

RRB NTPC Previous Years' Arithmetic Questions

Part III

Speed, Time & Distance, SI-CI



1. Four lights change at 15 sec., 18 sec, 27 sec, 30 sec, on different crossing respectively. If they all change at 6 : 10 : 00 O' clock then after how much time will they change together

- (A) 6 : 14 : 30
- (B) 6 : 40 : 00
- (C) 6 : 14 : 00
- (D) 10 : 40 : 00

- A. B
- B. D
- C. A
- D. C

Ans. C

Sol.

$$\text{Required time} = \text{LCM}(15, 18, 27, 30) \\ = 270 \text{ sec.}$$

Hence, they will change together after 270 second or 4 min 30 sec.

$$6 : 10 : 00 + 00 : 04 : 30 \\ = 6 : 14 : 30.$$

2. A boy sit in a train and he notice that he can count 31 telephone post in 60 sec. Distance between two post is 60 metre. Then what is the speed of train?

- (A) 90 km/sec
- (B) 108 km/sec
- (C) 601 km/sec
- (D) 120 km/sec

- A. B
- B. D
- C. A
- D. C

Ans. A

Sol. .

$$\text{Total distance covered by boy} \\ = (31 - 1) \times 60 = 1800$$

$$\text{The speed of train} = \frac{1800}{60} = 30 \text{ m/s}$$

$$= 30 \times \frac{18}{5} \text{ kmph} = 108 \text{ kmph}$$

3. A boy run at $\frac{10}{9}$ of his actual speed and he covers 39 km in 2 hr. 20 minutes 24 sec. Find actual speed of boy.

- (A) 15 km/hr
- (B) 50 km/hr
- (C) 39 km/hr
- (D) 150 km/hr

A. B

- B. A
- C. C
- D. D

Ans. B

Sol. .

$$\text{Let the original speed be} = 9x \\ 2 \text{ hour } 20 \text{ minute } 24 \text{ sec} \\ = 7200 + 1200 + 24 = 8424 \text{ sec}$$

A.T.Q.

$$10x = \frac{39 \times 1000}{8424} \text{ m/s}$$

Required -

$$9x = \frac{39 \times 1000 \times 9}{10 \times 8424} \times \frac{18}{5} = \frac{631800}{8424 \times 5} \\ = 15 \text{ km/hr.}$$

4. A 125 metre long metro train passes a 75 metre long platform in 10 sec. Find the speed of the train.

- (A) 72 km/hr
- (B) 36 km/hr
- (C) 18 km/hr
- (D) 90 km/hr

- A. (B)
- B. (C)
- C. (D)
- D. (A)

Ans. D

Sol.

$$\text{Length of a train (L1)} = 125\text{m}$$

$$\text{Length of a platform (L2)} = 75\text{m}$$

$$\text{Time} = 10 \text{ sec}$$

$$\text{Then, speed of a train} = (L1 + L2) / T$$

$$= (125 + 75) / 10$$

$$= 200 / 10$$

$$= 20 \text{ m/s}$$

$$\text{In km/hr, speed} = (20 \times 18) / 5$$

$$= 4 \times 18 = 72 \text{ km/hr}$$

Option D is correct answer.

5. John covers a certain distance in 1 hour and 15 minutes. He travels one third part of the distance with 3 km/hr and travels remaining distance with 4 km/hr. Find the total distance.

- (A) 5.5 km
- (B) 4.5 km
- (C) 4 km
- (D) 6.5 km

A. (D)

B. (C)



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- C. (A)
- D. (B)

Ans. D

Sol.

Let the total distance be D km.

$$\begin{aligned} \text{Total time (T)} &= 1 \text{ hr } 15 \text{ min.} = 1 + 15/60 \\ &= 1 + 1/4 = 5/4 \text{ hour} \end{aligned}$$

ATQ-

One- third part (D/3) with 3km/hr

$$T_1 = D/(3 \times 3) = D/9$$

Remaining 2D/3 with 4km/hr

$$T_2 = 2D/(3 \times 4) = D/6$$

$$T = T_1 + T_2$$

$$5/4 = D/9 + D/6$$

$$5/4 = (2D + 3D)/18$$

$$(5 \times 18)/4 = 5D$$

$$D = 18/4 = 4.5 \text{ km}$$

Option D is correct answer.

6. A superfast duranto express running at a speed of 90km/hr. crosses a motorcycle in 25 second. Motorcycle is running at a speed of 36km/hr. Find the length of duranto express.

- (A) 375 m
- (B) 225 m
- (C) 275 m
- (D) 325 m

- A. (C)
- B. (D)
- C. (A)
- D. (B)

Ans. C

Sol. Since, both the vehicles are travelling in the same direction the relative speed will be the difference of their speeds.

So,

$$\text{Relative speed} = 90 - 36 \text{ km/hr}$$

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

$$= 54 \times (5/18) \text{ m/s}$$

$$= 15 \text{ m/s}$$

$$\text{the length of train will be} = 15 \times 25 \text{ m}$$

$$= 375 \text{ m}$$

7. Peehu and Ayu are running on a 28m diameter circular path. Speed of Peehu is 48m/sec and speed of Ayu is 40m/sec . They Start from same point in same direction at a time. When will they met first time with each other?

- (A) 8 sec
- (B) 11 sec

- (C) 13 sec
- (D) 14 sec

- A. (A)
- B. (D)
- C. (C)
- D. (B)

Ans. D

Sol. circumference of the path= $2\pi R$

$$\text{Radius of the circular path } R = 28/2 = 14 \text{ m}$$

so,

$$\text{the length of the circular path} = 2 \times (22/7) \times 14 = 88 \text{ m}$$

Now the speeds of pee hu and aayu are 48m/s and 40m/s respectively.

