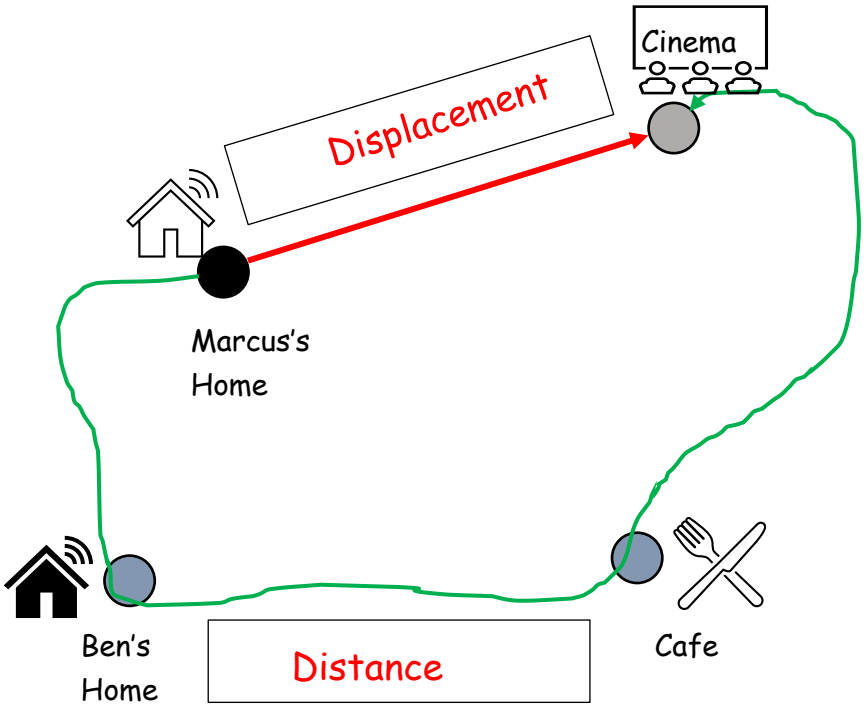


1. Markus and Ben want to go to the cinema.
Markus left home at **10 am.** First, he went at a constant speed to meet Ben in his house. He **walked 1.2 km,** and it took him **20 minutes**. Then they decided to buy a light snack at the café. So, they walked to the café at the same speed for **15 minutes.** and then walked at the uniform speed **1 km** to the cinema. They arrived **at 11:00 am.**

a. Label in the box which part of their journey is Distance and Displacement

the longest path is the Distance.

the shortest path is the Displacement, as the displacement is a vector whose length is the shortest distance from the initial to the final position.

b. How far the café from Ben's Home, if the whole journey is 3 km?

0.8 km

c. How long was Markus's journey from Home to Cinema?

