SUMMATIVE ASSESSMENT - I
2016-17

CLASS : IX

MATHEMATICS - Paper-II

Medium: ENGLISH

Principles of valuation

Section -I

1. In a $\triangle$ ABC, $LA + LB + LC = 180°$

    (or)

    Sum of the angles in a triangle is two right angles

    } Any relevant Answer 1 mark

2. $2x° = 36$ ($\because$ vertically opposite angles) $\frac{1}{2}$ mark

    $x = \dfrac{36^{18}}{2}$ $\frac{1}{2}$ mark

    $\therefore x = 18$ 1 mark

3. From the figure. $x = 80°$

    Since $x, 100°$ are allied exterior (or) Co-Exterior angles. they are Supplementary   1 mark

    $x + 100 = 180°$

    $\therefore x = 180 - 100 = 80°$

4. mean $(\bar{x}) = 10$

    $\bar{x} = \dfrac{10 + 12 + 18 + 10 + P}{5} = 10$ $\frac{1}{2}$

    $\dfrac{50 + P}{5} = 10$

    $50 + P = 50$ $\frac{1}{2}$

    $\therefore P = 50 - 50$

    $= 0$ 1 mark

5.
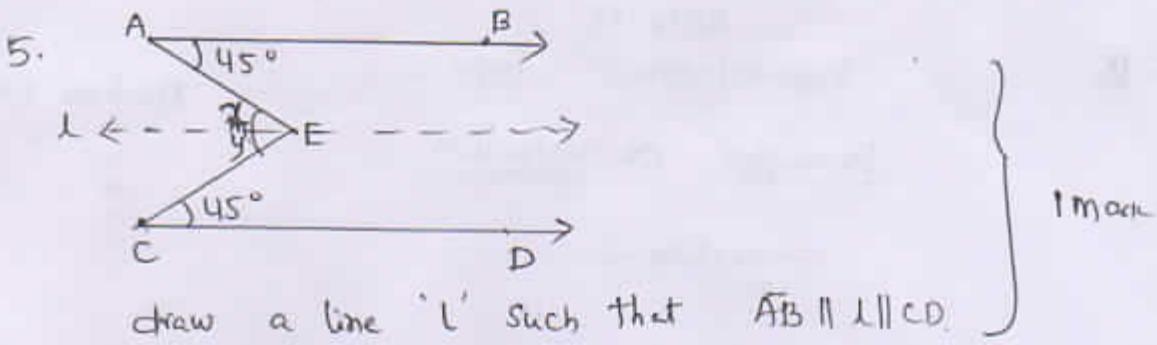
draw a line 'l' such that $\overline{AB} \parallel l \parallel CD$.

$x = 45°$ [∵ Alternate interior angles]

$y = 45°$ [∵ Alternate interior angles]

∴ $m = x+y = 45° + 45° = 90°$

1 mark

1 mark

2 marks

6.
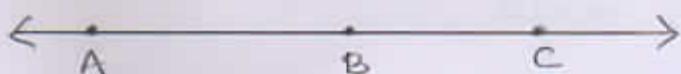
In the figure AC, AB + AC are collinear

by Euclid's 4th axiom Says that things which coincide with one another are equal to one another. Therefore it can be deducted that

∴ $AB + BC = AC$

Substituting this value of AC in the given equation $AC - AB = BC$.   (∵ $AC = AB+BC$)

$AB + BC - AB = BC$

7.

$\bar{x}$ = Arithmetic mean of the data

$\sum\limits_{i}^{i} x_i$ = Sum of the observations in the data

n = number of observations in the data

∴ $\bar{x} = \dfrac{\sum\limits_{i}^{i} x_i}{n}$

2 marks

8.

Day	No. of Applications Received	freequency
1	15	15
2	40	25
3	85	45
4	100	15

2 marks

9.

