QUANTITATIVE APTITUDE

Time Speed and Distance

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Quantitative Aptitude

Quantitative Aptitude is an important and highly scoring topic in **Competitive Exams** especially in **Bank Exams**. Quantitative Aptitude or Data Interpretation based questions are structured assessments that evaluate the talent and skills of the Candidates. It measures the problem-solving skills of the candidates so it has become an important part of Bank Exams.

Every bank exam includes Quantitative Aptitude in their Prelim and Mains Exams. Banks like **SBI, IBPS (for Clerk & PO), IBPS RRB and RBI Grade B** includes Quantitative Aptitude in their syllabus to examine the candidates' **Thinking power**. To understand the importance of Quantitative Aptitude let us have a look at the weightage of this topic in different banking exams.

Prelims and Mains Syllabus for Bank Exams

Prelims Syllabus	Mains Syllabus
✦ Number Series ✦ Data Interpretation ✦ Simplification/Approximation ✦ Quadratic Equation ✦ Data Sufficiency ✦ Mensuration ✦ Average ✦ Profit and Loss ✦ Ratio and Proportion ✦ Time and Work ✦ Time and Distance ✦ Probability ✦ Partnership ✦ Problem on Ages ✦ Simple and Compound Interest ✦ Permutation and Combination	✦ Simplification ✦ Average ✦ Percentage ✦ Ratio and Percentage ✦ Data Interpretation ✦ Mensuration and Geometry ✦ Quadratic Equation ✦ Interest ✦ Problems of Ages ✦ Profit and Loss ✦ Number Series ✦ Speed, Distance and Time ✦ Time and Work ✦ Number System ✦ Data Sufficiency ✦ Linear Equation ✦ Permutation and Combination ✦ Probability ✦ Mixture and Allegations

Quantitative Aptitude - Time Speed and Distance

Q1. Walking at the rate of 4 kmph a man cover certain distance in 2 hr 45 min. running at a speed of 16.5 kmph the man will cover the same distance in.

- **A.** A.12 min
- B. B.25 min
- C. C.40 min
- D. D.60 min

Answer: C

Solution:

Distance = Speed × time

Here time = 2hr 45 min = $\frac{11}{4}$

Distance = 4×$\frac{11}{4}$ = 11 km

New Speed =16.5 kmph

Therefore time =$\frac{D}{S}$ = $\frac{11}{16.5}$ = 40 min

Q2. Excluding stoppages, the speed of a bus are 54 kmph and including stoppages, it is 45 kmph. For how many minutes does the bus stop per hour?

- A. 4
- B. 6
- C. 8
- D. None of these

Answer: D

Solution:

Due to stoppages, it covers 9 km less.

Time taken to cover 9 km =$\frac{9}{54}$ ×60 = 10 min

Q3. Two trains starting at the same time from 2 stations 200 km apart and going in opposite direction cross each other at a distance of 110 km from one of the stations. What is the ratio of their speeds?

- A. 11:9
- B. 7:3
- C. 18:4
- D. None of these

Answer: A

Solution:

In same time, they cover 110 km and 90 km respectively.

For the same time speed and distance is inversely proportional.

So ratio of their speed = 110:90 = 11: 9

Q4. A train covers a distance in 50 min, if it runs at a speed of 48 kmph on an average. The speed at which the train must run to reduce the time of journey to 40 min will be.

A. 45 kmph
B. 60 kmph
C. 75 kmph
D. None of these

Answer: B

Solution:

Time = $\frac{50}{60}$= $\frac{5}{6}$ hr

Speed = 48 mph

Distance = S×T = 48×$\frac{5}{6}$ Km

Time = $\frac{40}{60}$ hr

New speed = 40×$\frac{3}{2}$ = 60 kmph

Q5. Sachin can cover a distance in 1hr 24 min by covering 2/3 of the distance at 4 kmph and the rest at 5 kmph. The total distance is?

A. 5 km
B. 6 km
C. 7 km
D. 8 km

Answer: B

Solution:

Let total distance =D

Distance travelled at 4 kmph speed = ($\frac{2}{3}$) D

Distance travelled at 5 kmph speed

= (1 - $\frac{2}{3}$) D = ($\frac{1}{3}$) D

Total time =1 hr 24 min = (60+24) min = $\frac{84}{60}$ hr = $\frac{21}{15}$ hr

Note: For explanation on 1 hr 24 min =2115 hr,

Check comment by Deepak.

