MATHS

NCERT - NCERT MATHEMATICS(ENGLISH)

INTRODUCTION TO GRAPHS

Exercise 15 1

1. 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?

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2. Use the tables below to draw linear graphs.

(a) The number of days a hill side city received snow in different years. Years $2003, 2004, 2005$ and 2006 and Days $8, 10, 5,$ and 12 (b) Population (in thousands) of men and women in a village in different years.

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3. A courier-person cycles from a town to a neighbouring suburban area to deliver aparcel to a merchant. His distance from the town at different times is shown by thefollowing graph.(a) What is the scale taken for the time axis?(b) How much time did the person take for the travel?(c) How far is the place of the merchant from the town?(d) Did the person stop on his way? Explain.(e) During which period did he ride fastest?

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4. Can there be a time-temperature graph as follows? Justify your answer.

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5. The following graph show the temprature 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 $38.5^{\circ}C$? (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 patients' temperature showed an upward trend?

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6. The following line graph shows the yearly sales figures 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.

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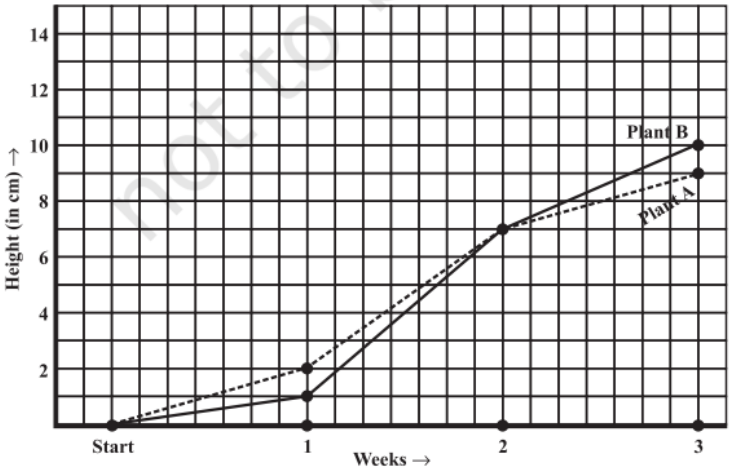
7. For an experiment in Botany, two different plants, plant A and plant B were grown under similar laboratory conditions. Their heights were measured at the end of each week for 3 weeks. The results are shown by the following graph.(a) How high was Plant A after (i) 2 weeks (ii) 3 weeks?(b) How high was Plant B

after (i) 2 weeks (ii) 3 weeks?(c) How much did Plant A grow during the 3rd week?(d) How much did Plant B grow from the end of the 2nd week to the end of the 3rd 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.



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Exercise 15 3

1. Draw a graph for the following. (i) Side of square (in cm) $2, 3, 3.5, 5, 6$ and Perimeter (in cm) $8, 12, 14, 20, 24$ Is it a linear graph ? (ii) Side of square (in cm) $2, 3, 4, 5, 6$ and Area (in cm) $4, 9, 16, 25, 36$ Is it a linear graph ?

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2. Draw the graphs for the following tables of values, with suitable scales on the axes. (a) Cost of apples Number of (b) Distance travelled by a car, Time (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 $100km$ since it's start? (c) Interest on deposits for a year. Deposit Simple Interest (i) Does the graph pass through the origin? (ii) Use the graph to find the interest on $Rs2500$ for a year. (iii) To get an interest of $Rs280$ per year, how much money should be deposited?

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Solved Examples

1. (Time and Distance) Ajit can ride a scooter constantly at a speed of $30km\frac{s}{h}our$. Draw a time-distance graph for this situation. Use it to find (i) the time taken by Ajit to ride $75km$. (ii) the distance covered by Ajit in $3\left(\frac{1}{2}\right)$ hours.

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2. (Principal and Simple Interest)A bank gives 10% Simple Interest (S.I.) on deposits by senior citizens. Draw a graph to illustrate the relation between the sum deposited and simple interest earned. Find from your graph(a) the annual interest obtainable for an investment of Rs 250.(b) the investment one has to make to get an annual simple interest of Rs 70.

