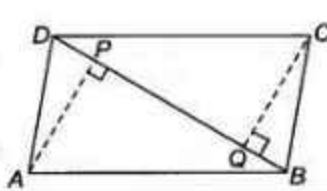




Time: 1 hr 10 min.

M.M. : 30

General Instructions:- All questions are compulsory.

Q.No.	Questions	Marks
1	The class mark of the class 80 – 100 is (A) 90 (B) 85 (C) 95 (D) 80	1
2	The base radii of two cones of same height are in the ratio 4 : 7. The ratio of their volumes is (A) 64 : 9 (B) 9 : 64 (C) 16 : 49 (D) 49 : 16	1
3	In a histogram, each class rectangle is constructed with base as (A) frequency (B) class interval (C) range (D) class size	1
4	One pair of opposite angles of a quadrilateral are in the ratio 5 : 4. These angles are as (A) $80^\circ, 100^\circ$ (B) $100^\circ, 80^\circ$ (C) $120^\circ, 60^\circ$ (D) $105^\circ, 75^\circ$	1
5	<b>Assertion</b> - The consecutive sides of a quadrilateral have one common point. <b>Reason</b> - The opposite side of a quadrilateral have two common points. (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A). (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A). (c) Assertion (A) is true but reason (R) is false. (d) Assertion (A) is false but reason (R) is true	1
6	In a rectangle PQRS diagonals intersect at point O, if $\angle POQ = 58^\circ$ , find $\angle ORS$ .	2
7	Find curved surface area and total surface area of a hemisphere of radius 7cm.	2
8	The radius of a spherical balloon increases from 5cm to 10cm as air is being pumped into it. Find the ratio of surface areas of the balloon in the two cases.	2
9	ABCD is a parallelogram and AP and CQ are perpendiculars from vertices A and C on diagonal BD. Show that $\triangle APB \cong \triangle CQD$ 	2
10	A diagonal of a parallelogram bisects one of its angles. Show that it is a rhombus.	2
11	A hemispherical dome of a building needs to be painted. If the circumference of the base of a dome is 35.2 m, then find the cost of painting it at the rate of Rs.200 per $m^2$ .	3
12	Sakshi's birthday cap is in the form of a right circular cone of base radius 20cm and height 15cm. Find the area of sheet required for her cap and for her 13 friends also.	3
13	A man with a monthly income of Rs 10000 plans his budget for a month as given below	3

	<table border="1"> <tr> <td>Item:</td> <td>clothing</td> <td>Food</td> <td>Education</td> <td>Savings</td> <td>Miscellaneous</td> </tr> <tr> <td>Amount in Rupees</td> <td>1200</td> <td>2800</td> <td>1800</td> <td>2000</td> <td>2200</td> </tr> </table> <p>Represent the above data by a bar graph.</p>	Item:	clothing	Food	Education	Savings	Miscellaneous	Amount in Rupees	1200	2800	1800	2000	2200	
Item:	clothing	Food	Education	Savings	Miscellaneous									
Amount in Rupees	1200	2800	1800	2000	2200									
<b>14</b>	<p>In a triangle ABC, AB = 6.6cm, BC = 8cm and AC = 7cm. D and E are mid points of AB and AC respectively. Find (i) length of DE (ii) perimeter of <math>\triangle ADE</math> and Trapezium DBCE</p>	<b>3</b>												
<b>15</b>	<p>Construct a histogram for the following data :</p> <table border="1"> <tr> <td>C . I</td> <td>10- 40</td> <td>40-70</td> <td>70 -100</td> <td>100 - 130</td> <td>130- 160</td> </tr> <tr> <td>Frequency</td> <td>7</td> <td>4</td> <td>9</td> <td>10</td> <td>2</td> </tr> </table>	C . I	10- 40	40-70	70 -100	100 - 130	130- 160	Frequency	7	4	9	10	2	<b>3</b>
C . I	10- 40	40-70	70 -100	100 - 130	130- 160									
Frequency	7	4	9	10	2									



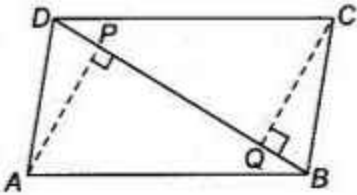
OSDAV Public School, Kaithal  
PT3 Test (November, 2024)  
Class : IX  
Subject : Mathematics

SET-B

Time: 1 hr 10 min.

