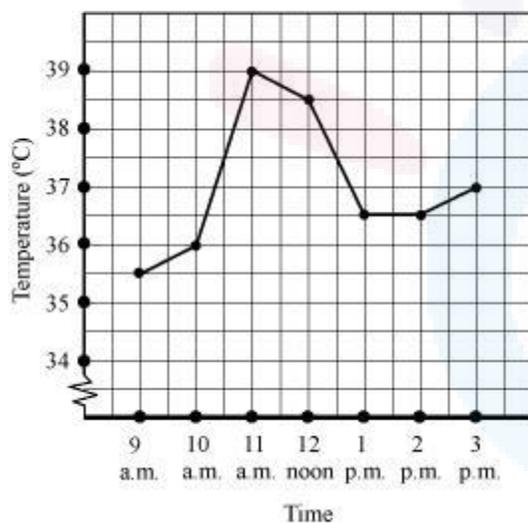


CLASS VIII: Maths  
Chapter 13: Introduction to Graphs

Questions and Solutions | Exercise 13.1 - NCERT Books

Q 1. The following graph shows the temperature of a patient in a hospital, recorded every hour.

- (a) What was the patient's temperature at 1 p.m.?
- (b) When was the patient's temperature  $38.5^{\circ}\text{C}$ ?
- (c) The patient's temperature was the same two times during the period given. What were these two times?
- (d) What was the temperature at 1.30 p.m? How did you arrive at your answer?
- (e) During which periods did the patient's temperature show an upward trend?



Answer :

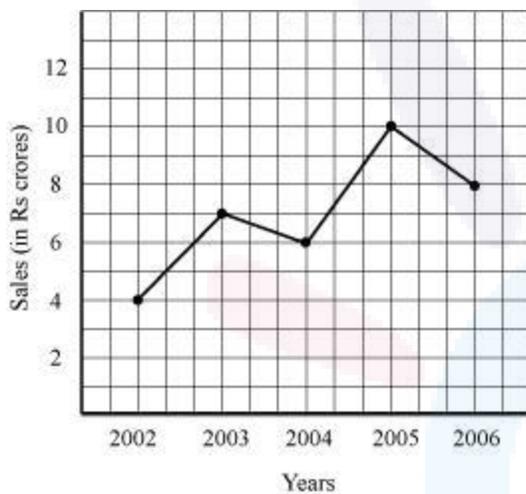
- (a) At 1 p.m., the patient's temperature was  $36.5^{\circ}\text{C}$ .
- (b) The patient's temperature was  $38.5^{\circ}\text{C}$  at 12 noon.
- (c) The patient's temperature was same at 1 p.m. and 2 p.m.
- (d) The graph between the times 1 p.m. and 2 p.m. is parallel to the x-axis. The temperature at 1 p.m. and 2 p.m. is  $36.5^{\circ}\text{C}$ . So, the temperature at 1:30 p.m. is  $36.5^{\circ}\text{C}$ .
- (e) During the following periods, the patient's temperature showed an upward trend.  
9 a.m. to 10 a.m., 10 a.m. to 11 a.m., 2 p.m. to 3 p.m.



Q2 :

The following line graph shows the yearly sales figure for a manufacturing company.

- (a) What were the sales in (i) 2002 (ii) 2006?
- (b) What were the sales in (i) 2003 (ii) 2005?
- (c) Compute the difference between the sales in 2002 and 2006.
- (d) In which year was there the greatest difference between the sales as compared to its previous year?



Answer :

- (a)
- (i) In 2002, the sales were Rs 4 crores.
- (ii) In 2006, the sales were Rs 8 crores.
- (b)
- (i) In 2003, the sales were Rs 7 crores.
- (ii) In 2005, the sales were Rs 10 crores.



(c)

(i) In 2002, the sales were Rs 4 crores and in 2006, the sales were Rs 8 crores.