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3. (Quantity and Cost) The following table gives the quantity of petrol and its cost. No of Litres of petrol $10, 15, 20, 25$ and Cost of petrol in $Rs500, 750, 1000, 1250$ Plot a graph to show the data.

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4. Plot the following points and verify if they lie on a line. If they lie on a line, name it. (i) (0, 2), (0, 5), (0, 6), (0, 3.5) (ii) A

(1, 1), B (1, 2), C (1, 3), D (1, 4)(iii) K (1, 3), L (2, 3), M (3, 3), N (4, 3) (iv) W (2, 6), X (3, 5), Y (5, 3), Z (6, 2)

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5. From Fig 15.14, choose the letter(s) that indicate the location of the pointsgiven below: (i) (2, 1)(ii) (0, 5)(iii) (2, 0)Also write(iv) The coordinates of A.(v) The coordinates of F.

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6. Plot the point (4, 3) on a graph sheet. Is it the same as the point (3, 4)?

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7. The given graph (Fig 15.8) describes the distances of a car from a city P at different times when it is travelling from City P to City Q, which are 350 km apart. Study the graph and answer the following:(i) What information is given on the two axes?(ii) From where and when did the car begin its

journey?(iii) How far did the car go in the first hour?(iv) How far did the car go during (i) the 2nd hour? (ii) the 3rd hour?(v) Was the speed same during the first three hours? How do you know it?(vi) Did the car stop for some duration at any place? Justify your

answer.(vii) When did the car reach City Q?

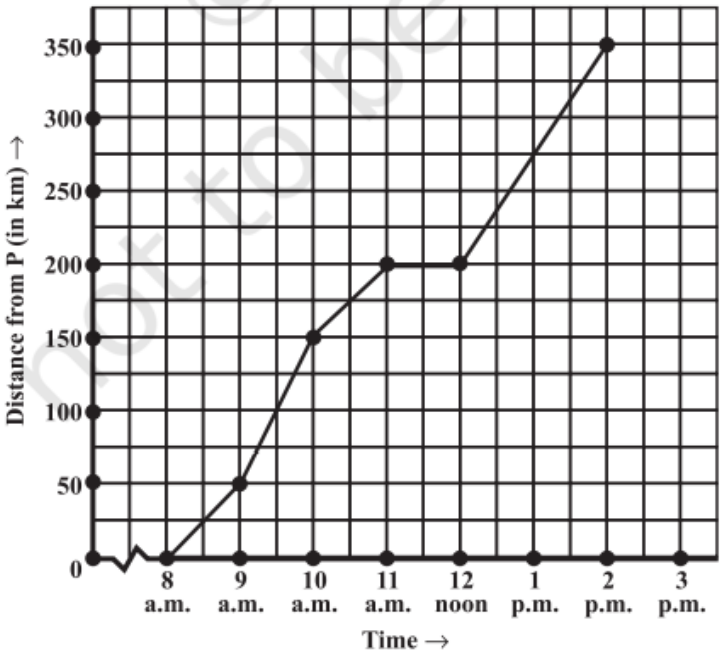

Fig 15.8

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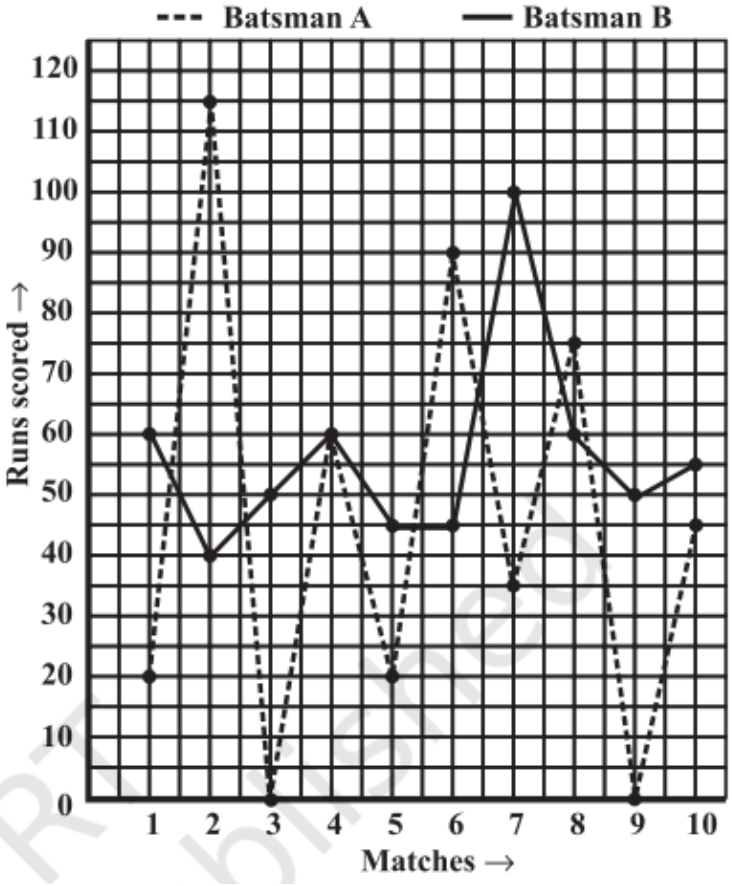
8. (A graph on "performance")The given graph (Fig 15.7) represents the total runs scored by