M.M. : 30

General Instructions:- All questions are compulsory.

Q.No.	Questions	Marks
1	One pair of opposite angles of a quadrilateral are in the ratio 11: 7. These angles are as (A) $110^\circ, 80^\circ$ (B) $70^\circ, 80^\circ$ (C) $110^\circ, 70^\circ$ (D) $105^\circ, 75^\circ$	1
2	The class mark of the class 90 – 120 is (A) 90 (B) 105 (C) 115 (D) 120	1
3	In a histogram, the class intervals or the groups are taken along (A) Y - axis (B) X - axis (C) both of X - axis and Y - axis (D) in between X- axis and Y- axis	1
4	The base radii of two cones of same height are in the ratio 3: 5. The ratio of their volumes is (A) 25: 9 (B) 9: 25 (C) 16 : 9 (D) 9: 16	1
5	<b>Assertion</b> - A parallelogram consist of two congruent triangles. <b>Reason</b> - Diagonal of a parallelogram divides it into two congruent triangles. (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A). (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A). (c) Assertion (A) is true but reason (R) is false. (d) Assertion (A) is false but reason (R) is true	1
6	ABCD is a parallelogram and AP and CQ are perpendiculars from vertices A and C on diagonal BD. Show that $\triangle APB \cong \triangle CQD$ 	2
7	A diagonal of a parallelogram bisects one of its angles. Show that it is a rhombus.	2
8	The radius of a spherical balloon increases from 7cm to 14cm as air is being pumped into it. Find the ratio of surface areas of the balloon in the two cases.	2
9	In a rectangle ABCD diagonals intersect at point O, if $\angle AOD = 42^\circ$ , find $\angle OCB$ .	2
10	Find curved surface area and total surface area of a hemisphere of radius 14cm.	2

11	In a triangle ABC, $AB = 5.6\text{cm}$ , $BC = 6.4\text{cm}$ and $AC = 7\text{cm}$ . D and E are mid points of AB and AC respectively. Find (i) length of DE (ii)perimeter of $\triangle ADE$ and Trapezium DBCE	3												
12	Reema's birthday cap is in the form of a right circular cone of base radius 10cm and height 24cm. Find the area of sheet required for her cap and for her 6 friends also.	3												
13	A man with a monthly income of Rs 9000 plans his budget for a month as given below <table border="1" data-bbox="240 394 1351 525"> <tr> <td>Item:</td> <td>Food</td> <td>Clothing</td> <td>Education</td> <td>Savings</td> <td>Miscellaneous</td> </tr> <tr> <td>Amount in Rs:</td> <td>2600</td> <td>1200</td> <td>1700</td> <td>1500</td> <td>2000</td> </tr> </table> Represent the above data by a bar graph.	Item:	Food	Clothing	Education	Savings	Miscellaneous	Amount in Rs:	2600	1200	1700	1500	2000	3
Item:	Food	Clothing	Education	Savings	Miscellaneous									
Amount in Rs:	2600	1200	1700	1500	2000									
14	A hemispherical dome of a building needs to be painted. If the circumference of the base of a dome is 17.6 m , then find the cost of painting it at the rate of Rs.100 per $\text{m}^2$ .	3												
15	Construct a histogram for the following data : <table border="1" data-bbox="240 714 1351 789"> <tr> <td>C . I</td> <td>20- 40</td> <td>40-60</td> <td>60 -80</td> <td>80 - 100</td> <td>100- 120</td> </tr> <tr> <td>Frequency</td> <td>8</td> <td>4</td> <td>7</td> <td>9</td> <td>2</td> </tr> </table>	C . I	20- 40	40-60	60 -80	80 - 100	100- 120	Frequency	8	4	7	9	2	3
C . I	20- 40	40-60	60 -80	80 - 100	100- 120									
Frequency	8	4	7	9	2									

- Q1) (A) 90  
 Q2) (C) 16:49  
 Q3) (B) Class Interval  
 Q4) (B)  $100^\circ, 80^\circ$   
 Q5) (C)