We know,

Time = $\frac{\text{Distance}}{\text{Speed}}$

Total time

$\frac{21}{15}$ = $\frac{2/4}{4}$ D + $\frac{1/3}{5}$ D

$\frac{21}{15}$ = $\frac{2D}{12}$ = $\frac{D}{15}$

84 = 14D

Note 2: For an explanation on 84=14D check comment by Rishi.

D=6 km

Q6.Vikas can cover a distance in 1 hr 24 min by covering (left (dfrac {2}{3}right)^{rd})of the distance at 4 kmph and the rest at 5kmph. The total distance is?

A. 4 km
B. 6 km
C. 8 km
D. 10 km

Answer: B

Solution:

Let total distance be S

Total time = 1 hr 24 min = 84 min

$\frac{84}{60}$ = $\frac{21}{15}$ hr

Let Vikas travels from A ---------- T ----------S

A →T →S

$\leftarrow (\frac{2S}{3}) \rightarrow \leftarrow (\frac{S}{3}) \rightarrow$

A to T: speed = 4 kmph

Distance = $(\frac{S}{3})$ ×S

T to S::speed = 5 km =

Distance = $(1-\frac{2}{3})$ S= $\frac{1}{3}$ S

Total time:

$\frac{21}{15} = \frac{2/3S}{4} + \frac{1/3S}{4}$

84=10S+4S {Multiply both sides by 15×4

S= $\frac{84}{14}$ =6 km

Q7.A passenger train takes two hours less for a journey of 300 km if its speed is increased by 5 km/hr from its normal speed. The normal speed is:

A. A.35 km/hr
B. B.50 km/hr
C. C.25 km/hr
D. D.30 km/hr

Answer: C

Solution:

Let the normal speed be's' km/hr

Then new speed = (s+5) km/hr

$\frac{300}{S} - 2 = \frac{300}{S+5}$

On solving this equation we get:

s = 25 km/hr

Q8.A train covers a distance in 100 min, if it runs at a speed of 48kmph on an average. The speed at which the train must run to reduce the time of journey to 40 min will be:

A. 30 kmph
B. 50 kmph
C. 80 kmph
D. 120 kmph

Answer: D

Solution:

Time = $\frac{100}{60} = \frac{5}{3}$ hr

Speed =48 mph

Distance =S×T

= 48×$\frac{5}{3}$

=80 km

Now, as per the question, journey is to be reduced to 40 min.

So, new time,

=40 min= $\frac{40}{60}$hr

=$\frac{2}{3}$ hr

$\frac{\text{Distance}}{New\ Time}$

= $\frac{80}{2/3}$

= 80 x $\frac{2}{3}$

=120 kmph

Q9.A good train and a passenger train are running on parallel tracks in the same direction. The driver of the goods train observes that the passenger train coming from behind overtakes and crosses his train completely in 60 sec. whereas a passenger on the passenger train marks that he crosses the goods train in 40 sec. If the speeds of the trains be in the ratio 1:2. Find the ratio of their lengths.

A. 3:1
B. 2:1
C. 3:2
D. 4:3

Solution:

Let the speeds of the two trains be s and 2s m/s respectively.

Also, suppose that the lengths of the two trains are P and Q meters respectively.

Then,

$\frac{P+Q}{2s-s}$ = 60 ------ (1)

And

$\frac{P}{2s-s}$ = 40------ (2)

On dividing these two equations we get:

$\frac{P+Q}{P} = \frac{60}{40}$

P: Q = 2: 1

Q10.A race course is 400 m long. A and B run a race and A wins by 5m. B and C run over the same course and B win by 4m. C and D run over it and D wins by 16m. If A and D run over it, then who would win and by how much?

A. D by 7.2 m
B. A by 7.2 m
C. A by 8.4 m
D. D by 8.4 m

Answer: A

Solution:
If AA covers 400m, BB covers 395 m

If BB covers 400m, CC covers 396 m

If DD covers 400m, CC covers 384 m

Now if BB covers 395 m, then C will cover

$\frac{396}{400}$ X 395 = 391.05m

If CC covers 391.05 m, then D will cover

$\frac{400}{384}$ X 391.05=407.24

If AA and DD run over 400 m, then DD win by 7.2 m (approx.)

Q11.The jogging track in a sports complex is 726 m in circumference. Suresh and his wife start from the same point and walk in opposite direction at 4.5 km/hr and 3.75 km/hr respectively. They will meet for the first time in:

A. 5.5 minutes
B. 6 minutes
C. 4.9 minutes
D. 5.28 minutes

Answer: D

Solution:

Let both of them meet after T min

4500 m are covered by Suresh in 60 m.

