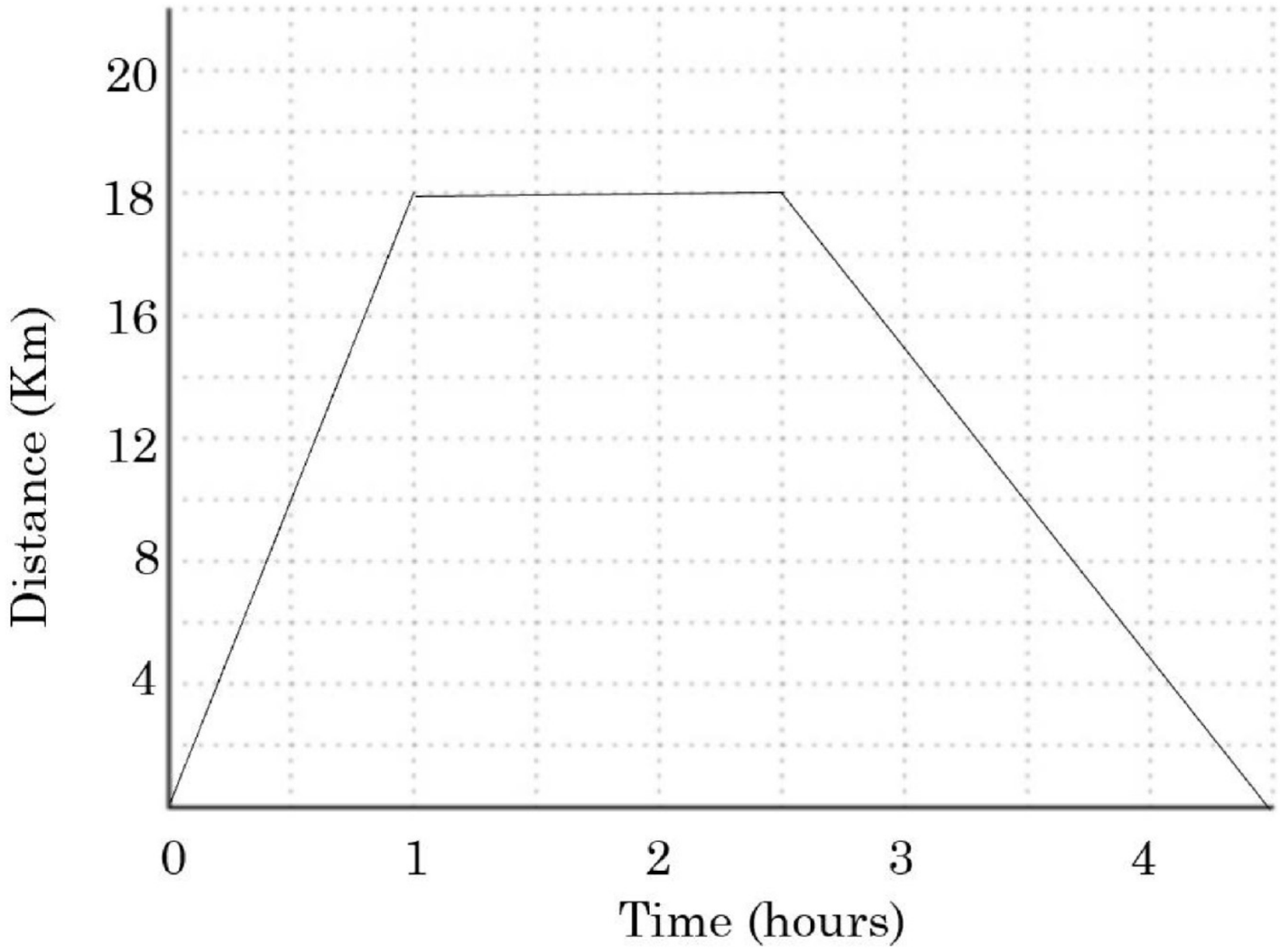
Real-Life Graphs Exam Practice

Q1. Robert cycles from his house to the gym. He spends some time exercising at the gym and then cycles home.



a) How long does Robert spend at the gym in minutes?

$1\frac{1}{2}$ hours

Answer: 90 minutes

(1 mark)

b) Work out the speed Robert travels to the gym, stating the units.

