

CAT Time, Speed & Distance

Practice Question Bank

20 Quantitative Aptitude Questions with Answers and Detailed Solutions

Difficulty	Questions	Focus
Easy	Q1 - Q6	Basic speed, time, distance and unit conversions
Medium	Q7 - Q13	Trains, boats & streams, average speed, relative speed
Tough	Q14 - Q20	Races, multi-stage journeys, chases, stoppage-time problems

Instructions: Attempt each question on your own first. Options are labelled A-D. The correct answer and a full step-by-step solution follow every question. Unless stated otherwise, assume constant speed throughout each journey.

EASY LEVEL

Q1. [EASY]

A car travels 60 km in 2 hours, moving at a constant speed.

What is the speed of the car?

- (A) 20 km/h
- (B) 30 km/h
- (C) 40 km/h
- (D) 120 km/h

Correct Answer: (B) 30 km/h

Solution:

$$\text{Speed} = \text{Distance} / \text{Time} = 60 \text{ km} / 2 \text{ h} = 30 \text{ km/h.}$$

Q2. [EASY]

A man walks at a constant speed of 5 km/h.

How much time will he take to cover a distance of 20 km?

- (A) 2 hours
- (B) 4 hours
- (C) 5 hours
- (D) 25 hours

Correct Answer: (B) 4 hours

Solution:

Time = Distance / Speed = 20 km / 5 km/h = 4 hours.

Q3. [EASY]

Convert a speed of 72 km/h into metres per second (m/s).

- (A) 10 m/s
- (B) 15 m/s
- (C) 20 m/s
- (D) 25 m/s

Correct Answer: (C) 20 m/s

Solution:

To convert km/h to m/s, multiply by 5/18. So 72 km/h = $72 \times 5/18 = 20$ m/s.

Q4. [EASY]

A train travels at a constant speed of 90 km/h.

What distance does it cover in 30 minutes?

- (A) 30 km
- (B) 45 km
- (C) 60 km
- (D) 90 km

Correct Answer: (B) 45 km

Solution:

30 minutes = 0.5 hour. Distance = Speed $\times$ Time = 90 km/h $\times$ 0.5 h = 45 km.

Q5. [EASY]

Convert a speed of 15 m/s into kilometres per hour (km/h).

- (A) 36 km/h
- (B) 54 km/h
- (C) 60 km/h
- (D) 75 km/h

Correct Answer: (B) 54 km/h

Solution:

To convert m/s to km/h, multiply by 18/5. So 15 m/s = $15 \times 18/5 = 54$ km/h.

Q6. [EASY]

A cyclist covers a distance of 100 m in 20 seconds, moving at a constant speed.

What is the cyclist's speed in m/s?

- (A) 4 m/s
- (B) 5 m/s
- (C) 6 m/s
- (D) 10 m/s

Correct Answer: (B) 5 m/s

Solution:

$$\text{Speed} = \text{Distance} / \text{Time} = 100 \text{ m} / 20 \text{ s} = 5 \text{ m/s.}$$

MEDIUM LEVEL

Q7. [MEDIUM]

A train 150 m long crosses a stationary pole (an object with negligible length) in 15 seconds.

What is the speed of the train in km/h?

- (A) 30 km/h
- (B) 36 km/h
- (C) 40 km/h
- (D) 45 km/h

Correct Answer: (B) 36 km/h

Solution:

When a train crosses a pole, it covers a distance equal to its own length. Speed = $150 \text{ m} / 15 \text{ s} = 10 \text{ m/s}$. Converting to km/h: $10 \times 18/5 = 36 \text{ km/h}$.

Q8. [MEDIUM]

Two trains, 120 m and 180 m long, are running on parallel tracks in opposite directions at 54 km/h and 36 km/h respectively.

How much time will they take to completely cross each other?

- (A) 10 seconds
- (B) 12 seconds
- (C) 15 seconds
- (D) 20 seconds

Correct Answer: (B) 12 seconds

Solution:

When two objects move in opposite directions, their relative speed is the sum of their individual speeds: $54 + 36 = 90 \text{ km/h} = 90 \times \frac{5}{18} = 25 \text{ m/s}$. The total distance to be covered while crossing is the sum of their lengths: $120 + 180 = 300 \text{ m}$. Time = Distance / Relative Speed = $300 / 25 = 12 \text{ seconds}$.

Q9. [MEDIUM]

A man covers a certain distance in 5 hours travelling at a constant speed of 40 km/h. Suppose his speed is increased by 10 km/h for the same journey.

