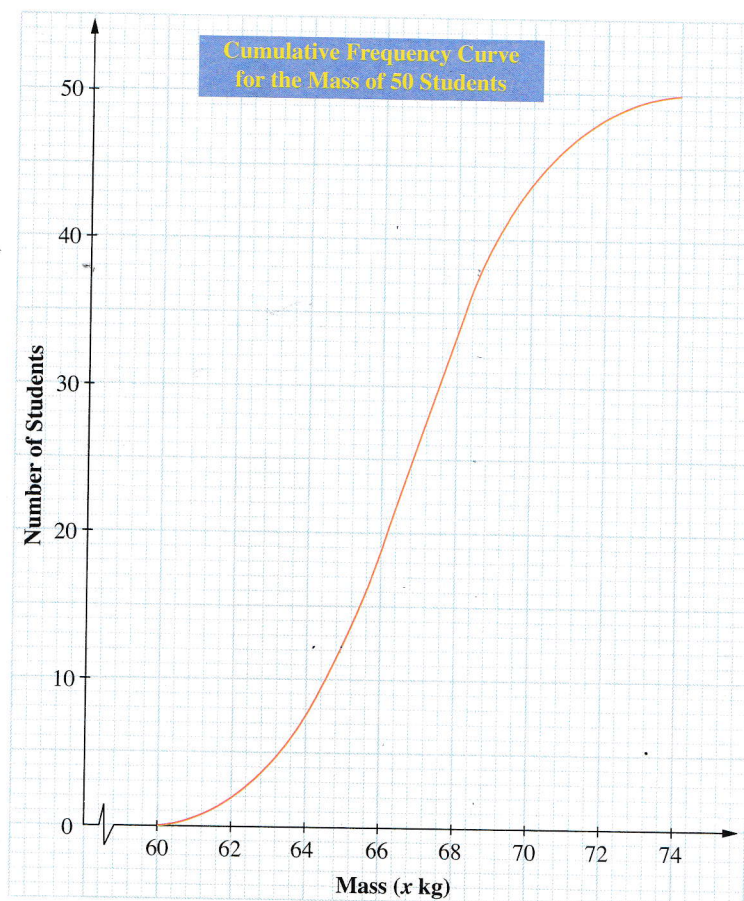



**Exercise 5a**

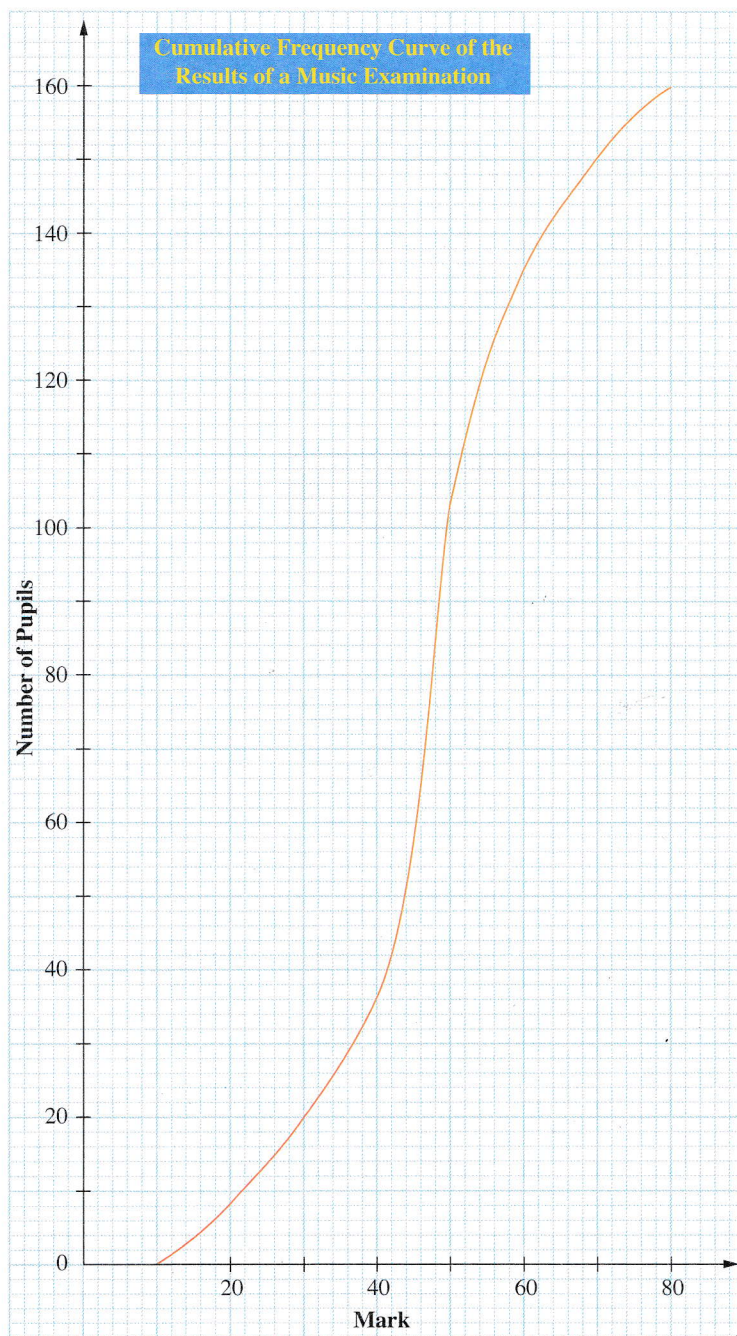
1. The masses, in kg, of 50 students are measured. The cumulative frequency curve shows the number of students whose masses are less than or equal to  $x$  kg. (As an example, 20 students have masses of 66.2 kg or less.)

