**Time Distance and Work**

Prepared by: Tanmay Patil

1. A car finishes a journey in 10 hours at a speed of 48 km/hr. To finish the journey in 7.5 hours, the speed of the car should be increased by

Answer:

* Let x be the new speed
* Distance = 10\*48 = 7.5\*x
* x = 64km/hr
* So, Speed should be increased by = 64-48 = **16 km/hr**

1. A train running between two stations arrives at its destination 10 minutes late when it travels at 40 kmph and 16 minutes late when it travels at 30 kmph. The distance between the two stations in km is

Answer:

* Assume train normally takes T hours to reach its destination and D the distance covered
* D = 40 (T + 10/60)
* D = 30 (T + 16/60)
* T = 8/60 hours = 8 minutes, D = **12km**

1. A clerk walks from his house at 4 km/hr and reaches his office 5 minutes late. If his speed is 5 km/hr, he will reach 10 minutes early. How far in km is his office?

Answer:

* Same as question 2
* D = 4 (T + 5/60)
* D = 5 (T - 10/60)
* T = 70 minutes, D = **5km**

1. A bus travelling at 50 kmph leaves Burbank at 9 am. A plane, travelling at 300 kmph in the same direction leaves Burbank at 1 p.m. How many minutes does the plane take to overtake the bus?

Answer:

* At time of overtaking, both the plane and bus must have traveled the same distance
* Distance traveled by bus from 9 a.m. to 1 p.m. = 50\*4
* 300 \* T/60 = (50\*4) + (50 \* T/60)
* T = 48/60 hours = **48 mins**

1. An aircraft flying 800 km covers the first 200 km at 100 km/hr, the second 200 km at 200km/hr, the third 200 km at 300 km/hr and the last 200 km at 400 km/hr. The average speed of the aircraft in kmph is

Answer:

* Average Speed = Total Distance / Total Time
* Time @ 100kmph = 200/100 = 2 hr.
* Time @ 200kmph = 200/200 = 1 hr.
* Time @ 300kmph = 200/300 = 2/3 hr.
* Time @ 400kmph = 200/400 = ½ hr.
* Average Speed = 800 / (2+1+2/3+1/2) = **192 km/hr.**

1. One hour after Pam started walking from A to B, a distance of 58 miles, Sue started along the same road from B to A. If Pam’s walking rate was 4 mph and Sue’s speed was 5 mph, how many miles had Sue walked when they met?

Answer:

* If they meet T hr. after Sue started walking
* Total Distance = Distance traveled by Pam + Distance traveled by Sue
* 58 = 4(T+1) + 5(T)
* T = 6 hr.
* Distance traveled by Sue = 5(T) = **30 miles**

1. Flowers in a basket are doubled every minute. In an hour the basket is full. The basket would be half full after how many minutes?

Answer:

* Don’t think in terms of what happens in the next minute
* Think in terms of what was the status in the previous minute
* If at 60 minutes the basket was full, then it must have been half filled the previous minute.
* Solution: **59**

1. It takes an hour for a saree to dry in the sun. If 25 such sarees are all dried separately and simultaneously, they all would dry in how many hours?

Answer:

* They are drying separately and simultaneously.
* Solutions: **1 hr**

1. A monkey ascends a greased pole 21 m high. In the first minute it ascends 5 m and in the next minute it descends 3m. If he continues this process, in how many minutes will it reach the top?

Answer:

* So the monkey will climb 2mtrs in 2 minutes
* So after 16 minutes it would have climbed 16 mtrs
* Now in the next step it will climb 5mtrs, (16+5=21)which means it will get to the top in 17 minutes
* Solution: **17 minutes**

1. Mary can type 500 words in 10 minutes and Sam can type 400 words in 10 minutes. They can together type 3600 words in

Answer:

* Mary’s rate = 500/10 = 50 words/min
* Sam’s rate = 400/10 = 40 words/min
* If they type together, then total rate = 50+40 = 90 words/min
* Time taken = 3600/90 = 40 minutes

1. Three persons A, B and C can do a piece of work in 15 days, 6 days and 10 days respectively. In how many days will all the three finish three times the similar work?

Answer:

* Rate of A = 1/15
* Rate of B = 1/6
* Rate of C = 1/10
* Total Rate = 1/15 + 1/6 + 1/10 = 1/3
* So it takes 3 days to finish the work if they work together
* So it will take (3\*3) 9 days to finish 3 times as much work
* Solution: **9 days**

1. Two mail sorters r and s work at similar rates. If r can sort x letters in 60 minutes, how long will it take for both the sorters working together but independently to sort x letters?