Q6)  $\angle POQ = \angle ROS = 58^\circ$  (V.O.A)

In  $\triangle ORS$

$OR = OS$

[Because in Rect. PQRS diagonal bisects and equal]

$\therefore PR = QS$  and  $\frac{1}{2}PR = \frac{1}{2}QS$   
 $OR = OS$

$OR = OS$

$\therefore \angle 2 = \angle 1$  (Angles opp. to equal sides)

In  $\triangle ROS$

$\angle ROS + \angle 1 + \angle 2 = 180^\circ$  (By A.S.P of  $\triangle$ )

$\angle ROS + \angle 1 + \angle 1 = 180^\circ$  ( $\angle ROS = 58^\circ$ )

$2\angle 1 = 180^\circ - 58^\circ$

$2\angle 1 = 122^\circ$

$\angle 1 = \frac{122^\circ}{2} = 61^\circ$

$\angle ORS = 61^\circ$

Q7)

Radius = 7cm  
 C.S.A. of Hemisphere =  $2\pi r^2$   
 $= 2 \times \frac{22}{7} \times 7 \times 7$   
 $= 308 \text{ cm}^2$

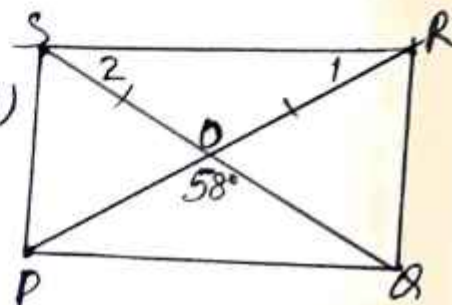


Fig. (1/2)

(1/2)

(1/2)

(1/2)

(1)

$$\begin{aligned} \text{Total S.A. of Hemi-sphere} &= 3\pi r^2 \\ &= 3 \times \frac{22}{7} \times 7 \times 7 \\ &= 462 \text{ cm}^2 \end{aligned} \quad (1)$$

Q8) Radius of small balloon =  $r = 5 \text{ cm}$   
 Radius of big balloon =  $R = 10 \text{ cm}$

$$\text{Ratio of S.A of balloons} = \frac{4\pi r^2}{4\pi R^2} \quad \left(\frac{1}{2}\right)$$

$$= \frac{r^2}{R^2} \quad \left(\frac{1}{2}\right)$$

$$= \frac{5^2}{10^2} = \frac{25}{100} = \frac{1}{4} \quad (1)$$

Q9) In  $\triangle APB$  and  $\triangle CPD$

$$\angle APB = \angle CPD = 90^\circ \quad (\because AP \perp BD \text{ and } CP \perp BD) \quad \left(\frac{1}{2}\right)$$

$$\angle ABD = \angle CDB \quad (\text{A.E.A}) \quad \left(\frac{1}{2}\right)$$

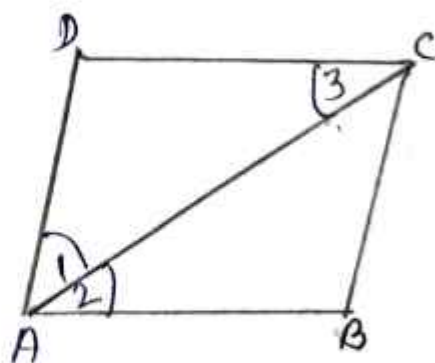
$$AB = CD \quad (\text{opp. sides of } \parallel \text{gm are equal}) \quad \left(\frac{1}{2}\right)$$

$$\triangle APB \cong \triangle CPD \quad (\text{By AAS cong. Condition}) \quad \left(\frac{1}{2}\right)$$

Q10) In  $\parallel \text{gm } ABCD$   
 diagonal  $AC$  bisect  $\angle A$

$$\therefore \angle 1 = \angle 2 \quad \text{--- (1)}$$

$$\angle 2 = \angle 3 \quad \text{--- (A.E.A) (2)}$$



From (1) and (2)

$$\angle 1 = \angle 3$$

In  $\triangle ADC$

$$\angle 1 = \angle 3$$

$\therefore DC = AD$  (sides opp. to equal angles are also equal)  $\left(\frac{1}{2}\right)$

In a  $\square$  If adjacent sides are equal  $(\frac{1}{2})$   
then it is rhombus.

