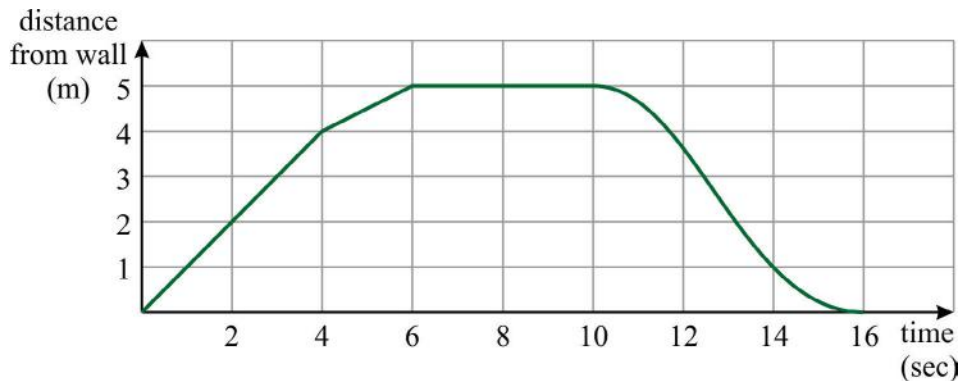# Describing Functions 2

Example 1. Tim is practicing driving with a car that is parked in front of a wall. The graph shows the car's distance from the wall as a function of time. Can you imagine what is happening, based on the graph?


First, Tim backs off the wall with a constant (fairly slow) speed for four seconds. Then he slows down to a slower speed, still going away from the wall. At 6 seconds, he stops for four seconds, and doesn't move, the car being 5 m from the wall. Then, he starts towards the wall, in a smooth motion — first gradually gaining speed, then moving with a constant speed, then gradually with decreasing speed, until he is back at the wall at 16 seconds.

1. The graph shows the distance that Anne jogged and walked during a 1-hour walk, as a function of time.
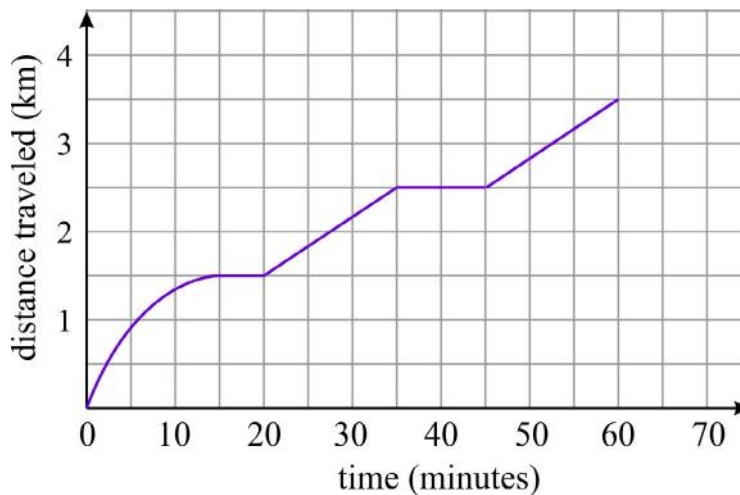

    a. What was the total distance she covered in that hour?

    b. What was her speed at 40 minutes?

    c. At what intervals was she going at a steady speed?

    d. Describe her speed in the first 15 minutes.

2. John plays with his dog Max at a local park. John stays in one place. The graph shows how far Max is from John. Make a story about Max's movements that matches the graph.
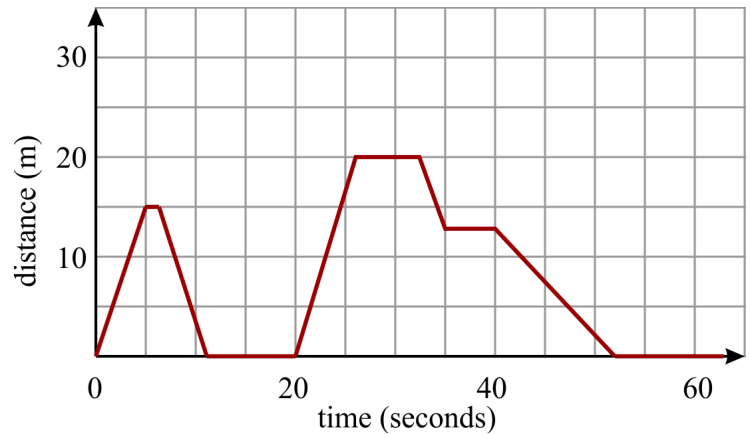
3. Draw a plot of a function that depicts the distance of Max, John's dog, from John, following the description. First, Max runs away from John for five seconds, until he is 20 meters away. Then Max slows down gradually during the next five seconds until he comes to a stop. Then he stops for 10 seconds, sniffing the ground. Then he still goes further away from John, for another ten seconds, but fairly slowly. Lastly Max turns suddenly and makes a mad dash back to John.
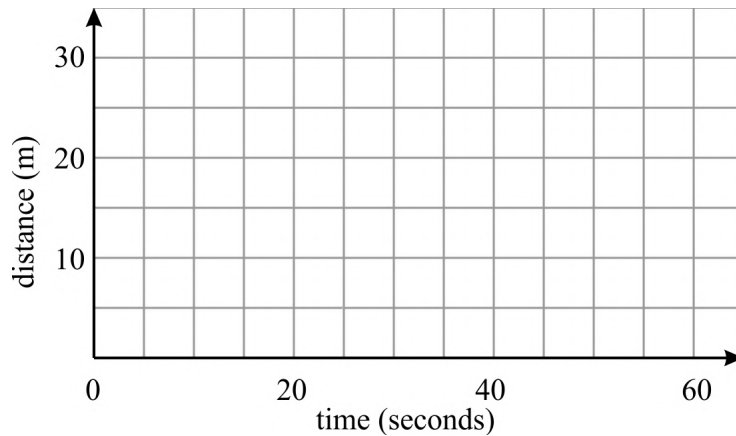
4. You throw a ball directly upwards. Sketch a graph depicting its height as a function of time.

First, the ball gains height quickly, but then it slows down. At 1.5 seconds, at a height of 11 meters, it stops gaining height and starts falling. First, it falls slowly, and then with increasing speed, until it reaches your hands again, at 3 seconds.