If they start together, difference between both of them will of 8 meter in one second.

Means, after every second the difference will increase by 8 meter.

They will only meet again when the difference will become equal to the circumference of the circle.

$$\text{so, time} = 88/8 = 11 \text{ sec}$$

8. A bus is running at 90 km/hr. How much distance will this bus cover in 20 sec.

- (A) 500 metre
- (B) 450 metre
- (C) 180 metre
- (D) 600 metre

- A. (C)
- B. (D)
- C. (A)
- D. (B)

Ans. C

Sol.

$$90 \text{ km/hr} = 90 \times \frac{5}{18} \text{ m/s}$$

$$= 25 \text{ m/s}$$

$$\text{Distance covered in 20 seconds} = 25 \times 20 = 500 \text{ m.}$$

9. The speed of car from A to B is 60 km/hr and returning speed is 40km/hr. Find average speed of car.

- (A) 50
- (B) 45
- (C) 48
- (D) 52

- A. (D)
- B. (B)



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- C. (A)
- D. (C)
- Ans. D

Sol.

Let the speed of car from A to B is X km/hr and from B to A is Y km/hr.

$$\text{So, average speed of the car} = \frac{2XY}{(X+Y)} = \frac{2 \times 60 \times 40}{60+40} = 48 \text{ km/hr}$$

10. Uninterrupted average speed of a car is 45 km/hr. and with obstacle average speed of the car is 36 km/hr. Find the average stopping time of the car.

- (A) 9
- (B) 15
- (C) 12
- (D) 10
- A. (B)
- B. (D)
- C. (C)
- D. (A)

Ans. C

Sol.

Speed of car = 45km/hr

Average speed of car with stoppages = 36km/hr

Distance travelled per hour = 36 km

Time taken by car to cover this distance without stoppages = $36/45 = 4/5$ hours = 48 minutes

Average stopping time per hour = 12 minutes per hour

11. Two cyclists start from a house with a speed of 24 km/hr. each at an interval of 15 minutes. With how much more speed (km/hr) the woman coming from the opposite direction towards the house has to travel to meet the cycles at an interval of 10 minutes?

- (A) 13
- (B) 11
- (C) 12
- (D) 14
- A. (A)
- B. (B)
- C. (C)
- D. (D)

Ans. C

Sol.

Let the speed of woman = s km/hr

Distance travelled in 15 minutes = $24 \times (15/60) = 6$ km

Relative speed of woman wrt cyclist = (s + 24) km /hr

6 km distance is covered in 10 minutes

$$6 = (s + 24) \times (10/60)$$

$$36 = s + 24$$

$$S = 12 \text{ km/hr}$$

12. Navya takes 7 hours 20 minutes in walking a distance and riding back to same place where she started. She could walk both ways in 10 hours 40 minutes. The time taken by her to ride back both ways is :

- (A) 4 hours
- (B) 4 hours 35 minutes
- (C) 4 hours 45 minutes
- (D) 4 hours 15 minutes

A. (B)

B. (D)

C. (A)

D. (C)

Ans. C

Sol.

Time taken to walk a distance and riding back to same place where she started = 7 hr 20 min = 440 min.

Time taken to walk both ways = 10 hr 40 min = 640 min

So time taken to walk that distance one way = $\frac{640}{2} = 320$ min

Time taken to ride that distance one way = 440 - 320 = 120 min

Therefore time taken to ride back both ways = $2 \times 120 = 240$ min = 4 hr

13. Two buses start from a house with a speed of 4km/hr at interval of 6 minutes. With how much more speed (km/hr.) the woman coming from the opposite direction towards the house has to travel to meet the buses at an interval of 4 minutes?

(A) 5

(B) 3

(C) 2

(D) 4

A. (A)

B. (D)

C. (C)

D. (B)



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Ans. C

Sol.

Distance travelled by one bus in 6 min. = $4 \times (6/60) = 0.4$ km

Let speed of woman = S km/hr

Relative speed of woman = $(4+S)$ km/hr

0.4 km distance is travelled by woman in 4 min.

$$0.4 = (4+S)(4/60)$$

$$S = 2 \text{ km/hr}$$

14. Two cars X and Y start at the same time in the same direction at 12 kmph and 16 kmph respectively. Find the distance between them after three minutes.

- (A) 200 metres
- (B) 150 metres
- (C) 180 metres
- (D) 120 metres

- A. (D)
- B. (C)
- C. (B)
- D. (A)

Ans. D

Sol.

Car X travels in 3 minutes = $12 \times (5/18) \times 3 \times 60 = 600$ m

Car Y travels in 3 minutes = $16 \times (5/18) \times 3 \times 60 = 800$ m

Distance between car X and car Y = $800 - 600 = 200$ m

15. A man covers 1 km, in 10 minutes. What is his speed in kmph?

- (A) 1.33
- (B) 1.25
- (C) 1.67
- (D) 6.00

- A. (D)
- B. (C)
- C. (B)
- D. (A)

Ans. A

Sol.

Speed = distance (in km)/ time (in hrs) = $1/(10/60) = 6$ km/hr

16. A train of length 210 metre runs at the speed of 108 km/hr. How long will it take for the train to cross a platform of length 150 metre?

- (A) 8 seconds

- (B) 9seconds
- (C) 10seconds
- (D) 12seconds

- A. (C)
- B. (A)
- C. (D)
- D. (B)

Ans. C

Sol.

Length of train = 210 m.

Length of platform = 150 m.

