RELATION

A DEFINITIONS

A.1 VARIABLES IN SCIENCES

MCQ 1: We study the growth of a plant over different months of the year.

Choose the two variables:

- \Box d: length in km.
- \boxtimes *t*: time in months.
- \Box v: speed in km/h.
- \Box v: volume of soil in m³.
- \Box T: temperature in degrees.
- \boxtimes *h*: height of the plant in cm.

Answer:

- *t*: time in months.
- h: height of the plant in cm.

MCQ 2: We monitor the daily temperature changes over a month. Choose the two variables:

- \Box d: length in km.
- \Box *v*: speed in km/h.
- \boxtimes *t*: time in days.
- \Box T: temperature in degrees.
- \boxtimes v: volume of water in m³.
- \square *h*: height in cm.

Answer:

- *t*: time in days.
- T: temperature in degrees.

MCQ 3: We track the daily sales in a store over a month. Choose the two variables:

- \boxtimes *t*: time in days.
- \Box d: length in km.
- \Box v: speed in km/h.
- \Box v: volume of stock in m³.
- \Box T: temperature in degrees.
- $\boxtimes s$: sales amount in dollars.

Answer:

- *t*: time in days.
- s: sales amount in dollars.

MCQ 4: We measure the growth of a bacterial culture over a period of time.

Choose the two variables:

- \Box d: length in km.
- $\Box v$: speed in km/h.
- \boxtimes *t*: time in hours.
- \square *n*: number of bacteria.
- \boxtimes v: volume of liquid in m³.
- \Box T: temperature in degrees.

Answer:

- *t*: time in hours.
- n: number of bacteria.

MCQ 5: We study the amount of rain we get in different months of the year. Choose the two variables:

house the two variables

- \Box d: length in km.
- $\Box v$: speed in km/h.
- \boxtimes *t*: time in months.
- \Box h: height of rainfall in a graduated glass in cm.
- \boxtimes V: volume of sunscreen in m³.
- \Box T: temperature in degrees.

Answer:

- *t*: time in months.
- h: height of rainfall in a graduated glass in cm.

B TABLES

B.1 READING TABLES

Ex 6: For this relation:

x	0	1	2	3	4	5
y	3	3	2	4	5	4

Find the value of y when x = 3.

y = 4

Answer: When x = 3, y = 4.

Ex 7: For this relation:

x	1	2	3	4	5	6
y	4	5	6	7	8	9

Find the value of x when y = 8.

x = 5

Ex 8: For this relation:

1	x	0	1	2	3	4	5
1	y	1.5	2.5	3.0	4.5	5.5	6.0

Find the value of y when x = 2.

y = 3.0

Answer: When x = 2, y = 3.0.

Ex 9: For this relation:

x	1	2	3	4	5	6
y	1	4	9	16	25	36

Find the value of x when y = 16.

x = 4

Answer: When y = 16, x = 4.

Ex 10: For this relation:

x	0.5	1.5	2.5	3.5	4.5	5.5
y	2.0	2.5	3.5	4.0	4.5	5.0

Find the value of y when x = 3.5.

$$y = 4.0$$

Answer: When x = 3.5, y = 4.0.

B.2 READING TABLES IN SCIENCES

Ex 11: Consider a table that shows the relationship between Hugo's age (in years) and his height (in centimeters).

Hugo's Age (years)	5	6	7	8
Hugo's Height (cm)	110	116	122	128

1. What is Hugo's height at 5 years old?

110 cm.

2. At what age was Hugo's height 122 cm?

7 years.

Answer:

- 1. Hugo's height at 5 years old is 110 cm.
- 2. Hugo's height was 122 cm when he was 7 years old.

Ex 12: Consider a table that shows the relationship between speed (in km/h) and distance traveled (in km).

Speed (km/h)	40	50	60	70
Distance (km)	80	100	120	140

1. What is the distance traveled at a speed of 50 km/h?

100 km.

2. At what speed was the distance 120 km?

60 km/h

Answer:

- 1. The distance traveled at a speed of 50 km/h is 100 km.
- 2. The speed was 60 km/h for a distance of 120 km.

Ex 13: Consider a table that shows the relationship between time (in hours) and temperature (in $^{\circ}$ C).

Time (hours)	10	11	12	13
Temperature (°C)	22	24	24	23

1. What is the temperature at 10 o'clock?

22 °C.

2. At what times was the temperature 24°C?

11 o'clock and 12 o'clock

Answer:

- 1. The temperature at 10 o'clock is 22° C.
- 2. The temperature was 24°C at 11 o'clock and 12 o'clock.

Ex 14: Consider a table that shows the relationship between the temperature (in $^{\circ}$ C) and the number of ice creams sold.

Temperature (°C)	20	22	24	26
Ice Creams Sold	50	75	100	150

1. How many ice creams were sold at 24° C?

100

2. At what temperature were 150 ice creams sold?

26 degrees Celsius.

Answer:

- 1. At 24°C, 100 ice creams were sold.
- 2. 150 ice creams were sold at a temperature of 26° C.

Ex 15: Consider a table that shows the relationship between the price of a book (in dollars) and the number of books sold.

Price $(\$)$	10	12	15	20
Books Sold	120	100	80	60

1. How many books were sold at a price of \$15?

80

2. At what price were 60 books sold?

\$ 20

Answer:

- 1. At a price of \$15, 80 books were sold.
- 2. 60 books were sold at a price of \$20.



C GRAPHS

C.1 IDENTIFYING LINE GRAPHS

MCQ 16: For this relation:

x	0	1	2	3	4	5
y	3	3	2	4	5	4

Choose the line graph.



Answer:

• The horizontal axis is the x-axis. The vertical axis is the y-axis.

x	0	1	2	3	4	5
y	3	3	2	4	5	4

• Plot the points



• Connect the points



MCQ 17: For this relation:

x	0	1	2	3	4	5
y	1	4	2	7	3	6

Choose the graph.





Answer:

• The horizontal axis is the x-axis. The vertical axis is the y-axis.



• Plot the points



• Connect the points



MCQ 18: For this relation:

					-
y 2.5	4.1	3.7	1.2	4.8	3.6

Choose the graph.





Answer:

• The horizontal axis is the x-axis. The vertical axis is the y-axis.

x	0	1	2	3	4	5
y	2.5	4.1	3.7	1.2	4.8	3.6

• Plot the points



• Connect the points





C.2 PLOTTING LINE GRAPHS

Ex 19:

x	0	1	2	3	4	5
y	3	3	2	4	5	4

Plot these points and connect them with line segments on a coordinate plane.



Answer:



Ex 20:

x	0	1	2	3	4	5
y	1	4	2	7	3	6

Plot these points and connect them with line segments on a coordinate plane.



Answer:



Ex 21:



Plot these points and connect them with line segments on a coordinate plane.



Answer:



C.3 READING LINE GRAPHS





Find the value of y when x = 3.

y = 4

Answer:



• When x = 3, y = 4.

Ex 23: For this graph,





y = 5

Find the value of y when x = 4.

Answer:





Ex 24: For this graph,



Find the value of y when x = 2.

$$y = 3$$

Answer:



• When x = 2, y = 3.

Ex 25: For this graph,



Find the value of y when x = 1.

$$y = 2$$

Answer:



• When
$$x = 1, y = 2$$
.