Q11) Circumference of dome = 35.2 m  $(\frac{1}{2})$

$$2\pi r = 35.2$$

$$2 \times \frac{22}{7} \times r = 35.2$$

$$r = \frac{35.2 \times 7}{2 \times 22} = 5.6 \text{ m} \quad (1)$$

$$\begin{aligned} \text{Area to be painted} &= 2\pi r^2 \\ &= 2 \times \frac{22}{7} \times 5.6 \times 5.6 \\ &= 197.12 \text{ m}^2 \quad (1) \end{aligned}$$

$$\begin{aligned} \text{Cost} &= 197.12 \times 200 \\ &= \text{Rs. } 39424 \quad (1) \end{aligned}$$

Q12) Slant height  $l = \sqrt{r^2 + h^2}$   $(1)$

$$\begin{aligned} &= \sqrt{(20)^2 + (15)^2} \\ &= \sqrt{400 + 225} \\ &= \sqrt{625} \\ &= 25 \end{aligned}$$

$$\begin{aligned} \text{C.S.A. of cone} &= \pi r l \\ &= \frac{22}{7} \times 20 \times 25 \\ &= \frac{11000}{7} \text{ cm}^2 \quad (1) \end{aligned}$$

$$\text{Total caps} = 1 + 13 = 14 \quad (1\frac{1}{2})$$

$$\begin{aligned} \text{Area of sheet required for 14 caps} &= 14 \times \frac{11000}{7} \\ &= 22000 \text{ cm}^2 \\ &= 2.2 \text{ m}^2 \quad (1\frac{1}{2}) \end{aligned}$$

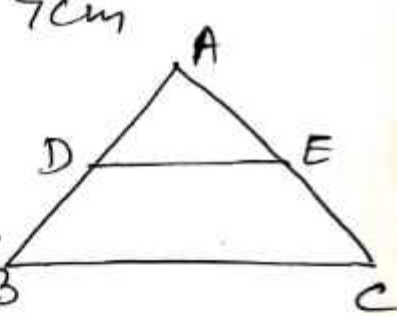


$$\left(\frac{1}{2} \times 6 = 3\right)$$

Q 14)

$AB = 6.6$ ,  $BC = 8$  cm,  $AC = 7$  cm

D and E are mid pts. of AB and AC resp.



(i)  $\therefore DE = \frac{1}{2} BC$  and  $DE \parallel BC$   
 $= \frac{1}{2} \times 8$  (By Mid Pt. Theorem)  
 $= 4$  cm

(1)