Speed _____ of

$$\text{train} = 108 \text{ km/hr} = 108 \times \frac{5}{18} = 30 \text{ m/s}$$

Total length covered by train = length of train + length _____ of

$$\text{platform} = 210 + 150 = 360 \text{ m.}$$

So time taken to cross the platform = Length covered by train / Speed of train = $360/30 = 12$ sec.

17. If a car runs at the speed of 54 km/hr, what distance will it cover in a minute?

- (A) 9 km
- (B) 90 metre
- (C) 900metre
- (D) 540metre

- A. (C)
- B. (B)
- C. (D)
- D. (A)

Ans. A

Sol.

Speed _____ of car =

$$54 \text{ km/hr} = 54 \times \frac{1000}{60} \text{ m/min} = 900 \text{ m/min}$$

Time = 1 min

Distance = Speed \times Time = $900 \times 1 = 900$ metre

18. If 30 men working 7 hours per day can finish a work in 15 days, how long will 25 men work per day to finish the same work in 12 days.

- (A) 8
- (B) 10.5
- (C) 12.5
- (D) 15

- A. (A)
- B. (C)
- C. (B)
- D. (D)

Ans. C

Sol.

$$M1 \times D1 \times H1 = M2 \times D2 \times H2$$

$$30 \times 15 \times 7 = 25 \times 12 \times H2$$

$$H2 = \frac{30 \times 15 \times 7}{25 \times 12} = 10.5$$

19. A man walks at the speed of 5 km per hour and crosses a bridge in 18 minutes. Find the length of the bridge.

- (A) 1500 metre
- (B) 1800metre
- (C) 1250metre
- (D) 1200metre

A. (D)

B. (A)

C. (B)

D. (C)

Ans. B

Sol.

$$\text{Speed of man} = 5 \text{ km/hr} = 5 \times \frac{1000}{60} \text{ m/min}$$

$$\text{Time taken} = 18 \text{ min}$$

$$\text{Length of bridge} = \text{speed} \times \text{time} =$$

$$5 \times \frac{1000}{60} \times 18 = 1500 \text{metre}$$

20. If P completes the first half of his journey at 40 km/hr and remaining at 50 km/hr, then calculate his average speed for the entire journey.

- (A) 44.44 km/hr
- (B) 53.33 km/hr
- (C) 45 km/hr
- (D) 60 km/hr

A. (D)

B. (A)

C. (B)

D. (C)

Ans. B

Sol.

$$\text{average speed} = \frac{2xy}{x+y}$$

$$= \frac{2 \times 40 \times 50}{40+50}$$

$$= 44.44 \text{ kmph}$$

21. Speed of Boat against the stream is 40 km/hr and in still water is 55 km/hr. Calculate the speed of boat with the flow of stream

- (A) 75 km/hr
- (B) 70 km/hr
- (C) 60 km/hr
- (D) 65 km/hr

A. (D)

B. (A)

C. (C)

D. (B)

Ans. D

Sol.

Let Speed of stream is W kmph

Speed of boat in still water B = 55 kmph

Speed of boat in upstream = B-W = 40 kmph(given)

Speed of stream W = 55- 40 = 15 kmph

Speed of boat in Downstream = B+W = 55 +15 = 70 kmph

22. P travels with the speed of 50 km/hr in the 1st hour and with 70 km/hr in the next 2 hours. Find his average speed

- (A) 60 km/hr
- (B) 63.33 km/hr
- (C) 59.33 km/hr
- (D) 62 km/hr

A. (D)

B. (B)

C. (C)

D. (A)

Ans. B

Sol.

Total distance travelled = 50 x 1 + 70 x 2 = 190 km

Total time taken = 3 hours

Average speed = Total distance travelled/ Total time taken = 190/3 = 63.33 km/hr

23. A train 150 meter long is running at a speed of 54 km/hr. Find how long will it take for the train to pass a pole?

- (A) 8 seconds
- (B) 10 seconds
- (C) 12 seconds
- (D) 15 seconds

A. (B)

B. (A)

C. (C)

D. (D)

Ans. A

Sol.

Length of the train= 150 m

Speed of the train=150 Km/hr

Changing speed in m/sec

$$= 54 \times \frac{5}{18} = 15 \text{ m/sec}$$

So time taken by the train to pass the pole=length of the train/speed of the train

$$= 150/15$$



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= 10 sec

24. When I travel to my farmhouse alone, I drive my car at a speed of 80 km/hr. without stops. But when I travel with my family , I cover the same distance at 60 km/hr. with stoppages. How long is the stoppage per hour?

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

- A. (A)
- B. (C)
- C. (D)
- D. (B)

Ans. B

Sol.

Speed of car when he travel to farmhouse without stoppages= 80Km/hr

He travels same distance with family at 60 Km/hr with stoppages.

Due to stoppages, he covers 20 Km less per hour.

Time taken to cover 20 km= $20/80 \times 60$
=15 min

Hence he stops on an average 15 min per hour.

25. The ratio of speeds of P and Q is 2 : 3. Q covers a distance of 360 km in 3 hours. What is the speed of P?

- (A) 80 kmph
- (B) 75 kmph
- (C) 60 kmph
- (D) 70 kmph

- A. (C)
- B. (B)
- C. (A)
- D. (D)

Ans. C

Sol.

Let the speed of P and Q be 2x and 3x

Speed of Q = $360/3 = 120$ km/hr

$3x = 120$

$x = 40$

Speed of P = $2x = 2 \times 40 = 80$ km/hr

26. The speed of the car A is 80 kmph. It covers certain distance in 6 hours. Car B covers 60 km less than car A in the same time. What is the speed of car B?

- (A) 50 kmph

- (B) 70 kmph
- (C) 60 kmph
- (D) 55 kmph

- A. (A)
- B. (C)
- C. (B)
- D. (D)

Ans. C

Sol.