Difference between the sales in 2002 and 2006

$$= \text{Rs } (8 - 4) \text{ crores} = \text{Rs } 4 \text{ crores}$$

(d) Difference between the sales of the year 2006 and 2005

$$= \text{Rs } (10 - 8) \text{ crores} = \text{Rs } 2 \text{ crores}$$

Difference between the sales of the year 2005 and 2004

$$= \text{Rs } (10 - 6) \text{ crores} = \text{Rs } 4 \text{ crores}$$

Difference between the sales of the year 2004 and 2003

$$= \text{Rs } (7 - 6) \text{ crore} = \text{Rs } 1 \text{ crore}$$

Difference between the sales of the year 2003 and 2002

$$= \text{Rs } (7 - 4) \text{ crores} = \text{Rs } 3 \text{ crores}$$

Hence, the difference was the maximum in the year 2005 as compared to its previous year 2004.

Q3 :

For an experiment in Botany, two different plants, plant A and plant B were grown under similar laboratory conditions. Their heights were measured at the end of each week for 3 weeks. The results are shown by the following graph.

(a) How high was Plant A after (i) 2 weeks (ii) 3 weeks?

(b) How high was Plant B after (i) 2 weeks (ii) 3 weeks?

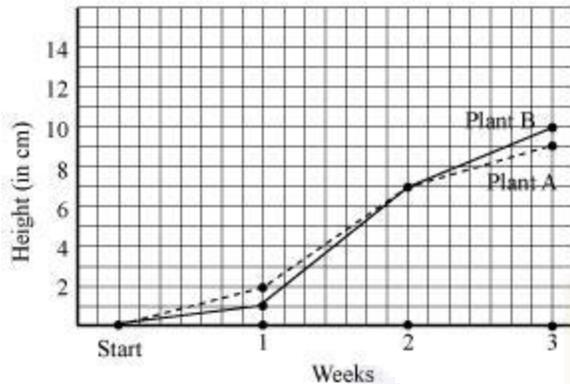
(c) How much did Plant A grow during the 3<sup>rd</sup> week?

(d) How much did Plant B grow from the end of the 2<sup>nd</sup> week to the end of the 3<sup>rd</sup> week?

(e) During which week did Plant A grow most?

(f) During which week did Plant B grow least?

(g) Were the two plants of the same height during any week shown here? Specify.



Answer :

(a)

(i) After 2 weeks, the height of plant A was 7 cm.

(ii) After 3 weeks, the height of plant A was 9 cm.

(b)

(i) After 2 weeks, the height of plant B was 7 cm.

(ii) After 3 weeks, the height of plant B was 10 cm.

(c) Growth of plant A during 3<sup>rd</sup> week = 9 cm - 7 cm = 2 cm

(d) Growth of plant B from the end of the 2<sup>nd</sup> week to the end of the 3<sup>rd</sup> week

= 10 cm - 7 cm = 3 cm

(e) Growth of plant A during 1<sup>st</sup> week = 2 cm - 0 cm = 2 cm

Growth of plant A during 2<sup>nd</sup> week = 7 cm - 2 cm = 5 cm

Growth of plant A during 3<sup>rd</sup> week = 9 cm - 7 cm = 2 cm

Therefore, plant A grew the most, i.e. 5 cm, during the 2<sup>nd</sup> week.

(f) Growth of plant B during 1<sup>st</sup> week = 2 cm - 0 cm = 2 cm



Growth of plant B during 2<sup>nd</sup> week = 7 cm - 1 cm = 6 cm

Growth of plant B during 3<sup>rd</sup> week = 10 cm - 7 cm = 3 cm

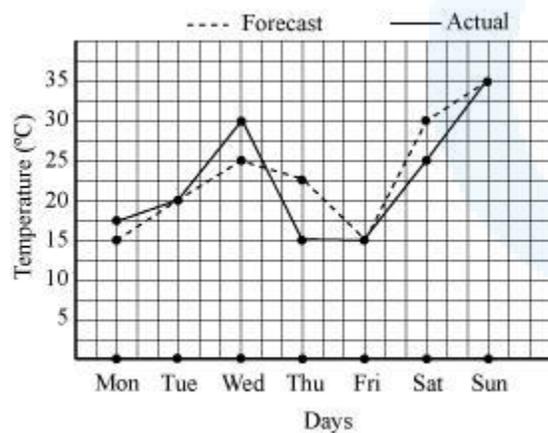
Therefore, plant B grew the least, i.e. 1 cm, during the 1<sup>st</sup> week.

