NCERT Solutions for Class 8 Maths Chapter 15 - Introduction to Graphs

Chapter 15 - Introduction to Graphs Exercise Ex. 15.1

Solution 1

(a) At 1 p.m., the patient's temperature was 36.5°C.

(b) The patient's temperature was 38.5°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°C. So, the temperature at 1:30 p.m. is 36.5°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

Solution 2

(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.

Solution 3

(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 3rd week = 9 cm − 7 cm = 2 cm

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

= 10 cm − 7 cm = 3 cm

(e) Growth of plant A during 1st week = 2 cm − 0 cm = 2 cm

Growth of plant A during 2nd week = 7 cm − 2 cm = 5 cm

Growth of plant A during 3rd week = 9 cm − 7 cm = 2 cm

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

(f) Growth of plant B during 1st week = 1 cm − 0 cm = 1 cm
Growth of plant B during 2nd week = 7 cm − 1 cm = 6 cm

Growth of plant B during 3rd week = 10 cm − 7 cm = 3 cm

Therefore, plant B grew the least, i.e. 1 cm, during the 1st week.

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

Solution 4

(a) The forecast temperature was same as the actual temperature on Tuesday, Friday, and Sunday.

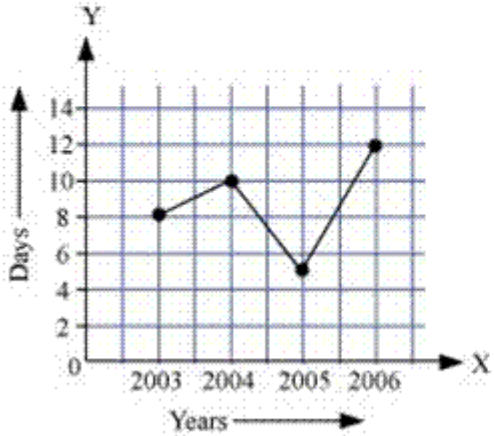
(b) The maximum forecast temperature during the week was 35°C.

(c) The minimum actual temperature during the week was 15°C.

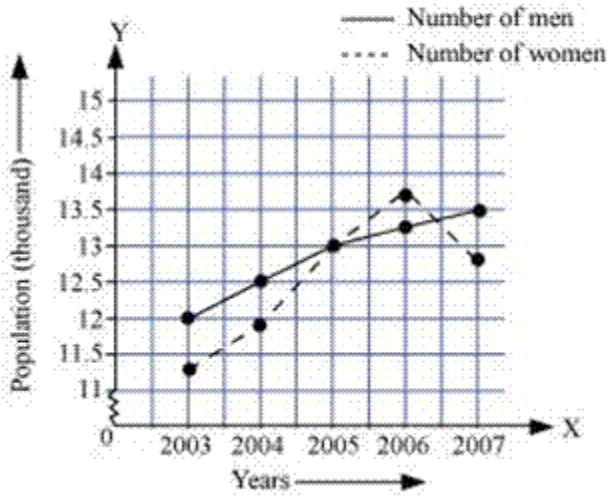
(d) The actual temperature differs the most from the forecast temperature on Thursday.

Solution 5

(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.



Solution 6

(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.

Solution 7

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.

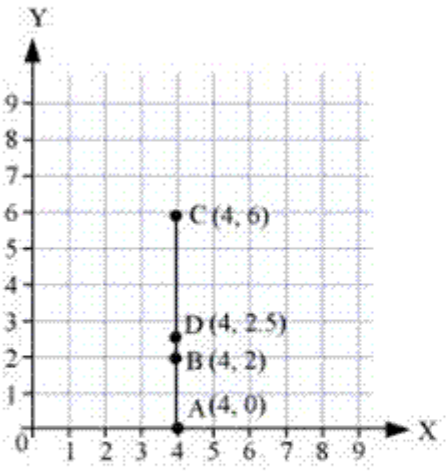
(iii) This cannot be a time–temperature graph since different temperatures at the same time are not possible.

(iv) This can be a time–temperature graph, as same temperature at different times is possible.

Chapter 15 - Introduction to Graphs Exercise Ex. 15.2

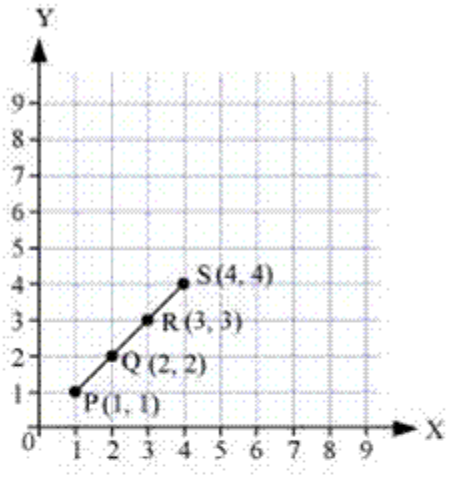
Solution 1

(a) We can plot the given points and join the consecutive points on a graph paper as follows.



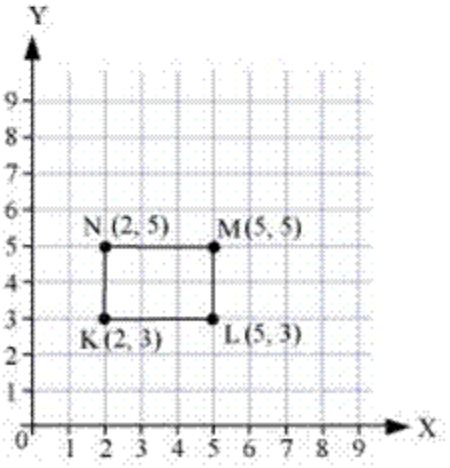
From the graph, it can be observed that the points A, B, C, and D lie on the same line.