Speed of car A = 80km/hr

Distance travelled in 6 hours = $80 \times 6 = 480$ km

Distance travelled by car B = $480 - 60 = 420$ km

Speed of Car B = distance travelled/time taken = $420/6 = 70$ km/hr

27. A train travels at a speed of 72 km/hr. How much distance will it cover in 15 sec.?

- (A) 150 metre
- (B) 300 metre
- (C) 200 metre
- (D) 100 metre

- A. (C)
- B. (A)
- C. (D)
- D. (B)

Ans. D

Sol.

For converting the speed in km/hr to m/s we multiply it by a factor $5/18$

Speed of train = 72 km/hr = $72 \times 5/18$ m/s
= 20 m/s

Distance covered by train in 15 sec = $20 \times 15 = 300$ m

28. The minimum speed of a man in down stream in 21 km/hr and the speed of stream is 4 km/hr. What will be the speed of man in upstream?

- (A) 19 km/hr
- (B) 17 km/hr
- (C) 15 km/hr
- (D) 13 km/hr

- A. (B)
- B. (A)
- C. (D)
- D. (C)

Ans. C

Sol.

Let the speed of man = x km/hr

Speed of man downstream = $x + 4 = 21$



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$x = 21 - 4 = 17 \text{ km/hr}$
Speed of man upstream = $17 - 4 = 13 \text{ km/hr}$

29. A 250m long train crosses a electric poll in 8 sec. If it takes 20 second to cross the platform, then find the length of platform

- (A) 375 meter
- (B) 625 meter
- (C) 500 meter
- (D) 675 meter

- A. (A)
- B. (D)
- C. (B)
- D. (C)

Ans. A

Sol. length of train (l) = 250 m, t = 8 sec

$$250 = 8 * s$$

$$s = 250/8$$

let length of platform = x

$$(250 + x) = 20 * (250/8)$$

$$x = 375 \text{ m}$$

30. A 180 meter long train is running at the speed of 140 km/hr. The time taken by the train to cross a pole is

- (A) 4.63 sec.
- (B) 5 sec.
- (C) 8.2 sec
- (D) 10 sec

- A. (C)
- B. (A)
- C. (B)
- D. (D)

Ans. B

Sol. 140 kmph = $140 \times (5/18) \text{ m/sec}$

$$\text{Now } 180 = t \times [140 \times (5/18)]$$

$$t = 4.63 \text{ sec}$$

31. Car B is running twice as fast as car

A. If car A covers a distance of 90 km in

$1\frac{1}{2}$ hrs. What is the speed of car B?

- (A) 60 km/hr
- (B) 90 km/hr
- (C) 100 km/hr
- (D) 120 km/hr

- A. (C)
- B. (D)
- C. (B)
- D. (A)

Ans. B

Sol.

.Let speed of car A = s and B = 2s

$$3/2 * s = 90$$

$$s = 60$$

thus, speed of B = 2s = 120

32. A man walks at a speed of 3 kmph. He doubles his speed after reaching exactly half way. He walks for 5 hours in all. What is the total distance travelled by him?

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

A. (C)

B. (D)

C. (B)

D. (A)

Ans. D

Sol.

.Let total distance be 2D.

He walks first D distance with 3kmph and the next D with 6kmph.

$$D/3 + D/6 = 5$$

$$D = 10, \text{ Total distance} = 20$$

33. The distance between point A and point B is 300 km. Two scooter riders start simultaneously from A and B towards each other. The distance between them after 2.5 hours is 25 km. The speed of one scooterist is 10 km/hr more than the other. Find the speed of each scooterist in km/hr.

- (A) 50 and 60
- (B) 30 and 40
- (C) 40 and 50
- (D) 60 and 70

A. (D)

B. (C)

C. (A)

D. (B)

Ans. C

Sol.

Let the speed of the first Scooter = x km/hr

And the speed of the first Scooter = x + 10 km/hr

They Cover total distance of 275 km in 2.5 hrs

Given,



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$$v_1t_1 + v_2t_2 = \text{total distance}$$

$$x \times 2.5 + (x+10) \times 2.5 = 275$$

$$2.5x + 2.5x + 25 = 275$$

$$5x = 250$$

$$x = 50$$

Hence the speed of each scooter is 50km/hr and 60 km/hr

34. A man traveling by bus finds that the bus crosses 35 electric poles in 1 minute. The distance between two consecutive poles is 50m. Find the speed of the bus?

- (A) 100 kmph
- (B) 102 kmph
- (C) 110 kmph
- (D) 90 kmph

- A. (D)
- B. (B)
- C. (C)
- D. (A)

Ans. B

Sol.

There will be 34 spaces between 35 poles. Thus, Distance covered by bus between 1st and 35th pole = $34 \times 50 = 1700m$

$$\text{Speed of bus} = \frac{1700}{60} \text{ m/sec}$$

$$= 170/6 \text{ m/sec.}$$

$$\text{Speed in kmph} = \frac{170}{6} \times \frac{18}{5} = 102 \text{ kmph}$$

35. Ali travels a distance of 300 m in 2 minutes and 30 seconds. What is his speed in kmph?

- (A) 6.9
- (B) 7.1
- (C) 7.2
- (D) 7.3

- A. (B)
- B. (A)
- C. (C)
- D. (D)

Ans. C

Sol.

300 metres in 150 seconds

$$\text{Speed} = 300/150 = 2 \text{ m/s}$$

$$\text{in kmph} = 2 \times 18 / 5 = 36/5 = 7.2 \text{ kmph}$$

36. Gopal covers 100 km. He travels at a speed of 60 kmph for the first 40 km and

the rest of the distance at 40 kmph. What is his average speed in kmph?