Resured angles are $4x$ and $5x$

$4x + 5x = 180°$ (∵ angles are supplimentry) 1m

$9x = 180°$

$\Rightarrow x = 20°$

∴ angles are
$4x° = 4 \times 20 = 80°$
$5x = 5 \times 20 = 100°$
} 1m

2 marks

Section - III

10 ⓐ

A 6cm B
6cm   6cm
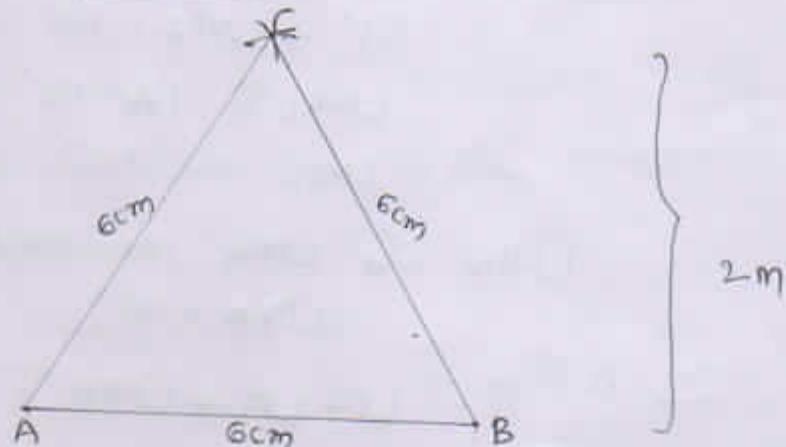
2m

Steps : 1. Draw a line segment $AB = 6cm$

2. Draw an arc with centre A. and radius 6cm

3. Draw another arc with centre B and radius 6cm which intersects Previous arc at C

2m

4. Join AC and BC.

5. Resured. equilateral triangle formed whose sides 6cm

4m

Note : Of the construction is wrong give 1/2 more to Rough Diagram

⑩ ⓑ
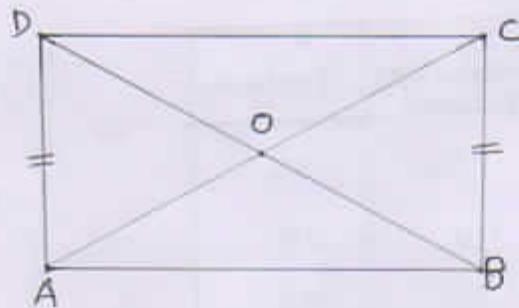
2 marks

Given :- In Quadrilateral ABCD, AD = BC.

AC and BD is intersecting at 'O'

$\angle DAB = \angle CBA$

2 marks

Formed Triangles are : $\triangle AOB, \triangle BOC, \underline{\triangle COD, \triangle AOD}$

4 marks

⑪

ⓐ From the figure

In $\triangle LRN$, $\angle L = 90°$, $\angle N = 45°$

then $\angle L + \angle N + \angle NRL = 180°$ (∵ Sum of interior angles are 180°) } 1m

$90° + 45° + \angle NRL = 180°$

$135° + \angle NRL = 180°$

$\angle NRL = 180° - 135°$

$\angle NRL = 45°$ } 1m

$\angle LRN$ and $\angle PRM$ are equal (∵ Vertically opposite angles)

∴ $\angle PRM = 45°$ } 1m

In $\triangle PRM$, $\angle P + \angle M + \angle PRM = 180°$

$\angle P + 90° + 45° = 180°$

$\angle P + 135° = 180°$

$\angle P = 180° - 135°$

∴ $\angle P = 45°$ } 1m

∴ $\angle NRL = 45°$, $\angle PRM = 45°$, $\angle P = 45°$

4m

11

(b)
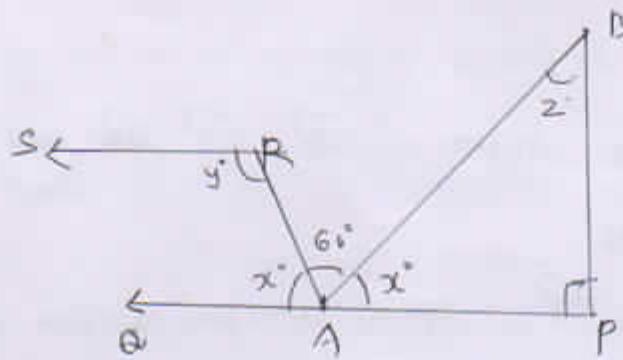
From the given figure. at Point A

$$\angle x + 60° + x° = 180°$$
$$2x + 60° = 180°$$
$$2x = 180° - 60°$$
$$2x = 120° \implies x = 60°$$

1 mark

In $\triangle PB$ ..., $\angle P = 90°$, $\angle x = 60°$

then
$$60° + 90° + \angle z = 180°$$
$$150° + \angle z = 180°$$
$$\therefore \angle z = 180° - 150°$$
$$\angle z = 30°$$

1 mark

PQ || RS and AR is transversal.
the sum of interior angles of the same side of
the transeversal is 180°

1 mark

$$\therefore \angle x + \angle y = 180°$$
$$60° + \angle y = 180°$$
$$\angle y = 180° - 60°$$
$$\angle y = 120°$$

1 mark

$$\therefore x = 60°, \quad y = 120°, \quad z = 30°$$

4 marks

(12)

(a)

From the figure $\overrightarrow{OP}$, $\overrightarrow{OQ}$, $\overrightarrow{OR}$ and $\overrightarrow{OS}$ are four rays

Draw ray $\overrightarrow{OT}$, opposite direction of $\overrightarrow{OQ}$ and formed a line $\overline{TOQ}$

∴ ray $\overrightarrow{OP}$ is on a straint line $\overleftrightarrow{TOQ}$

 1 mark

∴ $\angle TOP + \angle POQ = 180°$ —① (∵ linear pair) ✓

ray $\overrightarrow{OS}$ is also on a line $\overleftrightarrow{TQ}$

 1 mark

∴ $\angle TOS + \angle SOQ = 180°$ —② (∵ linear pair of angles)

But $\angle SOQ = \angle SOR + \angle QOR$.