(b) We can plot the given points and join the consecutive points on a graph paper as follows.



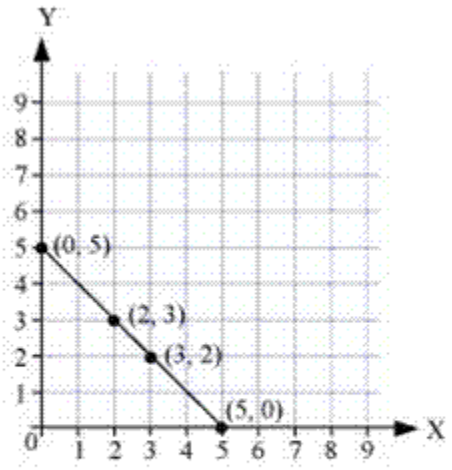
Hence, points P, Q, R, and S lie on the same line.

(c) We can plot the given points and join the consecutive points on a graph paper as follows.



Hence, points K, L, M, and N are not lying on the same line.

Solution 2



From the graph, it can be observed that the line joining the points (2, 3) and (3, 2) meets the x-axis at the point (5, 0) and the y-axis at the point (0, 5).

Solution 3

The coordinates of the vertices in the given figure are as follows.

O (0, 0), A (2, 0), B (2, 3), C (0, 3)

P (4, 3), Q (6, 1), R (6, 5), S (4, 7)

K (10, 5), L (7, 7), M (10, 8)

Solution 4

(i) True

(ii) False

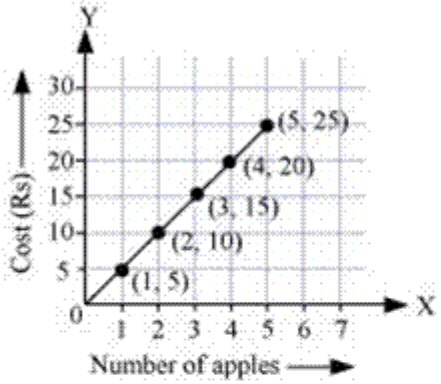
The point whose y-coordinate is zero and x-coordinate is 5 will lie on x-axis.

(iii) True

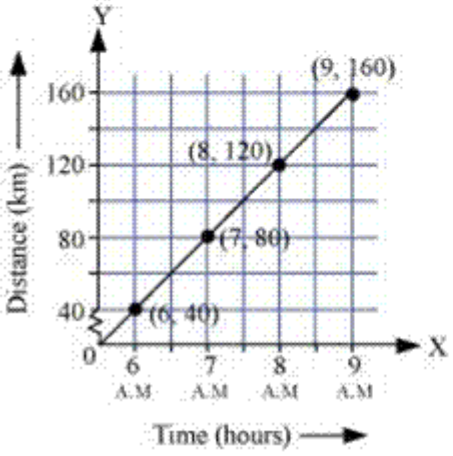
Chapter 15 - Introduction to Graphs Exercise Ex. 15.3

Solution 1

(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.

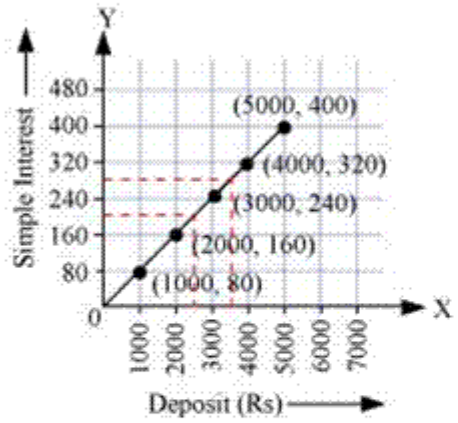
(ii) The car covered a distance of 100 km at 7:30 a.m. since its start.

(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.

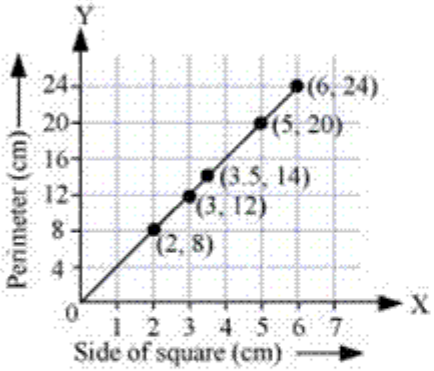
(iii) To get an interest of Rs 280 per year, Rs 3500 should be deposited.

Solution 2

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.

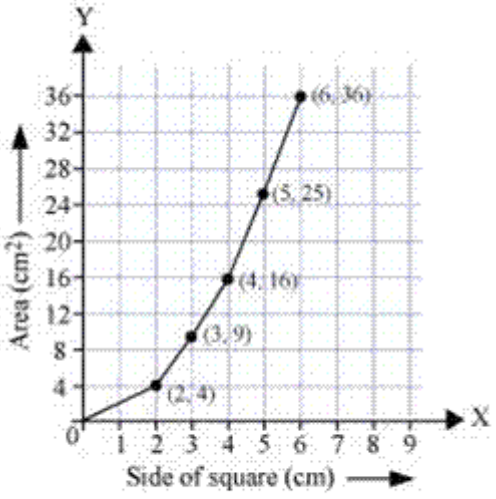


It is a linear graph.

(ii)Choosing a suitable scale,

For x-axis, 1 unit = 1 cm and for y-axis, 1 unit = 4 cm^2

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.