- (A) 44.20
- (B) 45.20
- (C) 46.20
- (D) 46.15

- A. (D)
- B. (B)
- C. (A)
- D. (C)

Ans. A

Sol.

$$\text{Total time taken} = 40/60 + 60/40 = 2/3 + 3/2 = 13/6 \text{ hours}$$

$$\text{Average speed} = \text{total distance}/\text{total time} = 100/(13/6) = 600/13 = 46.15$$

37. A 90 meter long train crossed a bridge in 15 second with 15 meter/second speed. Find out the length of bridge?

- (A) 225 Meter
- (B) 135 Meter
- (C) 315 Meter
- (D) 160 Meter

- A. (B)
- B. (D)
- C. (A)
- D. (C)

Ans. A

Sol. Total distance travelled = Length of train + Length of bridge = $15m/s \times 15s = 225m$

$$\text{Length of bridge} = 225 - 90 = 135m$$

38. If 10 man can dig a canal in 8 days then how many days would be taken by 15 men?

- (A) 12
- (B) 7
- (C) 6.67
- (D) 5.33

- A. (C)
- B. (A)
- C. (D)
- D. (B)

Ans. C

$$\text{Sol. } M_1D_1 = M_2D_2$$

$$10 \times 8 = 15 \times D_2$$

$$D_2 = 16/3 = 5.33 \text{ days}$$

39. Ankita is standing at the corner of a rectangular field having 40 meter and 30 meter length and breadth respectively. If



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she run along the diagonal and returned to the intial point then find out total distance travelled by her.

- (A) 100 meter
- (B) 80 meter
- (C) 140 meter
- (D) 120 meter

- A. (A)
- B. (B)
- C. (C)
- D. (D)

Ans. A

Sol. Length of diagonal = $\sqrt{(30^2+40^2)} = 50\text{m}$

Since she also returned to the original point

So total distance travelled = $50 \times 2 = 100\text{m}$

40. A man walks with the speed of 4km/hr for 3 hrs and return the same distance with the 16 km/hr by running. Find out the time taken by him in running?

- (A) 45 Minutes
- (B) 72 Minutes
- (C) 30 Minutes
- (D) 42 Minutes

- A. (B)
- B. (D)
- C. (A)
- D. (C)

Ans. C

Sol. Distance = $4 \times 3 = 12\text{km}$

Time in running = $12/16 \text{ hr} = 3/4 \text{ hr} = 45 \text{ minutes}$

41. Car B is running twice as fast as car A. If car A covers a distance of 90km in 2 hours. Then what will be the speed of Car B?

- (A) 90 km/hr.
- (B) 80 km/hr.
- (C) 100 km/hr.
- (D) 70 km/hr.

- A. (C)
- B. (B)
- C. (D)
- D. (A)

Ans. D

Sol. Speed of A = $90/2 = 45\text{km/hr}$

Speed of car B = $2 \times \text{Speed of A} = 2 \times 45\text{km/hr} = 90 \text{ km/hr}$

42. If mathematics sign '+' means 'x', '-' means '+' and 'x' means '-'. Then what is the value of $17 - 7 + 27 \div 3 \times 79$?

- (A) -1 (B) 0
- (C) 1 (D) 2

- A. (A)
- B. (C)
- C. (B)
- D. (D)

Ans. B

Sol. '+' = 'x',

'-' = '+' and

'x' = '-'

$17 - 7 + 27 \div 3 \times 79$

$= 17 + 7 \times 27 \div 3 - 79$

$= 17 + 63 - 79$

$= 1$

43. The ratio of the speed of x and y is 5 : 7, y covers a distance of 420 km in 3 hrs. Then what will be the speed of x?

- (A) 80 km/hr.
- (B) 90 km/hr.
- (C) 100 km/hr.
- (D) 120 km/hr.

- A. (D)
- B. (B)
- C. (A)
- D. (C)

Ans. D

Sol. Speed of y = $420/3 = 140\text{km/hr}$

$x/140 = 5/7$

$x = 100\text{km/hr}$

44. Car B is running twice as fast as car A. If car A covers a distance of 90 km in 1 1/2 hrs, what is the speed of car B?

- A. 60 kmph
- B. 90 kmph
- C. 100 kmph
- D. 120 kmph

Ans. D

Sol. Let speed of car A = x

And, speed of car B = 2x

We know that,

speed = $\frac{\text{distance}}{\text{time}}$

Given, $x = \frac{90}{\frac{3}{2}} = 60 \text{ km/hr}$

speed of car B = $2 \times 60 = 120 \text{ kmph}$

45. A man walks at a speed of 3 kmph. He doubles his speed after reaching



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exactly half way. He walks for 5 hours in all. What is the total distance travelled by him?

- A. 20 km
- B. 15 km
- C. 12 km
- D. 9 km

Ans. A

Sol. Let total distance = $2x$

We know that, $time = \frac{distance}{speed}$

Given that, $\frac{x}{3} + \frac{x}{6} = 5hr$

$$Or, \frac{2x+x}{6} = 5$$

$$\frac{3x}{6} = 5$$

$$x = 10$$

Total distance = $2x = 20km$.

46. A man traveled at 40 kmph. Had he increased his speed by 16 kmph, he would have covered 80 km more in the same time. Find the actual distance travelled?

