Answer the questions

(1) The following graphs the amount of milk (in liters) that a milkman sold over 10 days. Calculate the average liters of milk he sells per day.

(2) A bike is travelling with uniform speed in one direction. Following graph shows its position (in km) at two time points. Find its position at 40 minutes.
3) The average temperature in Vadodara is shown over 9 weeks in the graph below. Which week saw the biggest increase in temperature?

4) The graph below shows the temperature (in degrees Celsius) over 10 weeks in Shillong. Calculate the maximum range of variation (difference between highest and lowest temperature).

5) Following chart shows quantity of kerosene and its cost. Plot a graph using this data, and find the cost for 110 liters of kerosene.

<table>
<thead>
<tr>
<th>kerosene (in liters)</th>
<th>Cost (in Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>800</td>
</tr>
<tr>
<td>100</td>
<td>1000</td>
</tr>
<tr>
<td>120</td>
<td>1200</td>
</tr>
</tbody>
</table>
Choose correct answer(s) from given choice

(6) The graph shows the temperature forecast and the actual temperature of a city on ten days. Find the maximum deviation of actual temperature from the forecast.

![Temperature graph]  
Day

- a. 1°C
- b. 2°C
- c. 4°C
- d. 3°C

(7) A point whose y-coordinate is zero and x-coordinate is non-zero will lie on which axis?

- a. y axis
- b. x axis
- c. Depends on value of x-coordinate
- d. Cannot be determined

(8) Rajesh is participating in cycling event. Following chart shows the distance traveled by him in ten hours. Find the highest speed during an hour.

![Distance chart]  
Hour

- a. 29 km/hour
- b. 32 km/hour
- c. 31 km/hour
- d. 30 km/hour

(9) If point (u, v) lies on the graph of function f, which of following points must also lie in the graph of inverse of f.

- a. (u, v)
- b. (v, u)
- c. (-u, -v)
- d. (-v, -u)
(10) The graph below shows the production of phones (in thousands) of two companies (A and B) for ten years. Find the combined production of phones of two companies in the year when combined production of phones was maximum.

![Graph of phone production](image)

- a. 47 thousands
- b. 44 thousands
- c. 45 thousands
- d. 46 thousands

(11) If you plot following set of points on a graph, which set of points will form a straight line?

- a. (1,3) (2,3) (4,6) (5,7) (7,9)
- b. (0,0) (2,4) (3,6) (4,8) (6,12)
- c. (2,4) (4,8) (5,9) (7,14) (9,18)
- d. (2,3) (4,5) (5,7) (7,8)

(12) If you draw a straight line passing through points (1, 2) and (3, 0), find the point where line intersects with y axis.

- a. (0,3)
- b. (0,1)
- c. (0,5)
- d. (0,4)
(13) Following chart shows average daily viewership (in thousands) of a news channel. Assuming trend between data points to be linear, find the average daily viewership for 4th year.

![Graph showing average daily viewership (thousands).](image)

a. 23 thousands  
b. 20 thousands  
c. 24 thousands  
d. 22 thousands

(14) The graph below shows the temperature (in degrees Celsius) over 10 weeks in Chandigarh and Jaipur. The maximum difference in temperature = □□□°C.

![Graph showing temperature over 10 weeks in Chandigarh and Jaipur.](image)
(15) The graph below shows the average daily circulation (in thousands) of two newspapers (A and B) for ten years. The average daily circulation of A in the year (when combined average daily circulation of both A and B was minimum) = _____ thousands.)
Step 1
The y-axis of the graph represents the amount of milk sold by the milkman over 10 days, where days are shown on x-axis.

Step 2
From the graph we can observe that, the milk sold over 1st to 10th day are 12, 6, 13, 9, 16, 8, 10, 12, 10, 14 liters respectively.

Step 3
The average liters of milk sold by him per day = \[
\frac{\text{Total milk sold in 10 days}}{10}
\]
\[
= \frac{12 + 6 + 13 + 9 + 16 + 8 + 10 + 12 + 10 + 14}{10}
\]
\[
= \frac{110}{10}
\]
\[
= 11 \text{ liters}
\]
**Step 1**
Let’s draw a line connecting to the given points, as shown below,

**Step 2**
It is given that bike is travelling with uniform speed in one direction, the given line represents the location of the bike at intermediate times.

**Step 3**
Now, draw a point on the line at time = 40 minutes.

**Step 4**
From the point we can observe that the bike is at **30 km** at 40 minutes.
Step 1

The y-axis and x-axis of the graph show the temperature over 0 to 9 weeks in Vadodara respectively.

Step 2

If we look at the graph, we notice that the temperature in 5th week = 26
The temperature in 6th week = 34
Now, the increase in temperature from 5th week to 6th week = 34 - 26 = 8

Step 3

The increase in temperature from 5th week to 6th week is 8, which is biggest increase in temperature over 9 weeks and hence, we can say that the week 6 saw the biggest increase in temperature. A quick way to find the week with the biggest increase in temperature is to find the line segment in the graph which has highest upward slope. In this graph, the line with the highest upward slope is seen connecting 5th week to 6th week: that is the segment representing the week 6.
Step 1

The y-axis and x-axis of the graph show the temperatures over 0 to 10 weeks in Shillong respectively.