Use the curve to estimate

- (a) the number of students whose masses are less than or equal to 65 kg,
- (b) the number of students whose masses are more than 68.6 kg,
- (c) the percentage of the total number of students whose masses are more than 64.4 kg.



The results of a music examination taken by 160 pupils are shown in the cumulative frequency curve below:



From the graph, estimate

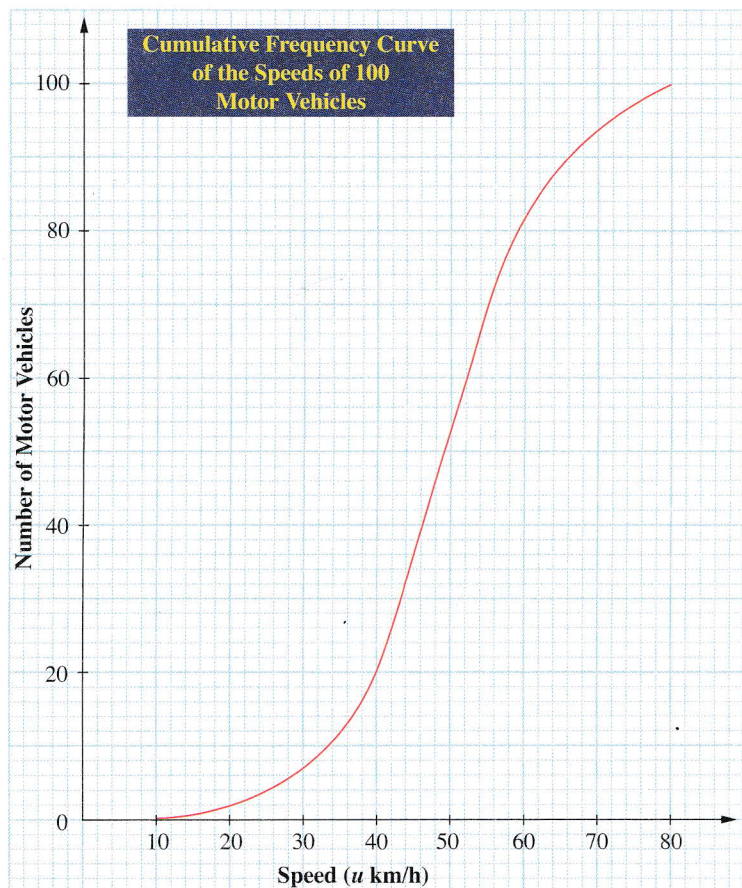
- (a) the number of pupils who scored less than 45 marks,
- (b) the fraction of the total number of pupils who failed the music examination given that 34 is the lowest mark to pass the examination,
- (c) the value of  $x$  if 22.5% of the pupils obtained at least  $x$  marks in the music examination.

