SECTION-II

Q. No. 10. (a) Define and draw the following: (2½ each) (5)
(i) Rightangle triangles (ii) Equilateral triangles
(b) There are nine students in a group having ages 15, 15, 16, 16, 16, 17, 17, 18, (5)
19. Calculate *mean, medium, mode* and *range* of their ages also define the above mentioned terms:

Q. No. 11. (a) A distribution company provides households to departmental stores within a 50 (5)
kilometers radius. The table below shows how far each departmental store is from the godown of the distribution company.

Distance from the godown of the distribution company	Number of Stores
10 kilometers or less	03
11 to 20 kilometers	15
21 to 30 kilometers	26
31 to 40 kilometers	20
41 to 50 kilometers	16

(i) How many stores does the distribution company serve?
(ii) What is the most common distance of stores from the company's godown?
(iii) How many stores are 35 Km or more from the godown?
(iv) What percentage of stores are 31 Km or more from the godown?

(b) Read the following carefully and answer the questions following: (5)
Ahmad, Ali, Akbar, Nasir and Shehbaz are students of a college having different heights and weights. Ahmad weighs thrice as much as Ali and Ali weighs 5 times as much as Akbar. Akbar weighs half as much as Nasir and Nasir weighs half as much as Shehbaz.
(i) Who is the heaviest in weight?
(ii) Who is the is the lightest in weight?
(iii) Shehbaz is lighter in weight than which of the two students?
(iv) Shehbaz is heavier than which of the two students?
(v) Show the descending order of weights of the students?

Q. No. 12. (a) Classification of blood groups is based on the presence or absence of inherited (5)
antigenic substances on the surface of red blood cells. In a survey of British population the blood group distribution among 1000 people was as follows: 300 had blood group A, 325 had blood group B, 250 had O and 125 AB. Out of this group a person was selected at random, calculate his probability of having blood group AB

(b) Five friends Ahmad, Ali, Akbar, Nasir and Shehbaz went on summer vacation (5)
to five cities namely V, W, X, Y and Z by five different modes of transport, that is by bus, train, aeroplane, car and boat from point A. Akbar went to Y by car and Ali went to X by air. Nasir travelled by boat whereas Shehbaz went by train. For X and W there is no bus service. The person who went to X did not use boat to travel. Now answer the following questions.
(i) How did Ahmad travel and where did he go?
(ii) Which mode of transport was used by the person who travelled to X city?

Q. No. 13. (a) Differentiate between primary and secondary mental abilities. How the general (5)
mental ability scales differ from IQ test.
(b) Y = mX + C is an equation of straight line. Draw a graph showing relationship (5)
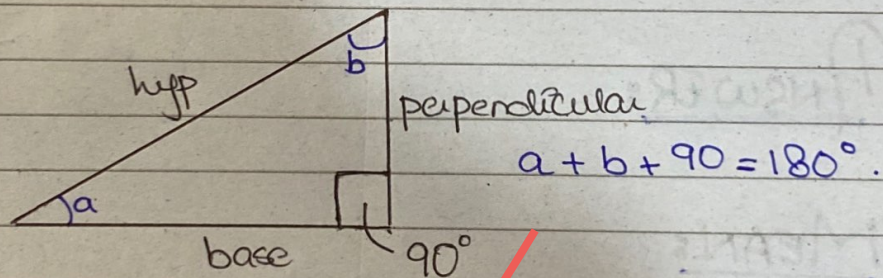between X and Y and relate the equation to the slope and intercept on the graph.

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Q10: Define and draw the following :

i) Right angle triangle:
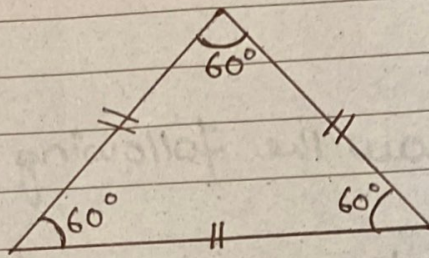
A triangle i.e right angle has three sides and three angles. The perpendicular angle to the base would always be 90°. The side opposite to 90° would be ~~hypothesis~~ *Hypotenuse* Hence it consists of three sides namely, base, perpendicular and hypothesis. The longest side would always be hypothesis. The other two angles would be sum of 90°.

hyp

b

perpendicular

$$a + b + 90 = 180°$$

a

base   90°

Right-angle triangle

ii) Equilateral triangle :

An equilateral triangle, would have three sides and three angles. The total sum of angles in a triangle equals to 180°. Hence the three angles would be 60°, 60°, 60° each. The three sides in an equilateral triangle has to be equal.