In T min he will cover $\frac{4500T}{60}$

Likewise, In T min Suresh's wife will cover $\frac{3750T}{60}$

Given,

$\frac{4500T}{60} + \frac{3750T}{60}$ =726

T=5.28 minutes

Q12.A train starts from Delhi at 6:00 am and reaches Ambala cantt. At 10am. The other train starts from Ambala cantt. at 8am and reached Delhi at 11:30 am, If the distance between Delhi and Ambala cantt is 200 km, then at what time did the two trains meet each other?

A. 8:46 am
B. 8:30 am
C. 8:56 am
D. 8:50 am

Answer: C

Solution:
Average speed of train leaving Delhi =

$\frac{200}{4}$ = 50 km/hr

Average speed of train leaving Ambala cantt. =

200 X $\frac{2}{7}$ = $\frac{400}{7}$

By the time the other train starts from Ambala

Cantt, the first train had travelled 100 km

Therefore, the trains meet after:

$\frac{200-100}{(50+\frac{400}{7})}$ = $\frac{14}{15}$hr

$\frac{14}{15}$ X 60 = 56minutes

Hence they meet at **8:56 am**

Q13.Two stations A and B are 110 km apart on a straight line. One train starts from A at 7 am and travel towards B at 20 km/hr speed. Another train starts from B at 8 am and travel towards A at 25 km/hr speed. At what time will they meet?

A. 9 am
B. 10 am
C. 11 am
D. None of these

Answer: B

Solution:

In 1 hour (7 am to 8 am) train from station A travels

20 km distance and reaches to C, (say).

A ---------- C ----------B

7 am ---------- 8 am

AC = 20 km, CB = 90 km

Distance travelled in 1 hour = 20 km

Remaining distance =110−20 = 90 km

Time = $\frac{\text{Distance}}{\text{Speed}}$

$\frac{90}{20+25}$ =2 hours

So, time = 8 am + 2 am = 10 am

Q14.A man can row 4.5 km/hr in still water and he finds that it takes him twice as long to row up as to row down the river. Find the rate of the stream.

A. A.2 km/hr
B. B.2.5 km/hr
C. C.1.5 km/hr
D. D.1.75 km/hr Solution:

Answer: C

Solution:

Let the speed of the current be x km/hr

Thus upward speed = (4.5−x) km/hr

And downward speed = (4.5+x) km/hr

Let distance travelled be y, then for the same distance y,

Time Rowing Upwards=2×Time Rowing Downwards

$\frac{h}{4.5-x} = 2x \frac{h}{4.5+x}$

⇒ x= 1.5 km/hr

Q15.The circumference of the front wheel of a cart is 40 ft long and that of the back wheel is 48 ft long. What is the distance travelled by the cart, when the front wheel has done five more revolutions than the rear wheel?

A. 950 ft
B. 1450 ft
C. 1200 ft
D. 800 ft

Answer: C

Solution:

Let the total distance travelled by the cart be x ft

Then,

$\frac{X}{40} - \frac{X}{48} = 5$

$\Rightarrow \frac{6X-5X}{240} = 5$

⇒ x = 1200 ft

Q16.A train 120 m in length passes a pole in 12sec and another train of length 100 m travelling in opposite direction in 10 sec. fined the speed of the second train in km per hour.

A. 43.2 km/hr
B. 43 km/hr
C. 44 km/hr

D. 43.5 km/hr

Answer: A

Solution:

Let the speed of the train be x km/hr

Then,

$120 = x \times \frac{5}{18} \times 12$

$\Rightarrow x=36$ km/hr

Let speed of the other train be y km/hr

Then,

Relative speed in opposite direction:

$= (Y + 36) \times \frac{5}{18}$

So total distance:

$(120+100)=(y+36) \times \frac{5}{18} = \times 10$

y=43.2 km/hr

17. A thief steals a car and drives it at 15 km/hr. The theft has been discovered after one hour and the owner of the car sets off in another car at 25 km/hr. When will the owner overtake the thief from the starting point?

A. 1 hr
B. 1.5 hr
C. 2 hr
D. 2.5 hr

Answer: B

Solution:

Distance covered by the thief in one hour = 15 km

Now this distance is to be covered by the relative speed of (25−15)=10 km/hr

Hence, time required to cover this distance at a speed of 10 km/hr:

$= \frac{10}{15}$

= 1.5 hr

Q18.A tower is 61.25 m high. A rigid body is dropped from its top and at the same instant another body is thrown up-wards from the bottom of the tower with such a velocity that they meet in the middle of the tower.