- A. 240 km
- B. 200 km
- C. 230 km
- D. 248 km

Ans. B

Sol. actual distance travelled = x

actual speed = 40 kmph

According to question,

If he increases his speed by 16km/hr, he covers 80km more distance.

means,

time for which he is travelling = $80/16 = 5hr$

Traveling time in both the case is same then,

so, distance travelled at 40kmph is:

Distance = Time \times speed

distance = $5 \times 40 = 200 Km$

47. Find the total simple interest of Rs.500 for 7% rate for 3 years and Rs.700 for 10% rate for 3 years and Rs.1000 for 4% rate for 3 years:

- A. Rs.435
- B. Rs.500
- C. Rs.700
- D. Rs.1000

Ans. A

Sol. Total S.I. = $500 \times 7 \times 3 / 100 + 700 \times 10 \times 3 / 100 + 1000 \times 4 \times 3 / 100$
 $= 105 + 210 + 120$
 $= Rs.435$

48. Ms. Karishma borrowed Rs. 950 at 6% per annum simple interest. What amount will she pay to clear her debt after 4 years?

- (A) Rs. 282
- (B) Rs. 1187
- (C) Rs. 1178
- (D) Rs. 228

A. (B)

B. (D)

C. (C)

D. (A)

Ans. C

Sol.

Simple interest = $PRT/100 = (950 \times 6 \times 4) / 100 = Rs. 228$

so, the total amount he will pay = $950 + 228 = 1178$

49. At what percentage simple interest per annum a certain sum will double itself in 10 years?

- (A) 7%
- (B) 8%
- (C) 9%
- (D) 10%

A. (C)

B. (B)

C. (A)

D. (D)

Ans. D

Sol.

Let the principal be P

Since the sum will be doubled in 10 years

SI in 10 years = P

$PRT/100 = P$

$R \times 10 = 100$

$R = 10 \%$

50. Simple interest at the rate of 12% per annum is added into principle at each six months. Then what will be the effective rate of interest?

- (A) 12.34%
- (B) 12.26%
- (C) 12.38%
- (D) 12.36%

A. (D)



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- B. (B)
 - C. (A)
 - D. (C)
- Ans. A

Sol.

When the interest is added to the principal after each time period, it is called compound interest.

Rate of interest per annum = 12%

Rate of interest per 6 months = 6%

Effective rate of interest per annum = $6\% + 6\% + 6 \times 6 / 100 = 12.36\%$

51. Simple interest on a certain sum of money at 10% per annum for 2 years is Rs. 2000. If compound interest is applied on the sum of money. Then what will be the effective rate of interest?

- (A) 10.25
- (B) 10.50
- (C) 10.75
- (D) 10.15

- A. (A)
- B. (B)
- C. (D)
- D. (C)

Ans. B

Sol.

Effective rate of interest for two years = $10\% + 10\% + 10 \times 10 / 100 = 21\%$

Effective rate of interest per annum = $21/2\% = 10.50\%$

52. What is the ratio of simple interest earned on certain amount at the rate of 12% for 6 years and that for 12 years?

- (A) 1 : 2
- (B) 2 : 3
- (C) 3 : 4
- (D) 4 : 5

- A. (A)
- B. (B)
- C. (C)
- D. (D)

Ans. A

Sol.

$$S.I = (P \times R \times T) / 100$$

$$\text{Ratio} = \frac{P \times 12 \times 6}{P \times 12 \times 12}$$

$$= 1:2$$

53. What is the ratio of simple interest earned on certain amount at the rate of

12% p.a. for 9 years and that for 12 years?

- (A) 1 : 2
- (B) 2 : 3
- (C) 3 : 4
- (D) 4 : 5

- A. (C)
- B. (B)
- C. (D)
- D. (A)

Ans. A

Sol.

Since principal and rate are same

So

$$SI_1 : SI_2 = t_1 : t_2 = 9 : 12 = 3 : 4$$

54. Ram lends 6000 to Shiv for 3 years and 8000 to Krishna for 5 years at same annual rate. He received 5220 in all from both as interest. The rate of interest per annum is :

- (A) 6%
- (B) 7%
- (C) 8%
- (D) 9%

- A. (C)
- B. (B)
- C. (A)
- D. (D)

Ans. D

Sol. Let rate be r%

Interest on first = r% of $(6000 \times 3) = 180r$

Interest on second = r% of $(8000 \times 5) = 400r$

Now, according to question:

$$5220 = 180r + 400r$$

$$r = 5220 / 580 = 9\%$$

55. The simple interest on a certain sum of money for 2 years at 10% per annum is 2000. If interest compounded yearly on the sum then what will be the difference of both type of interest

- (A) 200
- (B) 220
- (C) 100
- (D) 120

- A. (D)
- B. (B)
- C. (C)
- D. (A)

Ans. C



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Sol. At SI total interest in two years = 20%
At CI Interest = $10+10+ (10 \times 10)/100 = 21\%$
Now $20\% = 2000$
 $1\% = 100 = \text{Difference in CI and SI}$

56. At what principle, the simple interest on 8% rate in 9 years will be same as the simple interest on 800 Rs. for 3 year at $9\frac{1}{2}\%$ rate
(A) 100 Rs.
(B) 150 Rs.
(C) 125 Rs.
(D) 110 Rs.

A. A
B. D
C. B
D. C
Ans. C

Sol.

Let the principal be = P

A.T.Q.

$$\frac{P \times 8 \times 9}{100} = \frac{800 \times 3 \times 9}{100 \times 2}$$

$$72P = 10800$$

$$P = ₹ 150.$$

57. On a certain rate of simple interest 800 Rs. becomes 956 in 3 years. If in this duration it becomes 1052. Then find the percent increment in rate.-

- (A) 7%
- (B) 4%
- (C) 5%
- (D) 9.5%

A. (C)
B. (A)
C. (D)
D. (B)

Ans. D

Sol.