$S = \frac{D}{T} \Rightarrow S = \frac{18\text{ km}}{1\text{ hr}}$

Answer: 18 km/hr

(2 marks)

c) Robert goes to the gym three times a week. His trainer estimates he burns 300 calories going to the gym, and 450 calories at the gym. Here is his calculation for the total amount of calories Robert spends each week:

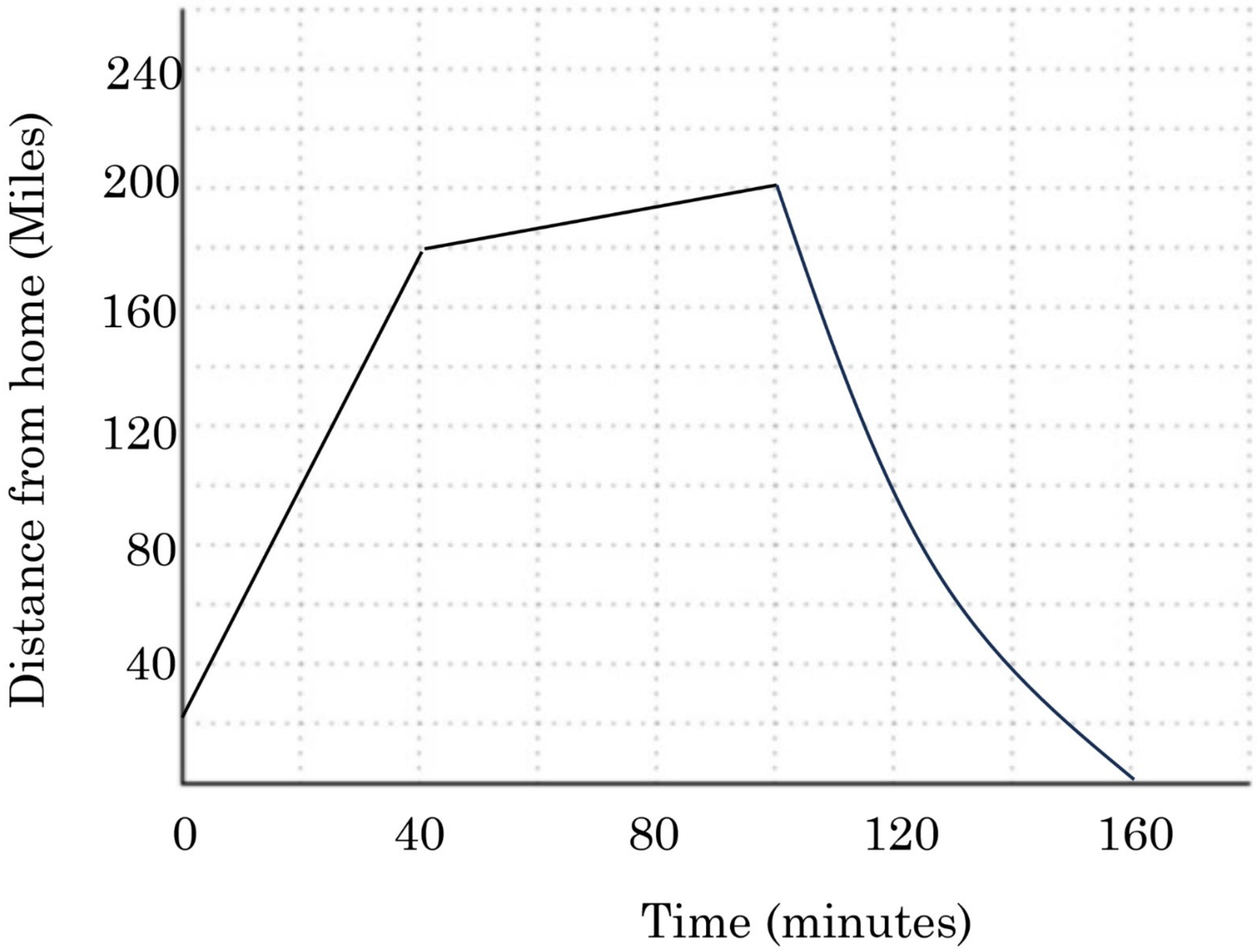
$$3 \times (300 + 2 \times 450)$$

With reference to the graph, explain why his estimation is unlikely to be correct.