Step 2

If we look at the graph, we notice that the temperature is highest in the 2\textsuperscript{nd} week, i.e. 32 °C, and the temperature is lowest in the 0\textsuperscript{th} week, i.e. 22 °C.

Step 3

Now, the difference between highest and lowest temperatures = 32 - 22 = 10 °C

Step 4

Therefore, the maximum range of variation is 10 °C.

(5) Rs. 1100
### Step 1
From the given graph we can find temperatures of ten days as shown in table below,

<table>
<thead>
<tr>
<th>Number of day</th>
<th>Actual temperature of the city</th>
<th>Temperature forecast of the city</th>
<th>Deviation in the temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>37</td>
<td>35</td>
<td>35 - 37 = -2</td>
</tr>
<tr>
<td>2</td>
<td>37</td>
<td>36</td>
<td>36 - 37 = -1</td>
</tr>
<tr>
<td>3</td>
<td>37</td>
<td>35</td>
<td>35 - 37 = -2</td>
</tr>
<tr>
<td>4</td>
<td>36</td>
<td>38</td>
<td>38 - 36 = 2</td>
</tr>
<tr>
<td>5</td>
<td>32</td>
<td>33</td>
<td>33 - 32 = 1</td>
</tr>
<tr>
<td>6</td>
<td>35</td>
<td>34</td>
<td>34 - 35 = -1</td>
</tr>
<tr>
<td>7</td>
<td>32</td>
<td>31</td>
<td>31 - 32 = -1</td>
</tr>
<tr>
<td>8</td>
<td>38</td>
<td>37</td>
<td>37 - 38 = -1</td>
</tr>
<tr>
<td>9</td>
<td>37</td>
<td>38</td>
<td>38 - 37 = 1</td>
</tr>
<tr>
<td>10</td>
<td>35</td>
<td>33</td>
<td>33 - 35 = -2</td>
</tr>
</tbody>
</table>

### Step 2
From the given table we notice that the maximum deviation in the temperature is **2°C**.
b. x axis

Step 1
We know that, if the x-coordinate of a point is zero, then it lies on the y-axis and if the y-coordinate of a point is zero, then it lies on the x-axis.

Step 2
Following graph shows some points whose y-coordinate is zero and x-coordinate is non-zero.

Step 3
Thus, the statement "A point whose y-coordinate is zero and x-coordinate is non-zero will lie on the y-axis" is False.
Step 1

The y-axis of the graph shows the distance traveled by Rajesh, whereas the x-axis shown time from time=0 hours to time=10 hours. Total number of hours is 10.

Step 2

If we look at the graph, we notice that:
- The distance traveled by Rajesh in 1\textsuperscript{st} hour = 10 km
- The distance traveled by Rajesh in 2\textsuperscript{nd} hour = 40 - 10 = 30 km
- The distance traveled by Rajesh in 3\textsuperscript{rd} hour = 50 - 40 = 10 km
- The distance traveled by Rajesh in 4\textsuperscript{th} hour = 50 - 50 = 0 km
- The distance traveled by Rajesh in 5\textsuperscript{th} hour = 80 - 50 = 30 km
- The distance traveled by Rajesh in 6\textsuperscript{th} hour = 80 - 80 = 0 km
- The distance traveled by Rajesh in 7\textsuperscript{th} hour = 90 - 80 = 10 km
- The distance traveled by Rajesh in 8\textsuperscript{th} hour = 90 - 90 = 0 km
- The distance traveled by Rajesh in 9\textsuperscript{th} hour = 100 - 90 = 10 km
- The distance traveled by Rajesh in 10\textsuperscript{th} hour = 130 - 100 = 30 km.

Step 3

Now, the highest distance traveled by Rajesh in an hour is 30 km, the highest speed during an hour is 30 km/hour.

(9) b. \((v, u)\)

Since \((u, v)\) lies on graph of \(f\), \(f(u) = v\)
Hence \(f^{-1}(v) = u\)
Therefore point \((v, u)\) will lie on the graph of function \(f^{-1}\)
Step 1
The x-axis and y-axis of the graph represents the year and the production of phones of two companies respectively.

Step 2
The one small box of chart represents 1 thousands production of phones. The combined production of phones of two companies from 1st year to 10th year are shown in the following table:

<table>
<thead>
<tr>
<th>Year</th>
<th>Company A</th>
<th>Company B</th>
<th>(Company A + Company B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>18</td>
<td>27</td>
<td>18 + 27 = 45</td>
</tr>
<tr>
<td>2</td>
<td>14</td>
<td>21</td>
<td>14 + 21 = 35</td>
</tr>
<tr>
<td>3</td>
<td>14</td>
<td>26</td>
<td>14 + 26 = 40</td>
</tr>
<tr>
<td>4</td>
<td>15</td>
<td>26</td>
<td>15 + 26 = 41</td>
</tr>
<tr>
<td>5</td>
<td>16</td>
<td>25</td>
<td>16 + 25 = 41</td>
</tr>
<tr>
<td>6</td>
<td>14</td>
<td>21</td>
<td>14 + 21 = 35</td>
</tr>
<tr>
<td>7</td>
<td>14</td>
<td>23</td>
<td>14 + 23 = 37</td>
</tr>
<tr>
<td>8</td>
<td>18</td>
<td>22</td>
<td>18 + 22 = 40</td>
</tr>
<tr>
<td>9</td>
<td>12</td>
<td>23</td>
<td>12 + 23 = 35</td>
</tr>
<tr>
<td>10</td>
<td>16</td>
<td>21</td>
<td>16 + 21 = 37</td>
</tr>
</tbody>
</table>