(g) At the end of the 2<sup>nd</sup> week, the heights of both plants were same.

Q4 :

The following graph shows the temperature forecast and the actual temperature for each day of a week.

- (a) On which days was the forecast temperature the same as the actual temperature?
- (b) What was the maximum forecast temperature during the week?
- (c) What was the minimum actual temperature during the week?
- (d) On which day did the actual temperature differ the most from the forecast temperature?



Answer :

- (a) The forecast temperature was same as the actual temperature on Tuesday, Friday, and Sunday.
- (b) The maximum forecast temperature during the week was 35°C.
- (c) The minimum actual temperature during the week was 15°C.
- (d) The actual temperature differs the most from the forecast temperature on Thursday.



Q5 :

Use the tables below to draw linear graphs.

(a) The number of days a hill side city received snow in different years.

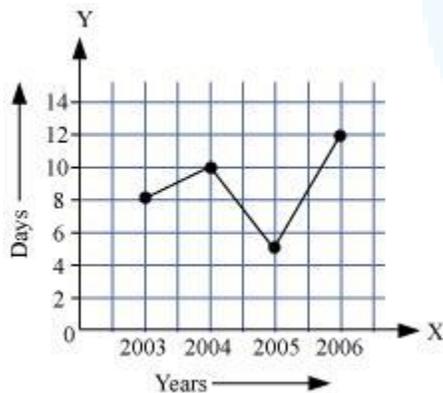
Year	2003	2004	2005	2006
Days	8	10	5	12

(b) Population (in thousands) of men and women in a village in different years.

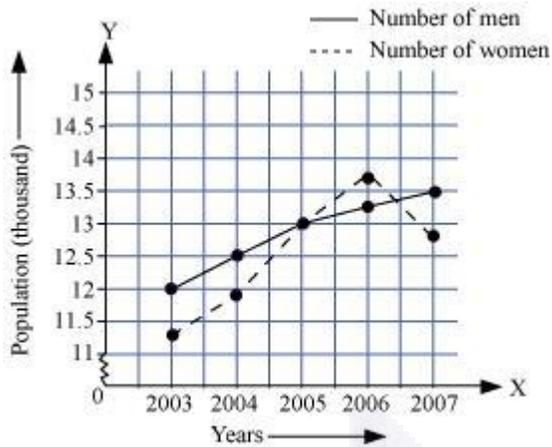
Year	2003	2004	2005	2006	2007
Number of men	12	12.5	13	13.2	13.5
Number of women	11.3	11.9	13	13.6	12.8

Answer :

(a) By taking the years on x-axis and the number of days on y-axis and taking scale as 1 unit = 2 days on y-axis and 2 unit = 1 year on x-axis, the linear graph of the given information can be drawn as follows.

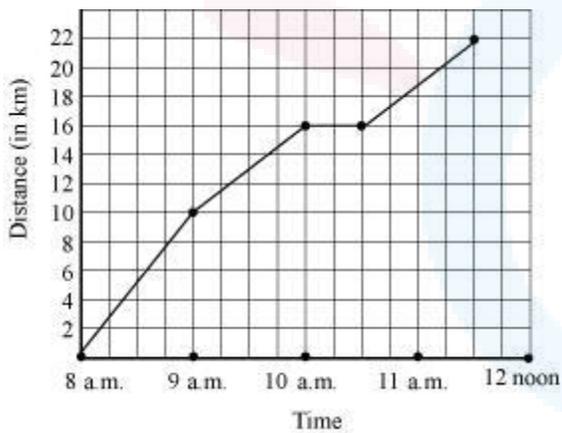


(b) By taking the years on x-axis and population on y-axis and scale as 1 unit = 0.5 thousand on y-axis and 2 unit = 1 year on x-axis, the linear graph of the given information can be drawn as follows.



Q6 :

A courier-person cycles from a town to a neighboring suburban area to deliver a parcel to a merchant. His distance from the town at different times is shown by the following graph.



