANS: a) 140 km/hr.

Explanation:

- First train :

Speed : 3 hrs – 300 km

: 1 hr – 100 km which is 5 units.

- Second train :

Speed : 7 units – 140 km/hr.

ALTERNATIVE:

Speed of the second train must be a multiple of 7 units. According to the options, opt(a) - 140 km/hr will be an ANS.



Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	TRAINS	Last updated on	25 January 2024

20) Points 'A' and 'B' are 70 km apart on a highway and two cars start at the same time. If they travel in the same direction, they meet in 7 hours, but if they travel towards each other they meet in one hour. Find the speed of the two cars (in km/hr).

- a) 20, 30.
- b) 40, 30.
- c) 30, 50.
- d) 20, 40.

ANS: b) 40, 30.

Explanation:

Let the speed of the cars be S1 and S2

1. $S_1 - S_2 = 70 / 7 = 10$
2. $S_1 + S_2 = 70 / 1 = 70$

Solving 1 and 2, $S_1 = 40$ km/hr ; $S_2 = 30$ km/hr.