Principal = Rs.800

Amount = Rs. 962

Simple interest = $956 - 800 = \text{Rs. } 156$

Time = 3 yrs

SI = $\frac{PRT}{100}$

$$156 = \frac{(800 \times R \times 3)}{100}$$

$$156 / 24 = R$$

$$R = 6.5\%$$

When amount = Rs.1052

$$SI = 1052 - 800 = \text{Rs. } 252$$

$$R = \frac{(SI \times 100)}{P \times T}$$
$$R = \frac{(252 \times 100)}{800 \times 3}$$
$$R = 252 / 24$$
$$R = 10.5\%$$

Therefore, percent increment in rate = $10.5 - 6.5 = 4\%$

58. How much time will 10000 Rs. take to become 13,310 Rs. at the rate of 10% annually. While as interest is compound interest.

- (A) 4 year
- (B) 5 year
- (C) 3 year
- (D) 6 year

A. (C)
B. (D)
C. (B)
D. (A)

Ans. A

Sol.

Amount = Rs.13,310

Principal = Rs.10,000

$$CI = 13310 - 10000 = \text{Rs. } 3310$$

Rate% = 10%

$$CI = P[(1+r/100)^n - 1]$$

$$3310 = 10000$$

59. 10,000 Rs. is given at 20% annual rate of compound interest. If interest is compounded half yearly. Then what will be the amount after two years.

- (A) 14600
- (B) 12500
- (C) 14642
- (D) 14641

A. (A)
B. (B)
C. (D)
D. (C)

Ans. C

Sol.

If Compound half yearly $r = 10\%$

Then,

$$\text{Amount} = 10000 \times \frac{110}{100} \times \frac{110}{100} \times \frac{110}{100} \times \frac{110}{100}$$
$$= 14641$$

60. Simple interest of a sum at y% rate for y years is y Rs. Find the principle.

- (A) $100 \div y$
- (B) $10 \times y$
- (C) $100y^2$



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(D) $100 \div y^2$

A. (D)

B. (B)

C. (A)

D. (C)

Ans. C

Sol.

Let Principal = P

$$y = \frac{P \times y \times y}{100}$$

$$P = \frac{100}{y}$$

61. Manish takes two loans of Rs.2000 for two years, one is on 5% simple interest and the second is on 5% compound interest. Find the difference between compound and simple interest.

(A) Rs. 5

(B) Rs. 50

(C) Rs. 25

(D) Rs. 15

A. (B)

B. (D)

C. (A)

D. (C)

Ans. C

Sol.

Effective rate of interest for two years at 5% per annum simple interest = $5 + 5 = 10\%$

Effective rate of interest for two years at 5% per annum compound interest = $5 + 5 + 5 \times 5/100 = 10.25\%$

Difference in % = 0.25%

Difference = 0.25% of 2000 = ₹ 5

62. Mr. Ibrahim borrowed Rs. 7500 at 5% per annum compound interest. The compound interest compounded annually for 2 years is:

(A) Rs. 768.75

(B) Rs. 8268.75

(C) Rs. 8286.75

(D) Rs. 786.75

A. (C)

B. (D)

C. (A)

D. (B)

Ans. C

Sol.

Given, principal = Rs. 7500

Rate = 5% per annum & time = 2 years
 Effective rate of interest for 2 years = $5 + 5 + 5 \times 5 / 100 = 10.25\%$
 Required interest = $7500 \times 10.25/100 =$
 Rs. 768.75

63. Mr. Prabhat borrowed Rs. 8000 at 5% per annum compound interest. The compound interest compounded annually for 2 years is :

(A) Rs. 820

(B) Rs. 8820

(C) Rs. 8802

(D) Rs. 802

A. (B)

B. (D)

C. (C)

D. (A)

Ans. D

Sol.

Principal=P=8000 Rs.

Interest rate=r=5% p.a.

Time=t=2 year

Compound

interest=

$$8000 \times \left(\frac{105}{100}\right)^2 - 8000 = 8820 - 8000 = 820 \text{ Rs.}$$

64. Mr. Sinha invested money in FD. How much will he get on maturity. If Rs. 15500 is invested at 20% per annum compound interest for 6 months, compounded quarterly?

(A) Rs. 17088.5

(B) Rs. 17088.75

(C) Rs. 17088.35

(D) Rs. 17088

A. (B)

B. (C)

C. (D)

D. (A)

Ans. A

Sol.

Interest is compounded quarterly.

So, rate = $20/4 = 5\%$

Time period = 6 month = 2 quarter

Principal (P) = 15500 Rs.

$$A = P(1+r/100)^n = 15500(1+5/100)^2 = 15500 \times (21/20)^2 = 17088.75 \text{ Rs.}$$

65. A man deposits Rs. 500 at the beginning of each year for 2 years at 10%



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per annum compound annually. Find the maturity value at the end of the 2nd year

- (A) Rs. 1,050
- (B) Rs. 1,150
- (C) Rs. 1,155
- (D) Rs. 1,200

- A. (B)
- B. (C)
- C. (D)
- D. (A)

Ans. B

Sol.

Amount after 1 year = $500 \times \frac{11}{10} = 550$

Amount after 2 years = $(550 + 500) \times \frac{11}{10} = 1155$

66. What will be the amount after 2 years when a principle of Rs 80,000 is given at 20% compounded half yearly?

- (A) Rs 97,240
- (B) Rs 117,128
- (C) Rs 115,200
- (D) Rs 120,000

- A. (D)
- B. (A)
- C. (B)
- D. (C)

Ans. C

Sol.

Rate of interest per half year = 10%

Time taken = 2 year = 4 half years

Amount = $P(1+r/100)^t$

Amount = $80000(1+10/100)^4 = \text{Rs. } 117128$

67. A certain amount is invested at a certain simple interest rate for a period of 6 years. If the amount is invested at 3% more rate then it has fetched Rs 900 more. Find the principle Amount.