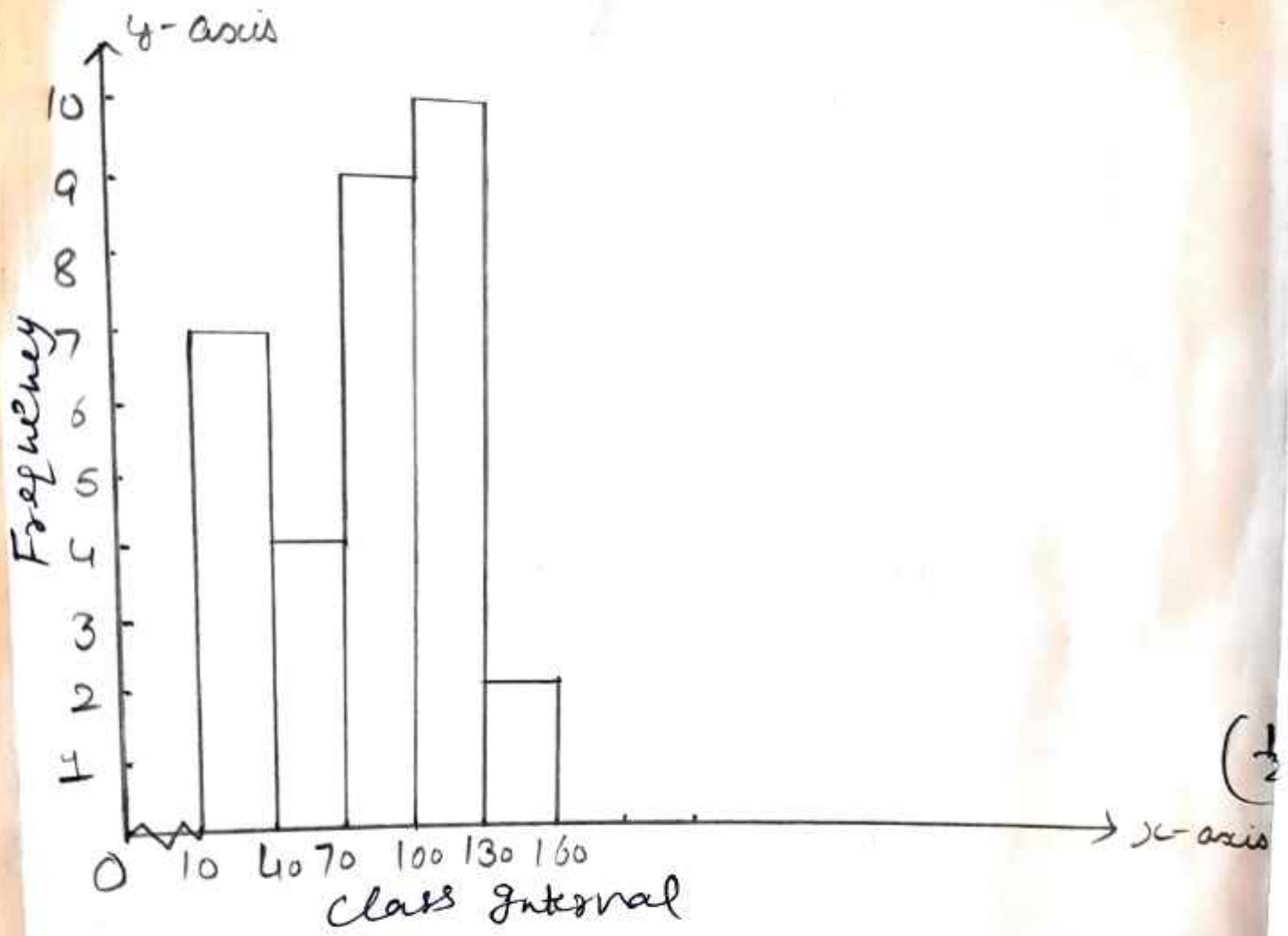
(ii) Perimeter of  $\triangle ADE = AD + DE + AE$   
 $= \frac{1}{2} \times 6.6 + 4 + \frac{1}{2} \times 7$   
 $= 3.3 + 4 + 3.5$   
 $= 10.8$  cm

(1)

(iii) Perimeter of Trap:  $DBCE = DB + BC + CE + DE$   
 $= 3.3 + 8 + 3.5 + 4$   
 $= 18.8$  cm

(1)





PT3 Exam (2024)

Class - IX

Set - B

Subject - Maths.

Ques 1) (C)  $110^\circ, 70^\circ$

Ques 2) (B)  $105^\circ$

Ques 3) (B) x-axis

Ques 4) (B) 9:25

Ques 5) (A)

Ques 6) In  $\triangle APB$  and  $\triangle COD$

$\angle APB = \angle COD$  (each  $90^\circ$ ) ( $\because AP \perp BD$  and  $CO \perp BD$ )

$\angle ABD = \angle CDB$  (A.T.A.)

$AB = CD$  (Opp sides of  $\parallel$  lines are equal)

$\triangle APB \cong \triangle COD$  (By AAS Cong. Condition)

Ques 7) In  $\parallel$ gm ABCD

Diagonal AC bisects  $\angle A$

$\angle 1 = \angle 2$  — (1)

$\angle 2 = \angle 3$  — (A.T.A.) — (2)

from (1) and (2)

$\angle 1 = \angle 3$

In  $\triangle ADC$

$\angle 1 = \angle 3$

$\therefore DC = AD$  (sides opp to equal angles are also equal)

In a  $\parallel$ gm if adjacent sides are equal then it is rhombus. (1)

Ques 8) Radius of small balloon =  $r = 5$  cm  
Radius of big balloon  $R = 10$  cm