two batsmen A and B, during each of the ten different matches in the year 2007. Study the graph and answer the following questions. (i) What information is given on the two axes?(ii) Which line shows the runs scored by batsman A?(iii) Were the run scored by them same in any match in 2007? If so, in which match?(iv) Among the two batsmen, who is

steadier? How do you judge it?



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Exercise 15 2

1. Decide which of the following statements is true and which is false. Give reasons for your answer. A point whose x-coordinate is zero, will lie on the y-axis. A point whose y-coordinate is zero, will lie on x-axis. The coordinates of the origin are (0, 0). Points whose $x \, and \, y$ coordinates are equal, lie on a line passing through the origin.

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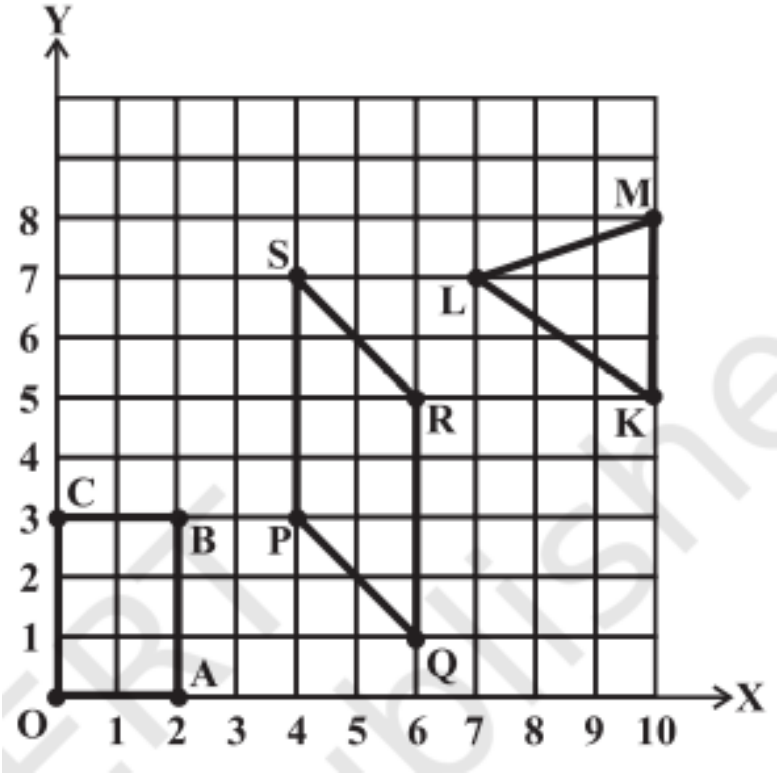
2. Write the coordinates of the vertices of each of these adjoining figures.



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3. Draw the line passing through (2, 3) and (3, 2). Find the coordinates of the points at which this line meets the x-axis and y-axis.

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4. Plot the following points on a graph sheet. Verify if they lie on a line

(a) A(4, 0), B(4, 2), C(4, 6), D(4, 2.5)

(b) P(1, 1), Q(2, 2), R(3, 3), S(4, 4)

(c) K(2, 3), L(5, 3), M(5, 5), N(2, 5)

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