The velocity of projection of the second body is:

A. 24.5 m/s
B. 20 m/s
C. 25 m/s
D. 22 m/s

Answer: A

Solution:

Let the body moving down-wards take't' sec to

Reach half the height $(=\frac{61.25}{2})$

As we know,

$S = ut + \frac{1}{2}at^2$

Since, body is DROPPED from the top, initial

Velocity u=0. And $s = \frac{61.25}{2}$

$\Rightarrow \frac{61.25}{2} = 0 + \frac{1}{2} \times 9.8 \times t^2$

$\Rightarrow t = \frac{5}{2}$ sec

Again, assume that the second body is projected minimum

Velocity 'u' up-wards, using the same formula,

$s=ut-\frac{1}{2}at2$

$\frac{61.25}{2}$ u x $\frac{5}{2}$ - $[\frac{1}{2} \times 9.8 \times (\frac{5}{2})^{2]}$

$\Rightarrow 61.25 = u \times \frac{5}{2} - [\frac{245}{8}]$

$\Rightarrow u=\frac{49}{2}$

=24.5 m/sec

Q19.A car travels first half distance between two places with a speed of 40 km/hr and rest of the half distance with a speed of 60 km/hr. The average speed of the car is:

A. 48 km/hr
B. 37 km/hr
C. 44 km/hr
D. 45 km/hr

Answer: A

Solution:

Let, the total distance covered be S km.

Total time taken,

$=\frac{S/2}{40}+\frac{S/2}{60}$

$=\frac{S}{2X40}+\frac{S}{20X60}$

$=\frac{5S}{240}$

Average speed,

$=\frac{S}{(\frac{5S}{240})}$

$=Sx\frac{240}{5S}$

=48 km/hr

Q20.A cyclist drove one kilometer, with the wind in his back, in three minutes and drove the same way back, against the wind in four minutes. If we assume that the cyclist always puts constant force on the pedals, how much time would it take him to drive one kilometer without wind?

A. A.73 min
B. B.247 min
C. C.177 min
D. D.4312 min

Answer: B

Solution:

Let the speed of the cyclist be x km/h and wind be y km/h

$\frac{1}{(x+y)} = \frac{3}{60}$

$\Rightarrow x+y=20$ -------- (i)

$1(x-y) = \frac{4}{60}$

$\Rightarrow x-y=15$ -------- (ii)

On solving both the equations we get:

$x=\frac{35}{2}$, $y=\frac{5}{2}$

Now, time taken by cyclist without wind:

$= \frac{3}{35} \times 60$

$= \frac{24}{7} 247$ min

Q21. A ship 77 km from the shore, springs a leak which admits to 9/4 tones of water in 11/2 minutes. 92 tones of water would sink it. But the pumps can throw out 12 tones of water per hour. Find the average rate of sailing so that the ship may just reach the shore as it begins to sink.

A. A.10.5 km/hr
B. B.11 km/hr
C. C.10 km/hr
D. D.12.5 km/hr

Answer: **A**

Solution:

Given leak admits $\frac{9}{4}$ tones of water in $\frac{11}{2}$min.

Leak admits one tank of water

$\frac{11}{2} X \frac{4}{9}$

$=\frac{22}{9}$ min

Q22.A train covered a certain distance at a uniform speed. If the train had been 6 km/hr faster, it would have taken 4 hour less than the scheduled time. And, if the train were slower by 6 km/hr, the train would have taken 6 hr more than the scheduled time. The length of the journey is:

A. 700 km
B. 740 km
C. 720 km
D. 760 km

Answer: C

Solution:

Let the length of the journey be 'd' km and the speed of train be S km/hr.

Then,

$\frac{d}{s+6}$ =t−4----- (i)

$\frac{d}{s-6}$ =t+6------ (ii)

Subtracting the 1 equation from another we get:

$\frac{d}{s-6} - \frac{d}{s+6}$ =10------ (iii)

Now t= $\frac{d}{s}$

Substitute in equation (i) and solve for d and S

We get S=30 and d = 720 km

Q23.Two identical trains A and B running in opposite direction at same speed tale 2 min to cross each other completely. The number of bogies of A are increased from 12 to 16. How much more time would they now require to cross each other?

A.40 sec

B.50 sec

C.60 sec

D.20 sec

Answer: D

Solution:

Total initial bogies is 12+12=24

Additional bogies =16−12=4

24 bogies take 2 minutes.

4 bogies will take:

$\frac{2 \times 60}{24}$ X 4

= 20 sec.

