Assumptions:

2 gophers

One pile of books

One incinerator

One gopher is present at start and other is at the end(near incinerator)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| S No. | Gopher | Books | Task | Remaining books | End time | Pile next to incinerator | Total time |
| 1 | 1 | 50 | G1 loads 5 books in the cart | 45 | 10 secs |  | 10 |
| 2 | 1  2 | 45 | G1 starts moving from pile to the incinerator  G2 starts moving from incinerator to pile | 45 | 30 secs |  | 40 |
| 3 | 1  2 | 45 | G1 will unload the cart and burn 3 books at a time  G2 will load at the same time when G1 was unloading the cart. | 40 | 10 secs | 2 | 50 |
| 4 | 2  1 | 40 | G2 starts moving towards the incinerator  G1 goes to books pile at the same time | 40 | 30 secs |  | 80 |
| 5 | 2  1 | 40 | G2 will unload the cart and burn 3 books at a time  G1 will load at the same time when G2 was unloading the cart | 35 | 10 secs | 2 | 90 |
| 6 | 1  2 | 35 | G1 starts moving towards the incinerator  G2 goes to books pile at the same time | 35 | 30 secs |  | 120 |
| 7 | 2  1 | 35 | G2 will load the cart  G1 will unload the cart | 30 | 10 secs | 2 | 130 |
| 8 | 2  1 | 30 | G2 will move towards the incinerator  G1 will move toward the pile | 30 | 30 secs |  | 160 |
| 10 | 2  1 | 30 | G2 will unload the cart  G1 will load the cart | 25 | 10 secs | 2 | 170 |
| 11 | 1  2 | 25 | G1 moves towards the incinerator  G2 moves towards the book pile | 25 | 30 secs |  | 200 |
| 12 | 1  2 | 25 | G2 will load the cart  G1 will unload the cart | 20 | 10 secs` | 2 | 210 |
| 13 | 1  2 | 20 | G2 will move towards the incinerator  G1 will move toward the pile | 20 | 30 secs |  | 240 |
| 14 | 2  1 | 20 | G2 will unload the cart  G1 will load the cart | 15 | 10 secs | 2 | 250 |
| 15 | 1  2 | 15 | G1 moves towards the incinerator  G2 moves towards the book pile | 15 | 30 secs |  | 280 |
| 16 | 1  2 | 15 | G2 will load the cart  G1 will unload the cart | 10 | 10 secs | 2 | 290 |
| 17 | 1  2 | 10 | G2 will move towards the incinerator  G1 will move toward the pile | 10 | 30 secs |  | 320 |
| 18 | 2  1 | 10 | G2 will unload the cart  G1 will load the cart | 5 | 10 secs | 2 | 330 |
| 19 | 1  2 | 5 | G1 moves towards the incinerator  G2 moves towards the book pile | 5 | 30 secs |  | 360 |
| 20 | 2  1 | 5 | G2 loads the cart  G1 unloads the cart | 0 | 10 secs | 2 | 370 |
| 21 | 2 | 0 | G2 moves towards the cart | 0 | 30 secs |  | 400 |
| 22 | 2 | 0 | G2 unloads the cart | 0 | 10 secs | 2 | 410 |

Now we have 20 books near the incinerator.

We will burn 3 books at a time

3\*6=18 books

Time taken=20\*6=120 secs

Books left=2

Time taken=20secs

Total=140 secs

Total time taken for burning 50 books=410+140=550 secs

Case 2: Divide books into two piles

Time taken will be half= 550/2

=275