AN EQUILATERAL TRIANGLE

b) There are nine students in a group having ages 15, 15, 16, 16, 16, 17, 17, 18, 19 . Calculate mean, medium, mode and range of their ages also define the above mentioned terms:

ANSWER:

i) MEAN:

The mean is the average. It is to calculate the average from the given set of values. The mean of the above data would be:

Total sum (n) = 15 + 15 + 16 + 16 + 16 + 17 + 17 + 18 + 19 = 149

Total number of values (N) = 9

Mean $(\bar{x})$ =

$$\bar{x} = \left(\frac{n}{N}\right) = \frac{149}{9}$$

$$= 16.55 \ (\text{Mean age}).$$

Median? Mode?

$$
\begin{array}{r}
16.5 \\
9\,|\,149 \\
-\,|\,9 \\
\hline
59 \\
-\,54 \\
\hline
50 \\
-\,45 \\
\hline
5
\end{array}
$$
M.M

QUESTION 11 b:

READ THE FOLLOWING...

ACCORDING TO GIVEN DATA:

Students : Ahmed, Ali, Akbar, Nasir, Shehbaz
         (Ah)   (Al)   (Ak)   (Na)   (Sh)

Weights of students:
Ahmed : 3 (Al)
Ali   : 5 (Ak)
Akbar : 1/2 (Na)
Nasir : 1/2 (Sh)

Q(i) Who is the heaviest in weight?

Lets suppose Shehbaz weighs = 20.

Nasir = 10
Akbar = 5   Hence, Ahmed is the heaviest as
Ali   = 25   proven. Ans.
Ahmed = 75

(ii) Who is the lightest in weight?

By carrying carry-forwarding the above example:
Akbar is the lightest in weight.

(iii) Shehbaz is lighter in weight than which of the two students?

Shehbaz is lighter in weight than : Ali & Ahmed.

iv) Shehbaz is heavier than which of the two students?

Shehbaz is heavier than : Nasir & Akbar.

v) Show the descending order of weights of the students?

Ahmed > Ali > Shehbaz > Nasir > Akbar.

QUESTION 12 a):

CLASSIFICATION OF BLOOD GROUPS ...

i) DATA GIVEN:

Total Sample: 1000

A = 300	
B = 325	
O = 250	
AB = 125	

Probability of having blood group AB:

$$\frac{AB}{Total\ Sample} \Rightarrow$$

$$\Rightarrow \frac{\cancel{125}}{\cancel{1000}} \frac{\cancel{25}}{\cancel{200}} \frac{\cancel{5}}{\cancel{40}} \frac{1}{8}$$

$$\Rightarrow \frac{1}{8} \Rightarrow \boxed{0.125}\ Ans.$$

ii) MEDIUM: *(Median)*

It is the central value in a data. The mid-value is referred to as median or medium. The below data is:

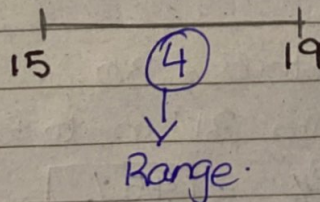15, 15, 14, 16, (16) 17, 17, 18, 19.

The medium is : 16.

iii) MODE :

It is the most occuring value in a data. The most occuring value in the above data is 16 hence the mode is: **16**.

iv) RANGE:

It is the difference between the higher and the lower value or the least/smallest value in the data. Basically, the higher and the least value describes the extremes of the data hence their difference sets the range.