Q24.A boatman rows to a place 45 km distant and back in 20 hour. He finds that he can row 12 km with the stream in the same time as 4 km against the stream. Find the speed of the stream.

A. 3 km/hr
B. 2.5 km/hr
C. 4 km/hr
D. 3.5 km/hr

Answer: A

Solution:

Ratio of time taken for up and down = 3:1

Out of 20 hr he took 15 hr for up and 5 for down.

Speed up = $\frac{45}{15}$ =3

And down = $\frac{45}{5}$ =9

Hence speed of stream

= (9â^'3) × $\frac{1}{2}$

= 3 km/hr

Q25.A motorboat whose speed is 15 km/hr in still water goes 30km downstream and comes back in four and a half hours. The speed of the stream is:

A. 4.5 km/hr
B. 6 km/hr
C. 7 km/hr
D. 5 km/hr

Answer: D

Solution:

Let the speed of the stream be's' km/hr.

Then, upward speed = (15−s) km/hr

And downward speed = (15+s) km/hr

Therefore,

$\frac{30}{(15+S)} + \frac{30}{(15-S)} = 4.5$

On solving this equation we get, s = 5 km/hr

Q26.A hare, pursued by a greyhound is 20 of her own leaps ahead of him. While the hare takes 4 leaps, the greyhound takes 3 leaps. 2 leaps of the greyhound is equal to 3 leaps of the hare.

In how many leaps will the greyhound overtake the hare?

A. 180 leaps
B. 270 leaps
C. 360 leaps
D. 90 leaps

Answer: A

Solution:

When hare takes 4 leaps, the greyhound takes 3

Leaps

When greyhound takes 1 leap hare will take

$\frac{4}{3}$ Leaps

2 leaps of greyhound = 3 leaps of hare

1 leaps of greyhound =$\frac{3}{2}$ leaps of hare

$\frac{4}{3}$ Leaps of hare = $\frac{4}{3}$x$\frac{2}{3}$=$\frac{8}{9}$ leaps of

Greyhound

Now the greyhound covers leaps (1− $\frac{8}{9}$) = $\frac{1}{9}$

In his every leap.

Greyhound covers 20 leaps in $\frac{20}{1/9}$

= 180 leaps

Q27.P and Q start running in opposite directions (towards each other) on a circular track starting at diametrically opposite points. They first meet after P has run for 75m and then they next meet after Q has run 100 m after their first meeting. Assume that both of them are running a constant speed.

The length of the track (in meter) is:

A. 70
B. 175
C. 250
D. 350

Answer: C

Solution:

Both P and Q are traveling at a constant speed, so

the ratio of the distance covered by both P and Q

Will be same.

Now, assume that the length of track be x.

So, for the time of 1st meet,

P travels =75 m and Q travels =x/2−75 m

Thus, ratio PQ= $\frac{75}{x/2-75}$ --------- (1)

Now, for the time of second meet.

Q travels =100 m and P travels =x−100 m

Thus, ratio $\frac{P}{Q}$= $\frac{x-100}{100}$ -------- (2)

From (1) and (2),

$\frac{75}{x/2-75} = \frac{x-100}{100}$

75x/2−75=x−100100

Upon solving, we get,

x=250 m

Q28.A man sitting in train travelling at the rate of 50 km/hr observes that it takes 9 sec for a goods train travelling in the opposite direction to pass him. If the goods train is 187.5m long. Find its speed

A. 40 km/hr
B. 30 km/hr
C. 24 km/hr
D. 25 km/hr

Answer: D

Solution:

Let the speed of goods train be x km/hr.

Then,

$(50+x)\times \frac{5}{18} = \frac{187.5}{9}$

⇒x= 25 km/hr

Q29.Two places A and B are separated by a distance of 200 m. Ajay and Jay have to start simultaneously from A, go to B and return to A. In 10 s they meet at a place 10m from B. If Ajay is faster than Jay, in how much time, after they start, will Ajay return to A?

A. 19 sec
B. 20021 sec
C. 40021 sec
D. 19021 sec

Answer: C

Solution:

Since Ajay is faster than Jay and they start together,

to meet at 10 m from B, Ajay would have covered a

distance from A to B and would meet Jay on his

way back to A.

Jay would be on his way from A to B.

So, Ajay covers 200+10=210 m in 10 sec

Hence, Ajay's speed = 21 m/sec

So he will take $\frac{190}{20}$ sec to cover the remaining 190 m.

The time required for Ajay to reach A will be:

$=10+\frac{190}{21}=\frac{400}{21}$sec

Q30.X and Y start walking towards each other at 10 am at speeds of 3 km/hr and 4 km/hr respectively. They were initially 17.5 km apart. At what time do they meet?