How much time would he save?

- (A) 0.5 hour
- (B) 1 hour
- (C) 1.5 hours
- (D) 2 hours

Correct Answer: (B) 1 hour

Solution:

The distance covered is $40 \text{ km/h} \times 5 \text{ h} = 200 \text{ km}$. At the increased speed of $40 + 10 = 50 \text{ km/h}$, the time taken = $200 / 50 = 4 \text{ hours}$. Time saved = $5 - 4 = 1 \text{ hour}$.

Q10. [MEDIUM]

A boat travels 24 km downstream in 4 hours and returns the same 24 km upstream in 6 hours.

What is the speed of the boat in still water?

- (A) 3 km/h
- (B) 4 km/h
- (C) 5 km/h
- (D) 6 km/h

Correct Answer: (C) 5 km/h

Solution:

Downstream speed = $24 \text{ km} / 4 \text{ h} = 6 \text{ km/h}$. Upstream speed = $24 \text{ km} / 6 \text{ h} = 4 \text{ km/h}$.
Speed of the boat in still water = $(\text{Downstream speed} + \text{Upstream speed}) / 2 = (6 + 4) / 2 = 5 \text{ km/h}$.

Q11. [MEDIUM]

A car covers the first half of a journey at 40 km/h and the second half of the same journey (by distance) at 60 km/h.

What is the car's average speed for the entire journey?

- (A) 48 km/h
- (B) 50 km/h
- (C) 52 km/h
- (D) 55 km/h

Correct Answer: (A) 48 km/h

Solution:

When equal distances are covered at two different speeds a and b , the average speed for the whole journey is the harmonic mean: $(2ab)/(a + b)$. Here, average speed = $(2 \times 40 \times 60)/(40 + 60) = 4800/100 = 48$ km/h. (Note: this is NOT the simple average of 40 and 60, because more time is spent travelling at the slower speed.)

Q12. [MEDIUM]

A policeman spots a thief exactly 100 m away and immediately starts chasing him; the thief starts running at the same moment. The thief runs at 8 m/s and the policeman runs at 10 m/s.

How long will it take the policeman to catch the thief?

- (A) 40 seconds
- (B) 50 seconds
- (C) 60 seconds
- (D) 100 seconds

Correct Answer: (B) 50 seconds

Solution:

Since both start moving at the same instant, the policeman needs to close the initial gap of 100 m. The relevant relative speed is the difference in their speeds (same direction): $10 - 8 = 2$ m/s. Time to catch up = Gap / Relative Speed = $100 / 2 = 50$ seconds.

Q13. [MEDIUM]

A train crosses a 250 m long platform in 20 seconds and crosses a stationary pole in 10 seconds, travelling at constant speed throughout.

What is the length of the train?

- (A) 200 m
- (B) 225 m
- (C) 250 m
- (D) 300 m

Correct Answer: (C) 250 m

Solution:

Let the train's length be L metres and its speed be v m/s. Crossing the pole: $v = L/10$. Crossing the platform, the train covers its own length plus the platform's length: $v = (L + 250)/20$. Equating: $L/10 = (L + 250)/20$, so $2L = L + 250$, giving $L = 250$ m.

TOUGH LEVEL

Q14. [TOUGH]

Two trains run in the same direction on parallel tracks at 45 km/h and 36 km/h. They take 50 seconds to completely cross each other. The length of the faster train is 75 m.

What is the length of the slower train?

- (A) 40 m
- (B) 50 m
- (C) 60 m
- (D) 70 m

Correct Answer: (B) 50 m

Solution:

Since the trains move in the same direction, their relative speed is the difference of their speeds: $45 - 36 = 9$ km/h $= 9 \times 5/18 = 2.5$ m/s. The total distance covered while crossing equals the sum of their lengths. Total distance = Relative Speed $\times$ Time = $2.5 \times 50 = 125$ m. So the slower train's length = $125 - 75 = 50$ m.

Q15. [TOUGH]

In a race, A is 20% faster than B. A gives B a head start of 40 m, and the two runners finish the race in a dead heat (i.e. at exactly the same time).

What is the length of the race?