3. The speed at which 100 motor vehicles passing a certain point in a busy street are recorded.

The cumulative frequency curve shows the speed,  $u$  km/h and the number of vehicles, that travel at a speed less than  $u$  km/h. (As an example, 74 vehicles travelled at a speed less than 53 km/h.)

Use the curve to find

- (a) the number of vehicles that travelled at a speed less than 34 km/h,
- (b) the fraction of the total number of vehicles that travelled at a speed greater than or equal to 59 km/h,
- (c) the value of  $v$ , if 40% of the vehicles have a speed less than  $v$  km/h.



a busy street are recorded.

number of vehicles, that travel  
at a speed less than 53 km/h.

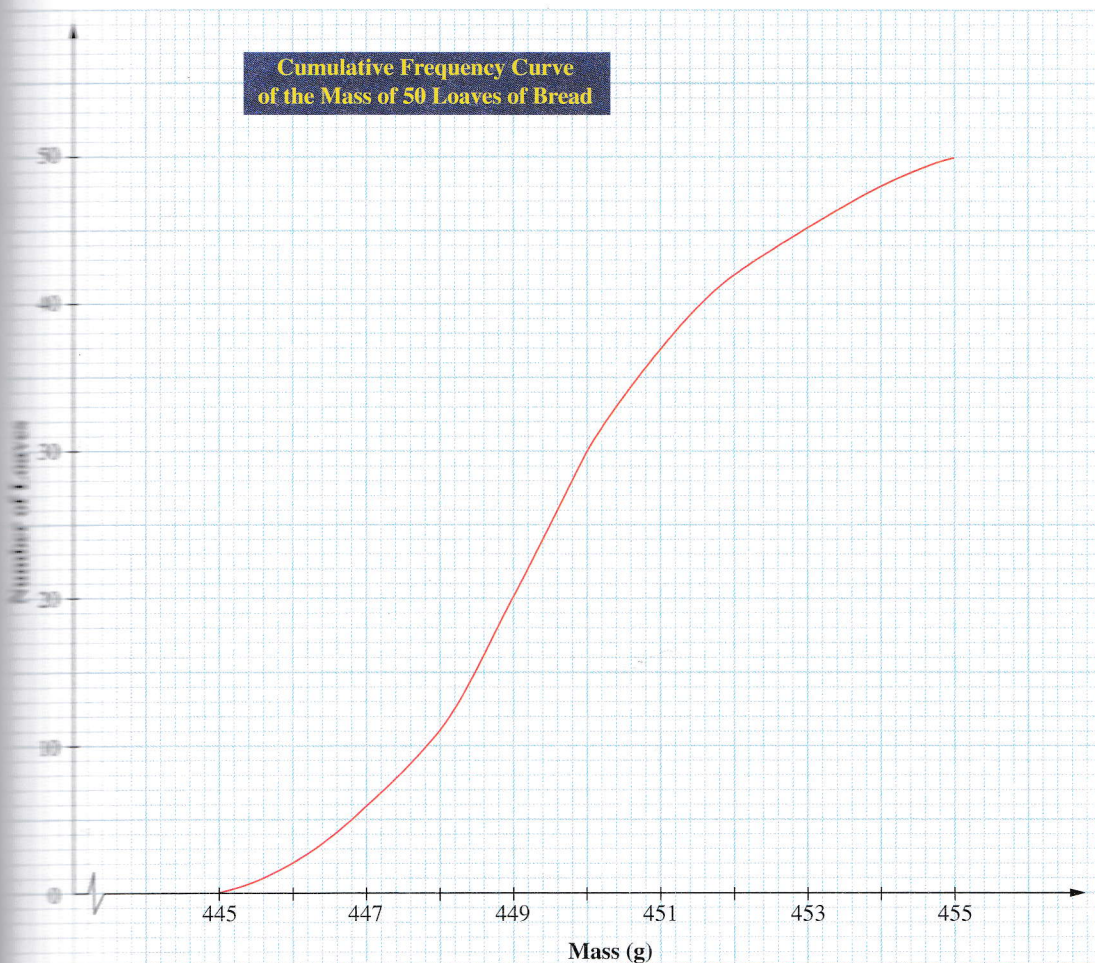
m/h.

a speed greater than or equal to

km/h.