- **A.** 2:30 pm
- B. 11:30 pm
- C. 1:30 pm
- D. 12:30 pm

Answer: D

Solution:

Let after T hours they meet

Then, 3T+4T=17.5

T=2.5

Time = 10:00 am + 2.5 hour = 12:30 pm

Q31.A car driver driving in fog passes a pedestrian who was walking at the rate of 2km/h in the same direction. The pedestrian could see the car for 6 min and it was visible to him up to a distance of 0.6 km. The speed of the car would be:

- A. 8 km/h
- B. 800 m/h
- C. 200 m/h
- D. 15 km/h

Answer: A

Solution:

Traveler distance in 6 min $=\frac{2}{60}\times 6=\frac{2}{10}$

Total distance in 6 min $=\frac{2}{10}+\frac{6}{10}=\frac{8}{10}$

Speed $=\frac{8}{10}\times 10$

= 8 km/hr

Q32.Rahul can row a certain distance downstream in 6 hour and return the same distance in 9 hour. If the speed of Rahul in still water is 12 km/hr, find the speed of the stream.

A.2 km/h

B.2.4 km/hr

C.3 km/hr

D.1.5 km/hr

Answer: B

Solution:

Let the speed of the stream be x km/hr

Thus, downward stream = (12+x)

and upward stream = (12−x)

Suppose the distance travelled be y, given:

$\frac{y}{12+x}$ = 6 and $\frac{y}{12+x}$ = 9

On solving these two equations we get:

x = 2.4 km/hr

Q33.In a race, the speeds of A and B are in the ratio 3:4. A takes 30 minutes more than B to reach the destination. The time taken by A to reach the destination is:

A. hr
B. 1.5 hr
C. 2 hr
D. 2.5 hr

Answer: C

Solution:

Ratio of speeds = 3:4

Distance remaining constant, the ratio of time taken = 4:3

A takes 0.5 hours more than B

Hence time taken by A=4×0.5= 2 hour

Q34.**Jay started cycling along the boundaries of a square field from corner point A. After half an hour he reached the corner point C, diagonally opposite to A. If his speed was 8 km/hr, the area of the filed in square km is:**

A. 64
B. 16
C. 9
D. 4

Answer: D

Solution:

Distance covered by Jay in $\frac{1}{2}$ hr = 4 km

Therefore, side of the square = $\frac{4}{2}$ =2 km

Hence, Area = 2×2 = 4 square km

Q35.Wheel of diameter 7cm and 14 cm start rolling simultaneously from X and Y which are 1980 cm apart towards each other in opposite directions. Both of them make same number of revolutions per second. If both of them meet after 10 s, the speed of the smaller wheel is:

A. 22 cm/s
B. 44 cm/s
C. 66 cm/s
D. 88 cm/s

Answer: C

Solution:

Circumference of the smaller wheel (X) = 2×π×3.5=22 m

Circumference of the bigger wheel (Y) = 2×π×7=44 m

Let both the wheels make x revolutions in one second

Distance covered by both the wheel in 1 second = 22x+44x=66x

Distance covered by both wheels in 10 second = 660x

Given, 660x=1980

⇒x=3

Speed of smaller wheel = 22x=22×3

= 66 cm/s

Q36.A monkey tries to ascend a greased pole 14 m high. He ascends 2 m in first two minutes and slips 1 m in alternate minute. If he continues to ascend in this fashion, how long does he take to reach the top?

A. 26 min
B. 24 min
C. 22 min
D. 25 min

Answer: D

Solution:

In every two minutes he is able to ascend 1 m.

In this fashion he ascends up to 12 m because when

he reaches at the top he does not slip down. Thus,

up to 12 m he takes 12×2=24 min and for the

last 2 m he takes 1 m.

Therefore, total time taken by him is 24+1 = 25 min

to reach the top

Q37.A train leaves station X at 5am and reaches station Y at 9 am. Another train leaves station Y at 7 am and reaches station X at 10:30 am. At what time do the two trains cross each other?

A. 7:36 am
B. 7:56 am
C. 8:36 am
D. 7:56 am

Answer: B

Solution:

Let the distance between X and Y is d km

Then, speed of A is $\frac{d}{4}$ d4 km/hr and that of B is

$\frac{2d}{7}$ Km/hr.