Answer: His speed coming back from the gym is greater than his outward journey. He would likely use more calories than 300

(2 marks)

Q2. Sarah goes out for a run. Her route is to the park, where she has a rest, and then she runs back home. Sarah runs at a constant speed. Identify all the mistakes in the travel graph below:

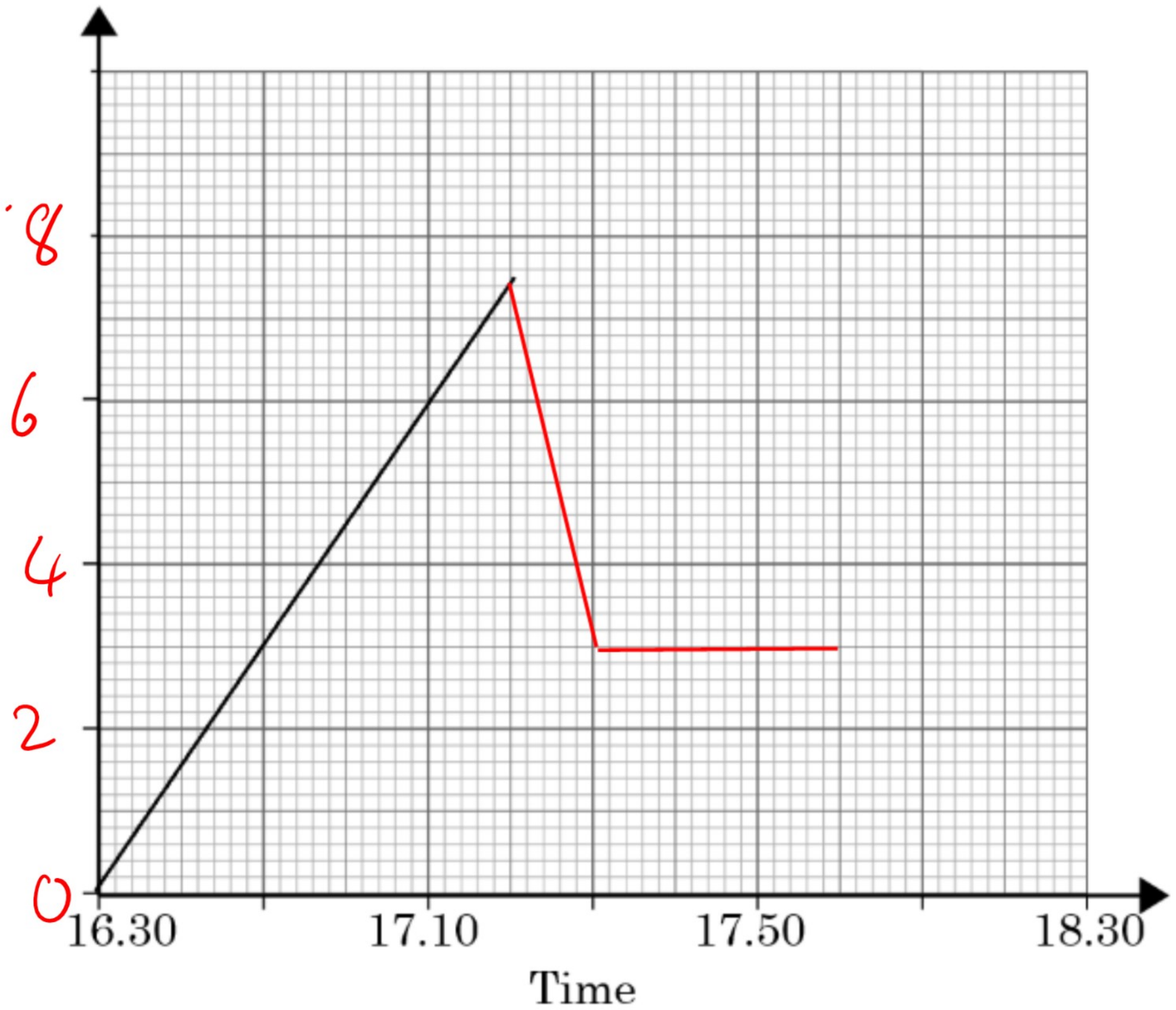


- Distances on both axis are not realistic for a run.
- The graph suggests she is not setting off from home, in contradiction to the info given
- The journey from the park is not at a constant speed as shown by the fact it's not a straight line
- The graph is never horizontal, which it should be to represent her rest period.

Answer: _____

(3 marks)

Q3. Jap sets off from college walking at 9 km/h. The graph shows how far he manages to get:



Thinking that he has forgot his hat, he stops for 10 minutes, then heads back towards college the way he came at a speed 30% faster than before. After 20 minutes, he realises to his relief that he didn't have it with him that day. He then rests for 30 minutes.
Complete the travel graph using the information, labelling the axes.

- $D = S \times T \Rightarrow D = 9\text{mph} \times \frac{5}{6}$
  $= 7.5$ miles (1st stage)
- $9.50 \times 9\text{mph} = 13.5\text{mph}$ (2nd stage)
- $D = 13.5 \times 0.\dot{3}$
  $= 4.5$ miles

Answer: _____

(2 marks)

b) Jap's house is 11 km away from college. Work out how far he has left to travel to arrive home.