- (A) 180 m
- (B) 200 m
- (C) 220 m
- (D) 240 m

Correct Answer: (D) 240 m

Solution:

Let B's speed be v ; then A's speed is $1.2v$ (20% faster). Let the race length be L . Since B gets a 40 m head start, B only needs to cover $(L - 40)$ m while A covers the full L m, and both take the same time to finish: $L / 1.2v = (L - 40) / v$. Cancelling v : $L / 1.2 = L - 40$, so $L = 1.2L - 48$, giving $0.2L = 48$, so $L = 240$ m.

Q16. [TOUGH]

Two cars start at the same time from points A and B, which are 290 km apart, and travel towards each other. The car from A moves at 40 km/h and the car from B moves at 60 km/h.

After how much time will the two cars meet?

- (A) 2 hours
- (B) 2.5 hours
- (C) 2.9 hours
- (D) 3 hours

Correct Answer: (C) 2.9 hours

Solution:

When two objects move towards each other, their relative speed is the sum of their speeds: $40 + 60 = 100$ km/h. Time to meet = Total Distance / Relative Speed = $290 / 100 = 2.9$ hours.

Q17. [TOUGH]

A man rows to a place 48 km away and back in a total of 14 hours. He notices that he can row 4 km with the stream (downstream) in the same time it takes him to row 3 km against the stream (upstream).

What is the speed of the stream?

- (A) 1 km/h
- (B) 2 km/h
- (C) 3 km/h
- (D) 4 km/h

Correct Answer: (A) 1 km/h

Solution:

Let the boat's speed in still water be b km/h and the stream's speed be s km/h. From the given time equality: $4/(b + s) = 3/(b - s)$, which gives $4(b - s) = 3(b + s)$, i.e. $4b - 4s = 3b + 3s$, so $b = 7s$. Then downstream speed = $b + s = 8s$ and upstream speed = $b - s = 6s$. Using the total time for the 48 km trip each way: $48/(8s) + 48/(6s) = 14$, i.e. $6/s + 8/s = 14$, so $14/s = 14$, giving $s = 1$ km/h.

Q18. [TOUGH]

A thief steals a car and drives away at 12:00 noon at a constant speed of 60 km/h. The theft is discovered at 12:30 pm, and the owner immediately begins chasing the thief in another vehicle at a constant speed of 75 km/h along the same route.

At what time will the owner catch up with the thief?

- (A) 2:00 pm
- (B) 2:30 pm
- (C) 3:00 pm
- (D) 3:30 pm

Correct Answer: (B) 2:30 pm

Solution:

By 12:30 pm, the thief has already travelled $60 \text{ km/h} \times 0.5 \text{ h} = 30 \text{ km}$, so the owner starts 30 km behind. Since both now travel in the same direction, the relevant relative speed is the difference of their speeds: $75 - 60 = 15 \text{ km/h}$. Time for the owner to close this 30 km gap = $30/15 = 2$ hours. Starting the chase at 12:30 pm, the owner catches the thief at $12:30 \text{ pm} + 2:00 = 2:30 \text{ pm}$.

Q19. [TOUGH]

Excluding stoppages, the speed of a bus is 54 km/h, and including stoppages, its speed drops to 45 km/h (because the bus halts at stops along the way).

For how many minutes does the bus stop, on average, per hour?

- (A) 8 minutes
- (B) 9 minutes
- (C) 10 minutes
- (D) 12 minutes

Correct Answer: (C) 10 minutes

Solution:

Because of the stoppages, the bus effectively covers 9 km less every hour ($54 - 45 = 9$ km). The time it would take to cover this 'lost' distance at the bus's actual moving speed (54 km/h) tells us how many minutes per hour are spent stopped: Stoppage time per hour = $(9/54) \times 60$ minutes = 10 minutes.

Q20. [TOUGH]

Stations A and B are 290 km apart. A train leaves A at 8:00 am heading towards B at a constant speed of 50 km/h. A second train leaves B at 9:00 am heading towards A at a constant speed of 70 km/h.

At what time will the two trains meet?

- (A) 10:00 am
- (B) 10:30 am
- (C) 11:00 am
- (D) 11:30 am

Correct Answer: (C) 11:00 am

Solution:

By 9:00 am, the first train (which left an hour earlier) has already covered $50 \text{ km/h} \times 1 \text{ h} = 50 \text{ km}$, leaving a remaining gap of $290 - 50 = 240 \text{ km}$ between the trains at that moment. From 9:00 am onward, both trains move towards each other, so their relative speed is $50 + 70 = 120 \text{ km/h}$. Time to close the 240 km gap = $240/120 = 2$ hours. So the trains meet at 9:00 am + 2:00 = 11:00 am.