X ---------- Y (XY = d km)

Relative speed = $\frac{d}{4}+\frac{2d}{7}=\frac{15d}{28}$km/hr

Now distance between these trains at 7 am

$=d-\frac{d}{2}=\frac{d}{2}$ km

Hence, time = $\frac{d/2}{15d/28}=\frac{14d}{15}$ X 60 = 56

Hence both of them meet at 7:56 am

Q38.A skating champion moves along the circumference of a circle of radius 28 m in 44 sec. How many seconds will it take her to move along the perimeter of a hexagon of side 48 m?

A.90

B.84

C.68

D.72

Answer: D

Solution:

Circumference of the circle = $2\pi r=2\times\frac{22}{7}\times28=176$ m

Given, side of the hexagon =48 m

So, perimeter of the hexagon = 48×6=288 m

Skating champion moves 176 m in 44 sec

Skating champion moves hexagon (288m) in:

$=\frac{44}{176}\times288$

= 72 sec

Q39.A hare sees a dog 200m away from her and scuds off in opposite direction at a speed of 24 km/hr. Two minutes later the dog perceives her and gives chase at a speed of 32 km/hr. How soon will the dog overtake the hare, and what distance from the spot from where the hare took flight?

A. 8 min, 2 km

B. 7.5 min, 2 km
C. 7.5 min, 3 km
D. 7.5 min, 2.5 km

Answer: C

Solution:

Distance covered by hare in 2 min = $\frac{24}{60}$×2=800 m

Now to overtake the hare dog has to cover a

Distance of (800+200)=1000 m with the

relative speed of (32−24) =8 km/hr

Time = $\frac{1}{8}$ hr

Now distance travelled by hare in $\frac{1}{8}$ hr

=$\frac{1}{8}$×24=3km

Q40.A boat covers a distance of 30 km downstream in 2 hour while it takes 6 hour to cover the same distance upstream. What is the speed of the boat in km/hr?

A. 5
B. 7.5
C. 10
D. 12

Answer: C

Solution:

Let b and s be the speed of boat and stream respectively.

As per the given conditions:

$\frac{30}{b+s}$ +s=2----- (1)

$\frac{30}{b+s}$ −s=6

From eq (i) and (ii):

s=5 and b = 10 km/hr

Q41.A and B start running simultaneously. A runs from point P to point Q and B from point Q to point P. A's speed is 6/5 of B's speed. After crossing B, if A takes 5/2 hr to reach Q, how much time does B take to reach P after crossing A?

A. 3 hr 6 min
B. 3 hr 16 min
C. 3 hr 26 min
D. 3 hr 36 min

Answer: D

Solution:

A–>.....<–B

$\frac{VA}{VB} = \sqrt{(\frac{tB}{tA})}$

$\Rightarrow (\frac{6}{5})^2 = \frac{tB}{tA}$

$t_B = \frac{36}{25} \times \frac{5}{2}$

= 3.6 hour

= 3 hr 36 min

Q42.Walking at 3/4 of his usual pace, a man reaches his office 20 minute late. Find his usual time?

A. 2 hr
B. 1 hr
C. 3 hr
D. 1.5 hr

Answer: B

Solution:

Let the original speed be S and time be T

If new speed = $S \times \frac{3}{4}$, then new time would be

$T \times \frac{4}{3}$ (D=ST = Constant).

Given,

$\frac{3T}{4} - T = \frac{20tT}{3}$

$\Rightarrow T = 60$ minutes

= 1 hour

Q43.A jet plane is rising vertically with a velocity of 10 m/s. It has reached a certain height when the pilot drops a coin, which takes 4 sec to hit the ground. Assuming that there is no resistance to the motion of the coin, the height of the place and the velocity of the coin on impact with the ground are:

A. 38.4 m, 28.7 m/s
B. 38.4 m, 29.2 m/s
C. 26.5 m, 13.5 m/s
D. 26.5 m, 28.7 m/s

Answer: B

Solution:

The coin will move up with the initial velocity of 10 m/s

till it comes to rest. Time taken is given by:

$0=10-9.8t$

$\Rightarrow t=\frac{10}{9.8}$ sec

Time taken to reach the ground from the highest point:

$=4-\frac{10}{9.8}$

$=\frac{29.2}{9.8}$ sec

Velocity of coin on impact

$=0+9.8\times(\frac{29.2}{9.8})$

=29.2 m/s

If 'h' is the height from which the coin dropped.

Then

$29.22-102=2\times9.8\times h$

$\Rightarrow h$ = 38.4 m

Q44.A train running at the speed of 20 m/s crosses a pole in 24 sec less than the time it requires to cross a platform thrice its length at the same speed. What is the length of the train?