Subsitute $\angle SOQ$ in esuction —②

$\angle TOS + \angle SOR + \angle QOR = 180°$ —③

 1 m

∴ Adding esuations ① and ③

$\angle TOP + \angle POQ + \angle TOS + \angle SOR + \angle QOR = 360°$ —④

But $\angle TOP + \angle TOS = \angle POS$

 1 m

∴ ④ ⇒ $\angle POQ + \angle QOR + \angle SOR + \angle POS = 360°$

 4 marks

(12)

(b)

Given Data is $6, 12, 14, 7, 8, 14, 16$

$\text{mean} = \dfrac{\text{Sum of observations}}{\text{No. of observatis}}$

 1 mark

$= \dfrac{6 + 12 + 14 + 7 + 8 + 14 + 16}{7}$

$= \dfrac{77}{7} = 11$

Data :- 6, 12, ⑭ 7, 8, ⑭ 16

$\therefore$ Mode = 14   ($\because$ 14 is the most occurs in the data) } 1m

If an observation '3' is added to given data the resulting data is . 3, 6, 12, 14, 7, 8, 14, 16

$\therefore$ Mean $= \dfrac{3 + 6 + 12 + 14 + 7 + 8 + 14 + 16}{8}$

$= \dfrac{80^{10}}{8}$

$= 10$

} 1m

Mode = 14   (After 3 is added, 14 is the most occurs)

Description	Mean	Mode
Original Data	11	14
If an observation '3' is added	10	14

} 1m

$\therefore$ If 3 is added to data the mean changes but No changes in mode. Mean represents all of the data. Mode is the value of the observation which occurs most frequently.

<u>4m</u>

13. (a) Given, $\overline{AB} = 60\,cm,$

$\overline{GH} = 40\,cm.$ and $\overline{CD} = \overline{EF}$ } 1 mark

and given. Average of line segments $\overline{AB}, \overline{CO}, \overline{ED}$ and

$\overline{GH}$ is $45\,cm$

$$\frac{\overline{AB} + \overline{CD} + \overline{EF} + \overline{GH}}{4} = 45$$

$\overline{AB} + \overline{CD} + \overline{EF} + \overline{GH} = 180$

$60 + \overline{CD} + \overline{CD} + 40 = 180 \quad (\because \overline{CD} = \overline{EF})$ } 1m.

$2\overline{CD} + 100 = 180$

$2\overline{CD} = 180 - 100$

$2\overline{CD} = 80 \Rightarrow \overline{CD} = 40\,cm$

$\overline{CD} = \overline{EF} = 40\,cm.$

$\therefore \overline{AB} = 60\,cm, \quad \overline{C} = 40\,cm, \quad \overline{EF} = 40\,cm, \quad \overline{GH} = 40\,cm.$

Arrenging in ascending order } 1m

$40\,cm, 40\,cm, 40\,cm, 60\,cm$

median of Data $= \dfrac{40 + 40}{2}$ } 1m

$= \dfrac{80}{2} = 40$

$\therefore$ median of $\overline{AB}, \overline{CD}, \overline{EF}$ and $\overline{GH} = 40$

4 marks

13 (b)

cost of ticket	Rs 60	Rs 80	Rs. 100	Rs. 120
No. of tickets Sold	40	72	78	60

} 1m

Cost of the ticket (Rs) (x_i)	No- of tickets Sold (f_i)	$f_i x_i$
60	40	2400
80	72	5760
100	78	7800
120	60	7200
	250	23160

$$\sum f_i = 250; \qquad \sum f_i x_i = 23160$$

2 marks

$$\text{mean } (\bar{x}) = \frac{\sum f_i x_i}{\sum f_i}$$

$$= \frac{23160}{250}$$

$$= 92.64$$

1 mark

4 marks

PART- B $20 \times \frac{1}{2} = 10$ marks

14. D.	19. C	24. C	29. B
15. C.	20. B.	25. D	30. D
16. B.	21. A	26. C	31. C
17. A	22. A	27. B	32. C
18. D	23. B	28. A	33. C