Answer:

* Rate of r = x/60 letters/min
* Rate of s = x/60 letters/min
* Total Rate = x/60 + x/60 = x/30 letters/min
* Sit it will take 30 minutes to sort x letters if they work together
* Solution: **30 minutes**

1. H, R and K working alone can do a piece of work in 9, 8 and 6 days respectively. They jointly finish the work and earn Rs 522. The earnings should be divided in the ratio

Answer:

* Rate of work of H, R and K = 1/9, 1/8, 1/6
* Now, whoever works faster should get paid more and vice versa
* So the ratio of their earnings should be in ratio H:R:K = 1/9 : 1/8 : 1/6 = **8:9:12**

1. John can do certain work in 30 hours. If he and his son work together, the time taken is 20 hours. The son working in the same capacity as when he was working with his father, can finish the work in

Answer:

* Rate of John = 1/30
* Son finishes the work alone in x hrs
* Rate of son = 1/x
* Total Rate = 1/30 + 1/x
* They will complete entire work in 20 hrs
* 20(1/30 + 1/x) = 1
* x = **60 hours**

1. Mohan can do a piece of work in 20 days and Harish in 25 days. They work together for 5 days and then Harish leaves. Mohan will finish the remaining work in how many days?

Answer:

* Let Mohan finish the remaining work in x days
* x = **11 days**

1. A and B can paint a home in 10 and 15 days respectively. They started painting but unfortunately A had to leave after some days and B finished the remaining task in 5 days. After how many days did A leave?

Answer:

* Assume A left after x days
* x = **4 days**

1. Ron can do a piece of work in 80 days. He works at it for 10 days and then Juan alone finishes the remaining work in 42 days. Had the two worked together from the beginning, they would have completed the work in

Answer:

* Assume Juan alone can finish the work in J days
* Rate of Juan = 1/J
* J = 48 days
* x = **30 days**

1. A certain number of men promise to do a job in 10 days. But 10 of them do not come. If the rest of the men can do the job in 12 days, the original number of men was

Answer:

* Let original number of men be m and one man can complete the work in r days
* Rate of work of one man = 1/r
* m = 60

1. A contractor undertakes to do a job in 300 days. He employs 200 men and after 100 days finds that only a quarter of the work is done. The number of additional men needed to finish the work in time is

Answer:

* Let one man complete the work in r days and additional men required be m
* Rate of work of one man = 1/r
* r = 80000 days
* m = **100**

1. Three men or six women can do a piece of work in 20 days. In how many days can 12 men and 8 women do the same piece of work?

Answer:

* Assume 1 man can complete the work in m days
* Assume 1 woman can complete the work in w days

1. A cistern normally filled in 8 hours, takes 2 hours longer due to a leak. If the cistern is full, the leak shall empty it in

Answer:

* Assume leak can drain the entire cistern in l hours
* l = **40 hours**

1. There are two taps which can fill a tank in 60 minutes and 75 minutes respectively. There is another exhausting tap in it. If all the three taps are opened simultaneously, the tank gets filled up in 50 minutes. When the tank is full, the third tap can empty it in how many minutes?

Answer:

* Let rate of exhausting tap be t
* t = **100 minutes**

1. A pipe can fill a tank in 15 hours. The tank develops a hole and 10% of the water leaks out. The pipe will now fill the tank in

Answer:

* So the hole leaks 10% water in 15 hrs, so it will leak 100% water in 150 hrs
* x = 16.6666 = **16 hours 40 minutes**

1. Two pipes A and B fill a tank separately in 24 minutes and 40 minutes respectively and a waste pipe C releases 30 liters per minute. If all the pipes are opened, the tank is filled in an hour. The capacity of the tank in liters is

Answer:

* Assume waste pipe can empty the entire tank in w minutes
* w = 20 minutes
* So waste pipe can empty the entire tank in 20 minutes at 30 liters per minute
* Tank Size = 30\*20 = **600 liters**

1. Two pipes A and B fill a cistern in 24 and 32 minutes respectively. Assuming that both pipes are opened simultaneously, when must the first pipe be closed so that the cistern in filled in 16 minutes?

Answer:

* Assume A is closed after x minutes
* x = **12 minutes**