- What is the scale taken for the time axis?
- How much time did the person take for the travel?
- How far is the place of the merchant from the town?
- Did the person stop on his way? Explain.
- During which period did he ride fastest?

Answer :

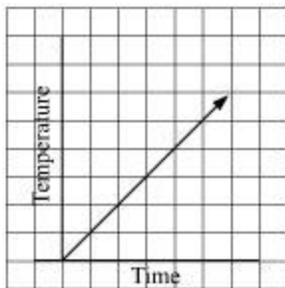
- (a) Scale taken for the time axis is 4 units = 1 hour
- (b) The person travelled during the time 8 a.m. - 11:30 a.m.

Therefore, the person took  $3\frac{1}{2}$  hours to travel.

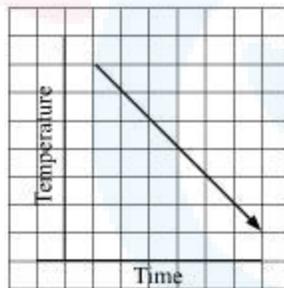
- (c) The merchant is 22 km far from the town.
- (d) Yes, the person stopped on his way from 10 a.m. to 10:30 a.m. This is indicated by the horizontal part of the graph.
- (e) From the graph, it can be observed that during 8 a.m. to 9 a.m., the person travelled the maximum distance. Thus, the person's ride was the fastest between 8 a.m. and 9 a.m.

Q7 :

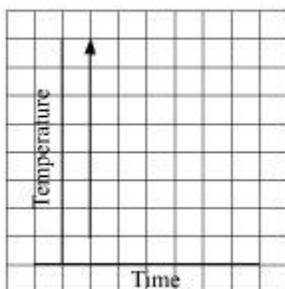
Can there be a time temperature graph as follows? Justify you're answer:



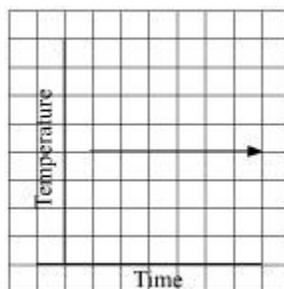
(i)



(ii)



(iii)



(iv)

Answer :



- (i) This can be a time-temperature graph, as the temperature can increase with the increase in time.
- (ii) This can be a time-temperature graph, as the temperature can decrease with the decrease in time.
- (iii) This cannot be a time-temperature graph since different temperatures at the same time are not possible.
- (iv) This can be a time-temperature graph, as same temperature at different times is possible.





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Questions and Solutions | Exercise 13.2 - NCERT Books

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Draw the graphs for the following tables of values, with suitable scales on the axes.

(a) Cost of apples

Number of apples	1	2	3	4	5
Cost (in Rs)	5	10	15	20	25

(b) Distance travelled by a car

Time (in hours)	6 a.m.	7 a.m.	8 a.m.	9 a.m.
Distance (in km)	40	80	120	160

(i) How much distance did the car cover during the period 7.30 a.m. to 8 a.m.?

(ii) What was the time when the car had covered a distance of 100 km since its start?

(c) Interest on deposits for a year.

Deposit (in ₹)	1000	2000	3000	4000	5000
Simple Interest (in ₹)	80	160	240	320	400

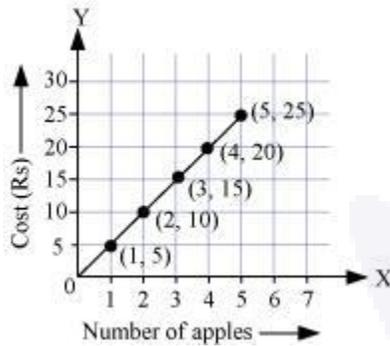
(i) Does the graph pass through the origin?

(ii) Use the graph to find the interest on Rs 2500 for a year.