A. 150 m
B. 200 m

C. 180 m
D. 160 m

Answer: D

Solution:

Let the length of the train be x m.

So, the length of the platform = 3x m.

Time taken in crossing the platform = $\frac{4x}{20}$ sec

Time taken in crossing the pole = $\frac{x}{20}$ sec

$\Rightarrow \frac{x}{20}+24=\frac{4x}{20}$

$\Rightarrow x$ = 160 m

Q45. If the wheel of a bicycle makes 560 revolutions in travelling 1.1 km, what is its radius?

A. 31.25 cm
B. 37.75 cm
C. 35.15 cm
D. 11.25 cm

Answer: A

Solution:

The distance covered by the wheel in 560

revolutions = 1100 m.

Hence, the distance covered per revolution =

$\frac{1100}{560} = \frac{55}{28}$ = meters

The distance covered in one revolution =

Circumference of the wheel.

Circumference $=2\pi r=2\times\frac{22}{7}\times r$

$\Rightarrow r$ = 31.25 cm.

Q46.What is the total distance travelled by A?

A. 480 km

B. 450 km
C. 550 km
D. 600 km

Answer: D

Solution:

A and B's speed is 5 times C's speed. So A and B

will travel 5 times than C in the same time.

As XZ=400 km and XY = 600 km they will

meet at some point V, 500 km from X.

It is shown below:

X-------->----------Z ----->------ V--------<---------Y

C covers 100 km by the time they meet at V. A, B

and C then cover 100 km to come back to Z.

A (as well as B) covers (XZ+ZV+VZ=400+100+100) = 600 km.

Q47. What is the time for the entire journey?

A. 10 hour
B. 6 hour
C. 8 hour
D. 9 hour

Answer: C

Solution:

A and B's speed is 5 times C's speed. So A

and B will travel 5 times than C in the same time.

As XZ=400 km and XY=600 km they will meet

at some point V, 500 km from X.

It is shown below:

X---------->---------Z ----->------- V ---------<----------Y

C covers 100 km by the time they meet at V. A, B

and C then cover 100 km to come back to Z.

A (as well as B) covers (XZ+ZV+VZ=400+100+100) =600 km.

Q48. A ship develops a leak 12 km from the shore. Despite the leak, the ship is able to move towards the shore at a speed of 8 km/hr. However, the ship can stay afloat only for 20 minutes. If a rescue vessel were to leave from the shore towards the ship and it takes 4 minutes to evacuate the crew and passengers of the ship, what should be the minimum speed of the rescue vessel in order to be able to successfully rescue the people aboard the ship?

A. 53 km/hr
B. 37 km/hr
C. 28 km/hr
D. 44 km/hr

Answer: B

Solution:

The distance between the rescue vessel and the

Ship, which is 12 km, has to be covered in 16 minutes.

(The ship can stay afloat only 20 minutes

and it takes 4 minutes to evacuate the people

aboard the ship). Therefore, the two

vessels should move towards each other at a speed

Of $\frac{12}{16/60}$km/hr

$=\frac{12 \times 60}{16}$

= 45 km/hr.

The ship is moving at a speed of 8 km/hr. Therefore,

the rescue vessel should move at a speed of

45−8 = 37 km/hr.

Q49. When an object is dropped, the number of feet N that it falls is given by the formula ($N=d\frac{1}{2}gt^2$) where t is the time in seconds from the time it was dropped and g is 32.2. If it takes 5 seconds for the object to reach the ground, how many feet does it fall during the last 2 seconds?

A. 64.4

B. 96.6
C. 161.0
D. 257.6

Answer: B

Solution:

In 5 seconds it travels

$= (\frac{1}{2}) \times 32.2 \times 52$

$=16.1 \times 25$

$=402.5$

In first 3 seconds it travels

$= (\frac{1}{2}) \times 32.2 \times 32$

=16.1Ã—9

=144.9

Hence in the last 2 seconds it travelled

402.5−144.9= 257.6

Q50.The speed of a motor boat itself is 20 km/h and the rate of flow of the river is 4 km/h. Moving with the stream the boat went 120 km. What distance will the boat cover during the same time going against the stream?

A. 80 km
B. 180 km
C. 60 km
D. 100 km

Answer: B

Solution:

Let the distance to be covered by the boat when it is

travelling against the stream be x.

The boat goes down the river at a speed of

20+4=24 km/h and up the river at a speed of 20–4=16 km/h.

Since the time taken is same which is?

$\frac{100}{24} = \frac{x}{16}$

Therefore, x=80 km

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