- (A) Rs 3500
- (B) Rs 4000
- (C) Rs 4500
- (D) Rs 5000

- A. (D)
- B. (B)
- C. (C)
- D. (A)

Ans. A

Sol.

If the rate is increased by 3%

Then simple interest for 6 years is increased by = $6 \times 3 = 18\%$

If,

18% = Rs. 90

100% = $100 \times 90 / 18 = \text{Rs. } 5000$

68. The difference between simple interest and compound interest on a certain sum of money at 5% per annum for 3 years is Rs. 14.48 . Find the principle. (Rounded off)

- (A) Rs. 1850
- (B) Rs. 1999
- (C) Rs. 1899
- (D) Rs. 2160

- A. (A)
- B. (D)
- C. (C)
- D. (B)

Ans. C

Sol.

Let the principal be P

Simple interest for 3 years at 5% per annum = $P \times 5 \times 3 / 100 = 15P / 100$

Compound interest for 3 years at 5% per annum = $P(1+5/100)^3 - P = 1261P/8000$

Difference between CI and SI = $1261P/8000 - 15P/100 = 61P/8000 = 14.48$

$61P/8000 = 14.48$

$P = 14.48 \times 8000 / 61 = \text{Rs. } 1899$

69. A borrowed a certain sum of money from the bank at 8% interest compounded half yearly. What was the principal if he pays Rs. 1,96,851 at the end of one and a half years?

- (A) Rs. 168,000
- (B) Rs. 175,000
- (C) Rs. 179,000
- (D) Rs. 184,000

- A. (D)
- B. (B)
- C. (C)
- D. (A)

Ans. B

Sol.

Rate of interest per annum = 8%

Rate of interest per half year = 4%

Amount = $P(1+r/100)^t$

$196851 = P(1+4/100)^3$

$P = 196851 \times (25/26)^3 = \text{Rs. } 175000$

70. The compound interest on a certain sum of money of 4% per annum, for 2



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years is 10 rupees more than the simple interest on the same sum at the same rate and for the same time. Find the principal:

- (A) Rs.5,000
- (B) Rs.4,500
- (C) Rs.6,250
- (D) Rs.3,500

- A. (C)
- B. (D)
- C. (B)
- D. (A)

Ans. A

$$\begin{aligned}\text{Sol. C.I} &= P(1 + r/100)^2 - P \\ &= (26/25)^2P - P \\ &= 51P/625 \\ \text{S.I} &= (Px2x4)/100 \\ &= 2P/25 \\ \text{C.I} - \text{S.I} &= P/625 \\ P/625 &= 10 \\ P &= \text{Rs.6250}\end{aligned}$$

71. A sum of money becomes 3 times to itself at particular rate in 8 years. How much time it will take to become 5 times to itself at the same rate

- (A) 14 years
- (B) 15 years
- (C) 16 years
- (D) 18 years

- A. (B)
- B. (C)
- C. (D)
- D. (A)

Ans. B

Sol. A sum of money becomes 3 times which means the interest is 2 times the principal.

$$2P = (Pxrx8)/100$$

$$r = 25\%$$

$$\text{Now, } 4P = (Px25xt)/100$$

$$t = 16 \text{ years}$$

72. R borrowed 1200 at 13% per annum simple interest. What amount will R pay to clear the debt after 5 years?

- (A) 1860
- (B) 1880
- (C) 1980
- (D) 2000

- A. (A)
- B. (B)
- C. (C)

D. (D)

Ans. C

$$\begin{aligned}\text{Sol. S.I} &= (PxRxT)/100 \\ &= (1200 \times 13 \times 5)/100 \\ &= 780\end{aligned}$$

$$\text{Amount after 5 years} = 1200 + 780 = 1980$$

73. Calculate the amount for Rs.37,500 at the rate of 8% per annum compound interest compounded half yearly for 1.5 years.

- (A) Rs.42,182.40
- (B) Rs.42,000
- (C) Rs.42,120
- (D) Rs.42,812.4

- A. (D)
- B. (C)
- C. (A)
- D. (B)

Ans. C

Sol.

$$P = 37,500$$

$$\text{Rate of interest for half yearly} = 4\%$$

$$\text{Time} = 3 \text{ half years}$$

$$\text{Amount} = P \left(1 + \frac{r}{100}\right)^n$$

$$= 37500 \left(1 + \frac{4}{100}\right)^3$$

$$\text{Amount} = 42182.4$$

74. On a certain principal, simple interest amounts to Rs. 1,000 in 1 year at the rate of 10% p.a. What will be the effective rate of interest if the same is compounded on half yearly basis?

- (A) 10.10
- (B) 10.15
- (C) 10.20
- (D) 10.25

- A. (D)
- B. (C)
- C. (B)
- D. (A)

Ans. A

Sol.

For half yearly compounding ;

$$\text{Rate for half year} = r/2 = 5\%$$

$$\text{Effective rate for 1 year} = 5 + 5 + (5 \times 5)/100 = 10.25\%$$



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75. Find the principle money becomes Rs.1000 by 8% yearly simple rate in 9 month-

- (A) Rs.781.40
- (B) Rs.981.40
- (C) Rs.943.40
- (D) Rs.843.40

A. (D)

B. (A)

C. (C)

D. (B)

Ans. C

Sol. $I = \frac{PRT}{100}$

$A - P = \frac{PRT}{100}$

Here time = 9 months = $\frac{3}{4}$ years

$1000 - P = \frac{P \times 8 \times \frac{3}{4}}{(4 \times 100)} = \frac{3P}{50}$

$53P = 50000$

$P = \frac{50000}{53} = \text{Rs.}943.40$



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