- The higher value in the above data is: 19.
- The lower value in the above data is: 15
- The range is 19 - 15 = 4

```
15      (4)      19
         |
         v
       Range.
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QUESTION # 11(a):

A distribution company provides households ...

ANSWER:

i) **How many stores does the distribution company serve?**

The distribution company serves:

$$03 + 15 + 26 + 20 + 16 = 80 \text{ stores}.$$

ii) **What is the most common distance of stores from the company's godown?**

The most common distance:

21 to 30 kms.

iii) **How many stores are 35km or more from the godown?**

It is not specified in the given table as the data suggests it is given for 21 or more. 35 kms are inclusive.

iv) **What percentage of stores are 31 km or more from the godown?**

Total number of stores = 80
Stores present within 31 km to 50 km range = 36.

$$\frac{{}^{9}\cancel{36}}{\cancel{80}_{1}} \times \cancel{80}^{5} = 45\%.$$

QUESTION 12 b:

Five Friends Ahmed, Ali, Akbar, Nasir
and Shehbaz ...

According to the given data:

The five friends went on summer vacations to:
V, W, X, Y, Z
Five different modes of transport: (from point A)
bus, train, aeroplane, car and boat.

		Destination	Mode
1,	Akbar	Y	Car
2,	Ali	X	Air
3/	Nasir		Boat
4,	Shehbaz		Train

- For X and W → No ~~boat~~ bus
- For X → Person did not use boat.

Q. How did Ahmed travel and where did he go?
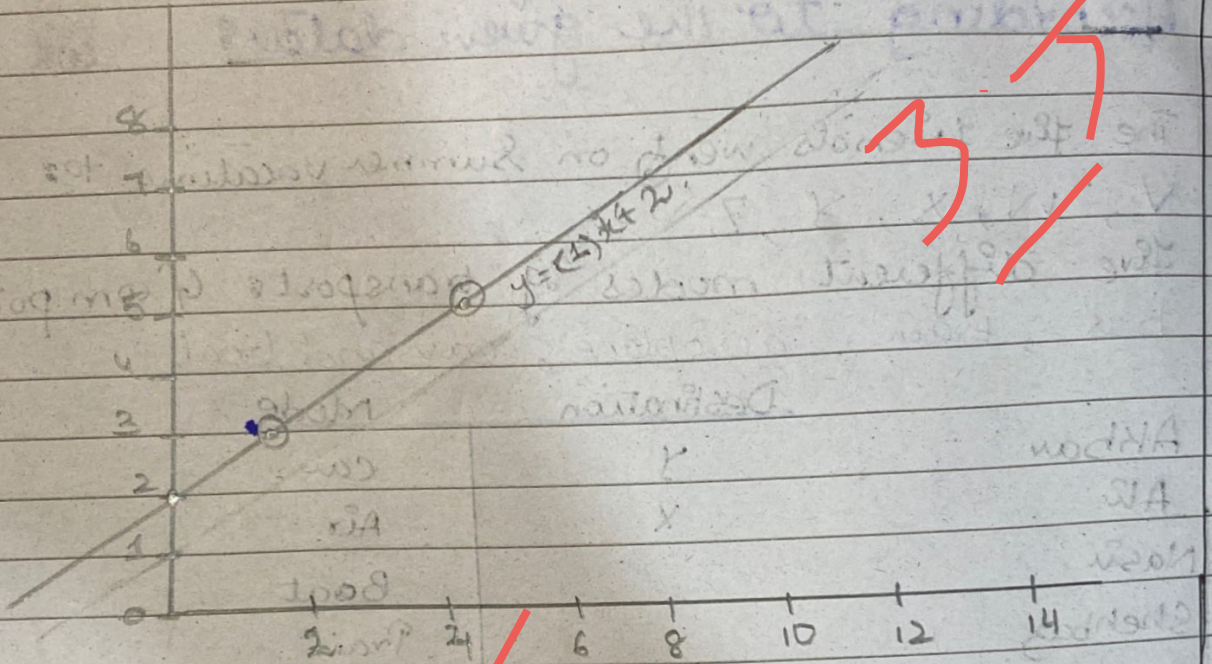 Ahmed went to either V or Z and went through
  bus.

Q. Which mode of transport was used by the person
who travelled to X city?
  Ali went to city X by air.

Question 13b:

$y = mx + C$ is an equation of straight line ...

Co-ordinates :

(2, 3)   (4, 5)

$m = \dfrac{y_2 - y_1}{x_2 - x_1}$ $\quad \dfrac{(rise)}{run}$

$m = \dfrac{5 - 3}{4 - 2} = \dfrac{2}{2} = \boxed{1}$

gradient (slope (m)) = 1

Taking (2, 3) to calculate +C.

$3 = (1)(2) + C$

$3 = 2 + C$

$3 - 2 = C$