Step 3
From the given chart we notice that the combined production of phones of two companies in 1st year was maximum. The combined production of phones in 1st year was 45 thousands.

(10) c. 45 thousands

(11) b. (0,0) (2,4) (3,6) (4,8) (6,12)

(12) a. (0,3)
Step 1
x-axis and y-axis of the chart represents the year and the average daily viewership of a news channel respectively.

Step 2
It is given that the trend between data points to be linear. We can connect the points as following to find average daily viewership for intermediate years,

Step 3
From the above chart we notice that, the average daily viewership for 4\textsuperscript{th} year is 22 thousands.
Step 1
The x-axis and y-axis of the graph represents the week and temperature respectively.

Step 2
One small box in chart represents 1°C temperature. The difference in temperatures from 1\textsuperscript{st} week to 10\textsuperscript{th} week are shown in the following table:

<table>
<thead>
<tr>
<th>Week</th>
<th>Chandigarh temperature (in degrees Celsius)</th>
<th>Jaipur temperature (in degrees Celsius)</th>
<th>Difference in temperature (Jaipur temperature - Chandigarh temperature)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>22</td>
<td>31</td>
<td>31 - 22 = 9</td>
</tr>
<tr>
<td>2</td>
<td>27</td>
<td>31</td>
<td>31 - 27 = 4</td>
</tr>
<tr>
<td>3</td>
<td>22</td>
<td>30</td>
<td>30 - 22 = 8</td>
</tr>
<tr>
<td>4</td>
<td>26</td>
<td>31</td>
<td>31 - 26 = 5</td>
</tr>
<tr>
<td>5</td>
<td>23</td>
<td>35</td>
<td>35 - 23 = 12</td>
</tr>
<tr>
<td>6</td>
<td>27</td>
<td>29</td>
<td>29 - 27 = 2</td>
</tr>
<tr>
<td>7</td>
<td>28</td>
<td>31</td>
<td>31 - 28 = 3</td>
</tr>
<tr>
<td>8</td>
<td>26</td>
<td>35</td>
<td>35 - 26 = 9</td>
</tr>
<tr>
<td>9</td>
<td>23</td>
<td>31</td>
<td>31 - 23 = 8</td>
</tr>
<tr>
<td>10</td>
<td>27</td>
<td>34</td>
<td>34 - 27 = 7</td>
</tr>
</tbody>
</table>

Step 3
From the given chart we notice that the difference in temperature in 5\textsuperscript{th} week is maximum. The difference in temperature in 5\textsuperscript{th} week is 12°C.
Step 1
The x-axis and y-axis of the graph represents the year and the average daily circulation of two newspapers respectively.

Step 2
The one small box of graph represents 1 thousands average daily circulation. The combined average daily circulation of two newspapers from 1\textsuperscript{st} year to 10\textsuperscript{th} year are shown in the following table:

<table>
<thead>
<tr>
<th>Year</th>
<th>Newspaper A</th>
<th>Newspaper B</th>
<th>(Newspaper A + Newspaper B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>33</td>
<td>41</td>
<td>33 + 41 = 74</td>
</tr>
<tr>
<td>2</td>
<td>35</td>
<td>46</td>
<td>35 + 46 = 81</td>
</tr>
<tr>
<td>3</td>
<td>38</td>
<td>43</td>
<td>38 + 43 = 81</td>
</tr>
<tr>
<td>4</td>
<td>34</td>
<td>42</td>
<td>34 + 42 = 76</td>
</tr>
<tr>
<td>5</td>
<td>38</td>
<td>42</td>
<td>38 + 42 = 80</td>
</tr>
<tr>
<td>6</td>
<td>34</td>
<td>44</td>
<td>34 + 44 = 78</td>
</tr>
<tr>
<td>7</td>
<td>36</td>
<td>41</td>
<td>36 + 41 = 77</td>
</tr>
<tr>
<td>8</td>
<td>39</td>
<td>40</td>
<td>39 + 40 = 79</td>
</tr>
<tr>
<td>9</td>
<td>34</td>
<td>41</td>
<td>34 + 41 = 75</td>
</tr>
<tr>
<td>10</td>
<td>35</td>
<td>46</td>
<td>35 + 46 = 81</td>
</tr>
</tbody>
</table>

Step 3
From the given chart we notice that the combined average daily circulation of two newspapers in 1\textsuperscript{st} year was minimum. The average daily circulation of A in 1\textsuperscript{st} year was 33 thousands.