1 hour = 60 minutes = 3600 seconds

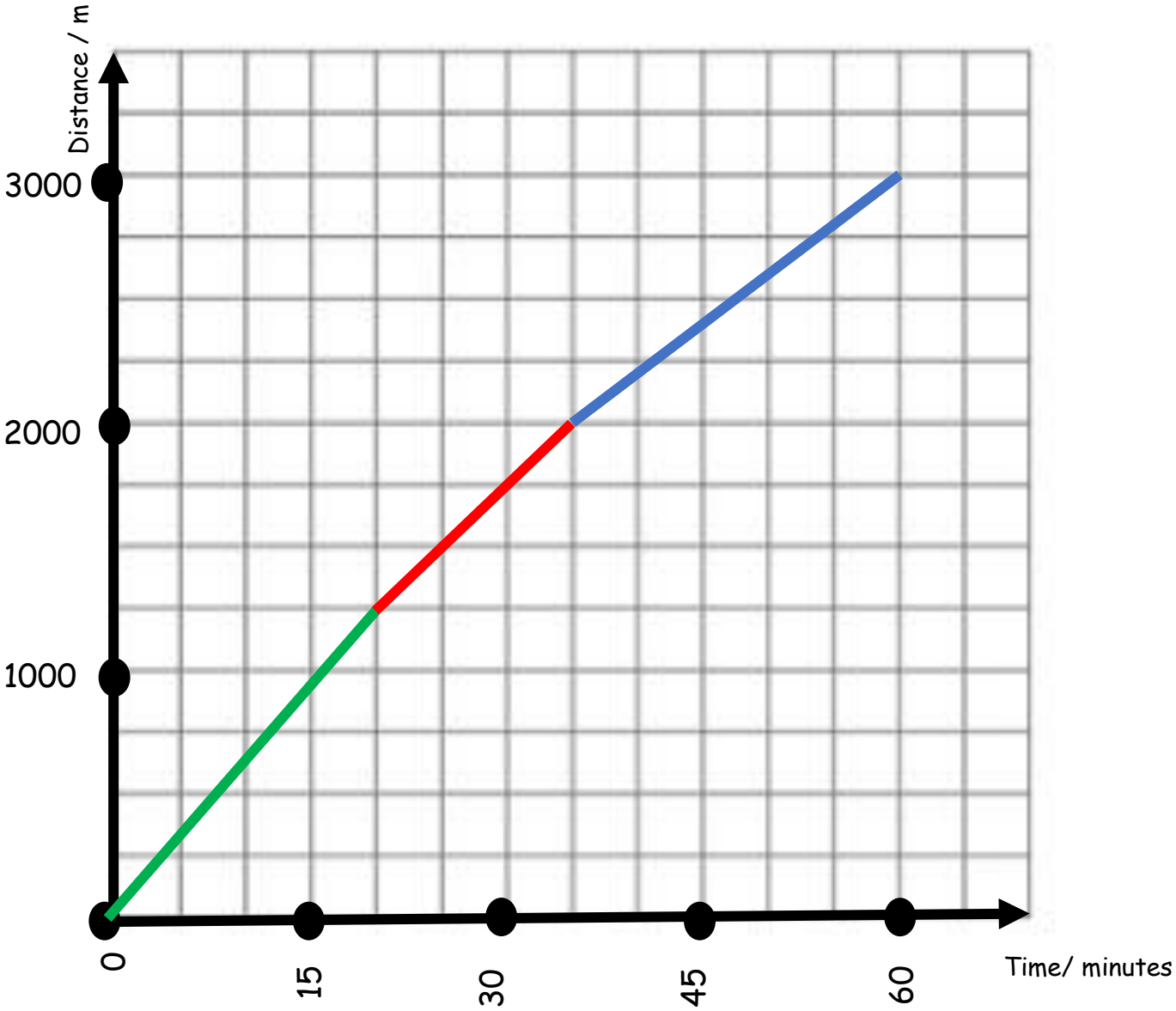
d. Calculate Markus's Average Speed in m/s

0.83 m/s

e. Calculate Markus's Average Velocity in m/s, knowing that between his home and cinema 800 metres.

0.22 m/s

f. Plot the Distance -Time graph shows Markus's trip.



To solve these questions, let's break down Markus and Ben's journey step by step:

Step 1: Meeting at Ben's House

Distance: 1.2 km

Time: 20 minutes

Step 2: Walking to the Café

Distance: Unknown

Time: 15 minutes

Step 3: Walking to the Cinema

Distance: 1 km

Time: 25 minutes (from 10:35 am to 11:00 am)

b. To determine the distance between the café and Ben's home, we need to subtract the distances covered in step 1 and step 3 from the total journey distance.

Total Journey Distance = 3 km

Distance from Home to Ben's house + Distance from Café to Cinema = 1.2+1.0 =2.2 km

Distance from Café to Cinema = 3 km - 2.2 km = 0.8 km

c. Markus's total journey time from home to the cinema:
He left home at 10 am, and he arrived home at 11 am.
therefore, the total journey time is 1 hour.

d. Average Speed is calculated by dividing the total distance traveled by the total time taken.

Total Distance Travelled = 3 km=3000 m
Total time of the journey = 1 hour= 60 minutes=60x60=3600 seconds

Average Speed = Total Distance Traveled / Total Journey Time

Average Speed = 3000 m / 3600 seconds

Average Speed ≈ 0.83 m/s

e. Average Velocity is the total displacement divided by the total time taken.

Total Displacement = Displacement from Home to Cinema = 800 meters

Total Time Taken = Total Journey Time = 60 minutes = 60 x 60 = 3600 seconds

Average Velocity = Total Displacement / Total Time Taken

Average Velocity = 800 meters / 3600 minutes

Average Velocity ≈ 0.22 m/s