$11 - 3 = 8$

Answer: 8 km

(2 marks)

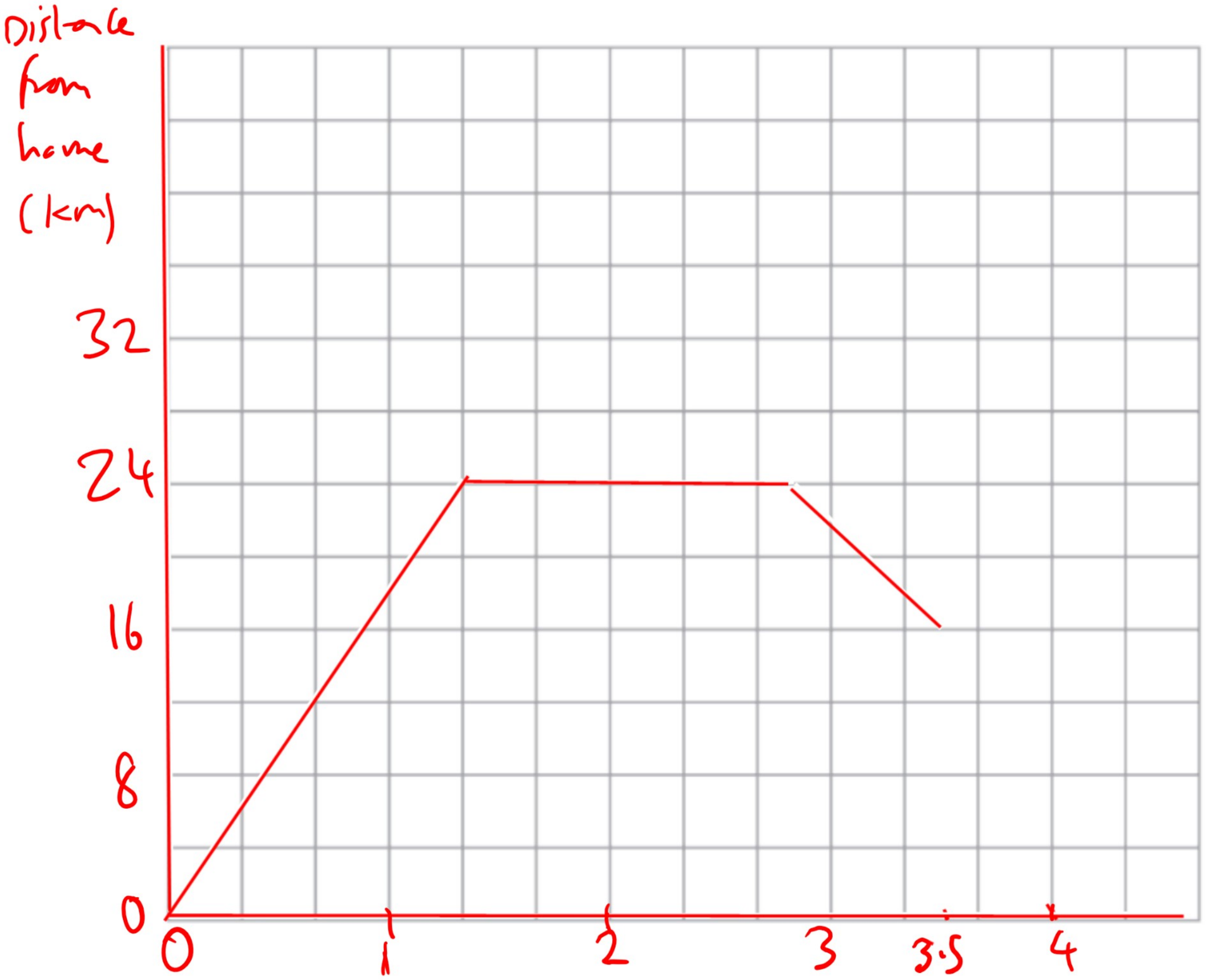
Q4. Rachel sets of from her house on her bicycle to her friend's house.
She rides for 1 hour 20 minutes at constant speed of 18 km/hour.
She spends 1½ hours at her friend's house before setting off back home.
After 40 minutes, her phone rings so she stops to answer it.

a) Draw her journey on the graph below.

Answer: _____

(3 marks)

b) How far from home is Rachel when she takes her phone call?



Answer: 16 km

(1 mark)