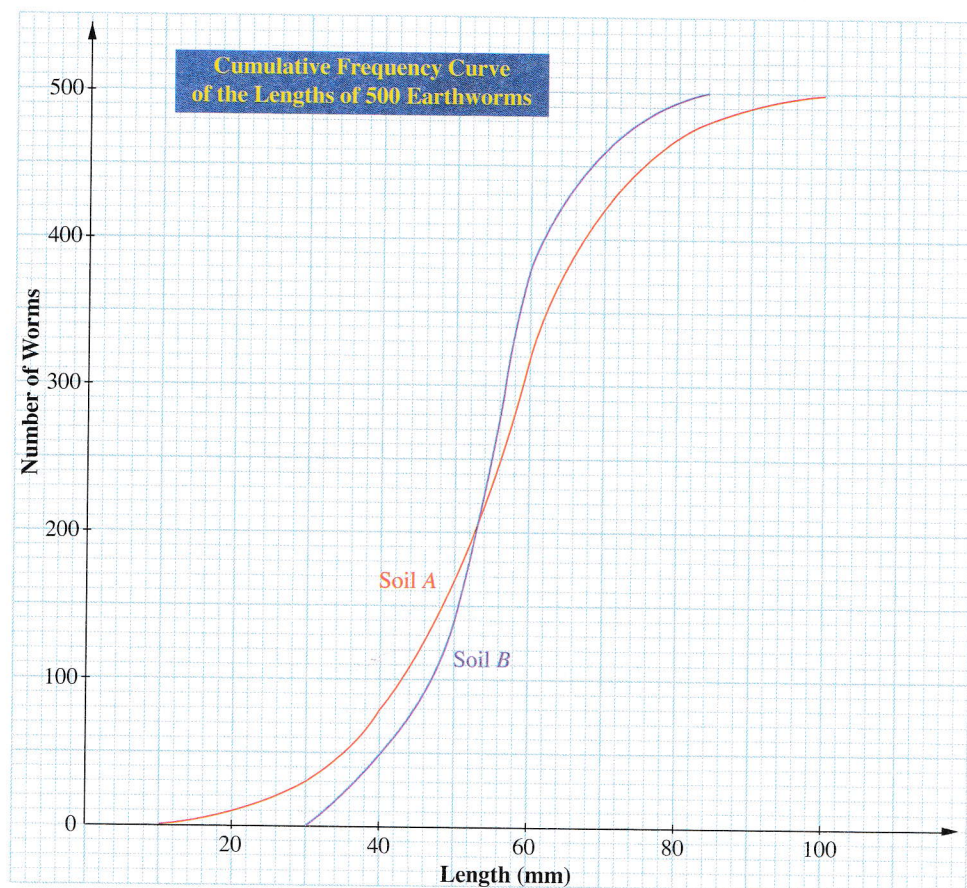
Fifty loaves of bread from a bakery are weighed. Their masses are distributed as shown in the cumulative frequency curve below:



From the graph, estimate

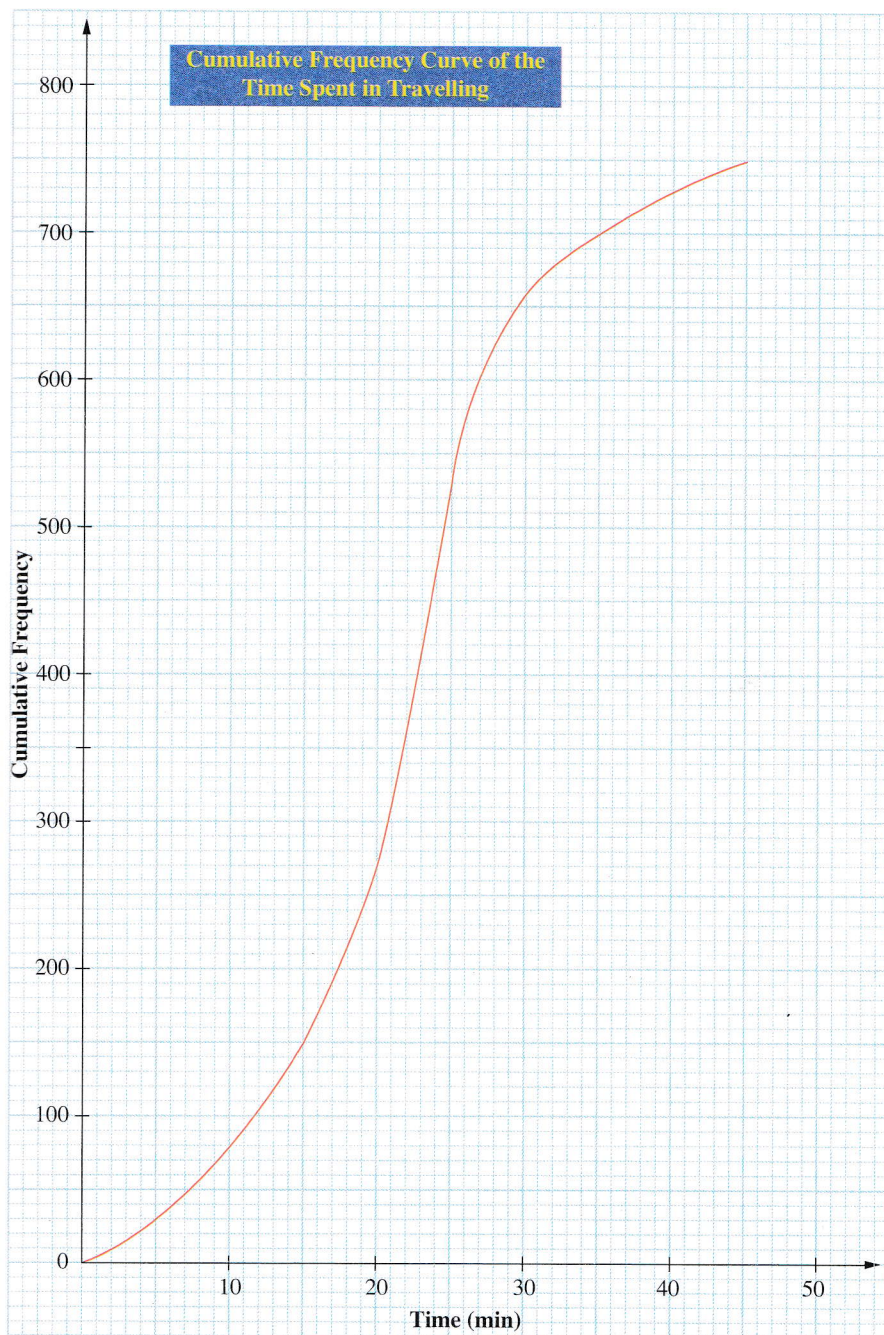
- the number of loaves of bread whose masses are less than or equal to 450.4 g,
- the number of loaves rejected either because they are underweight or overweight, given that a loaf is underweight if its mass is 446.3 g or less and overweight if its mass is more than 453.7 g,
- the value of  $x$  if  $\frac{3}{10}$  of the loaves weigh more than  $x$  g.

5. 500 earthworms were collected from a sample of Soil A and 500 earthworms from Soil B. lengths were recorded and the results are shown in the following diagram.



- (a) Use your graph of Soil A and Soil B to estimate
- the number of earthworms whose lengths are less than or equal to 46 mm,
  - the percentage of earthworms whose lengths are greater than 76 mm,
  - the value of  $x$  if 18% of the earthworms are of length  $x$  mm or less.
- (b) Which soil produced the longest earthworm among these 1000 earthworms?
- (c) Earthworms which grew more than 60 mm are said to be satisfactory. From the graph, estimate the percentage of satisfactory earthworms of
- Soil A,
  - Soil B.

1. B. The amount of time spent by 750 pupils of a certain school to travel from home to school on a particular morning is shown in the curve.



Use the graph to estimate

- the number of pupils who take less than 17.5 minutes to travel to school,
- the fraction of the 750 pupils who take at least 27 minutes to travel to school,
- the value of  $x$  given that 40% of the 750 pupils take at least  $x$  minutes to travel to school.