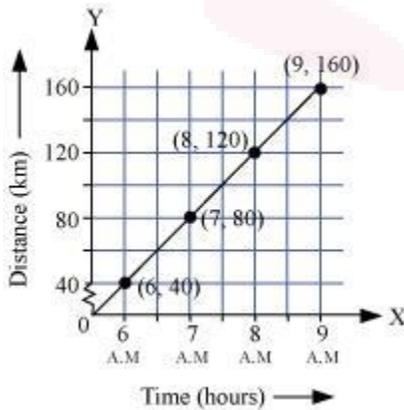
(iii) To get an interest of Rs. 280 per year, how much money should be deposited?

Answer :

(a) Taking a suitable scale (for x-axis, 1 unit = 1 apple and for y-axis, 1 unit = Rs 5), we can mark the number of apples on x-axis and the cost of apples on y-axis. A graph of the given data is as follows.



(b) Taking a suitable scale (for x-axis, 2 units = 1 hour and for y-axis, 2 units = 40 km), we can represent the time on x-axis and the distance covered by the car on y-axis. A graph of the given data is as follows.



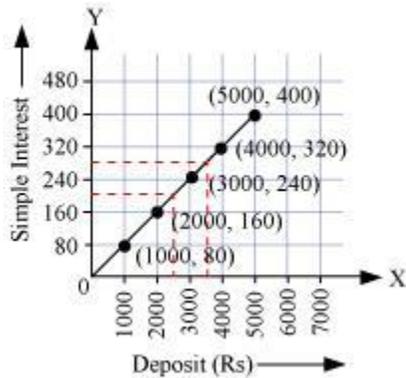
(i) During the period 7:30 a.m. to 8 a.m., the car covered a distance of 20 km.

(ii) The car covered a distance of 100 km at 7:30 a.m. since its start.

(c) Taking a suitable scale,

For x-axis, 1 unit = Rs 1000 and for y-axis, 1 unit = Rs 80

We can represent the deposit on x-axis and the interest earned on that deposit on y-axis. A graph of the given data is obtained as follows.



From the graph, the following points can be observed.

- (i) Yes. The graph passes through the origin.
- (ii) The interest earned in a year on a deposit of Rs 2500 is Rs 200.
- (iii) To get an interest of Rs 280 per year, Rs 3500 should be deposited.

Q2 :

Draw a graph for the following.

(i)

Side of square (in cm)	2	3	3.5	5	6
Perimeter (in cm)	8	12	14	20	24

Is it a linear graph?

(ii)

Side of square (in cm)	2	3	4	5	6
Area (in cm <sup>2</sup> )	4	9	16	25	36



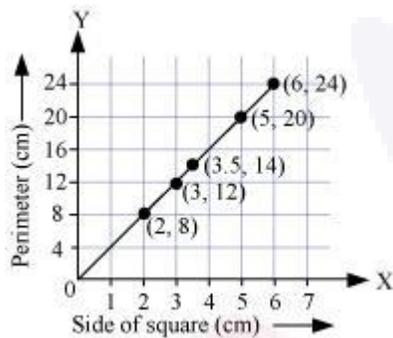
Is it a linear graph?

Answer :

(i) Choosing a suitable scale,

For x-axis, 1 unit = 1 cm and for y-axis, 1 unit = 4 cm

We can represent the side of a square on x-axis and the perimeter of that square on y-axis. A graph of the given data is drawn as follows.

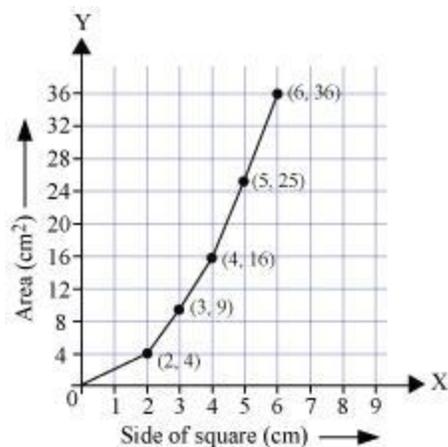


It is a linear graph.

(ii) Choosing a suitable scale,

For x-axis, 1 unit = 1 cm and for y-axis, 1 unit = 4 cm<sup>2</sup>

We can represent the side of a square on the x-axis and the area of that square on y-axis. A graph of the given data is as follows.



It is not a linear graph.