Ratio of S.A of balloons =  $\frac{4\pi r^2}{4\pi R^2}$  =  $\frac{1}{2}$

$$= \frac{49}{196} = \frac{1}{4} = \frac{1}{4} \left(\frac{1}{2}\right)$$

Ques 9)  $\angle AOD = \angle BOC$  (vertically opposite angles)

In  $\Delta OCB$

$$OC = OB$$

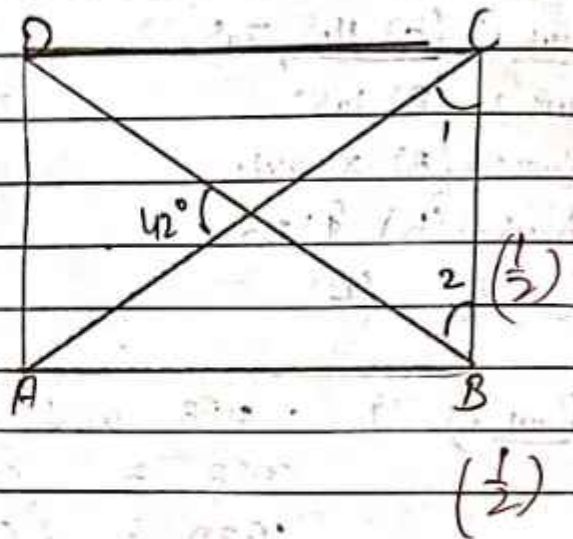
[Because in Rect ABCD  
diagonal bisects and equal)

$$\therefore AC = BD$$

$$\frac{1}{2} AC = \frac{1}{2} BD$$

$$OC = OB$$

$$\angle 2 = \angle 1$$



In  $\Delta OCB$

$$\angle 1 + \angle 2 + \angle COB = 180^\circ$$

$$2\angle 1 + \angle COB = 180^\circ$$

$$2\angle 1 + 42^\circ = 180^\circ$$

$$2\angle 1 = 180^\circ - 42^\circ$$

$$2\angle 1 = 138^\circ$$

$$\angle 1 = 69^\circ$$

$$\angle OCB = 69^\circ$$

Ques 10)

radius of hemisphere = 14 cm

$$\begin{aligned} \text{C.S.A of hemisphere} &= 2\pi r^2 \\ &= 2 \times 22 \times 14 \times 14 \end{aligned}$$

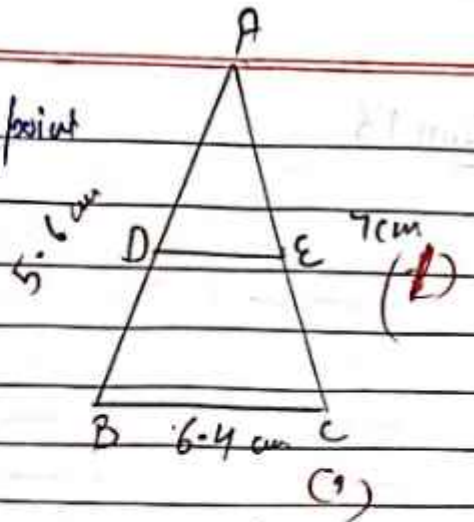
$$= 1232 \text{ cm}^2 \quad (1)$$

$$\begin{aligned} \text{T.S.A of hemisphere} &= 3\pi r^2 \\ &= 3 \times 22 \times 14 \times 14 \end{aligned}$$

$$= 1848 \text{ cm}^2 \quad (1)$$

Ques 11) i) length of  $DE = \frac{6.4}{2}$  [By mid point theorem]

$$= 3.2 \text{ cm}$$



ii) Perimeter of  $\triangle ADE = AD + AE + DE$

$$= 2.8 + 3.5 + 3.2$$

$$= 9.5 \text{ cm}$$

iii) Perimeter of trapezium  $DBCE = DB + DE + EC + BC$

$$= 9.5 + 6.4$$

$$= 15.9 \text{ cm}$$

Ques 12) slant height  $= \sqrt{r^2 + h^2}$

$$= \sqrt{10^2 + 24^2}$$

$$= \sqrt{100 + 576}$$

$$= \sqrt{676}$$

$$= 26 \text{ cm}$$

C.S.A of Cone  $= \pi r l$

$$= \frac{22}{7} \times 10 \times 26$$

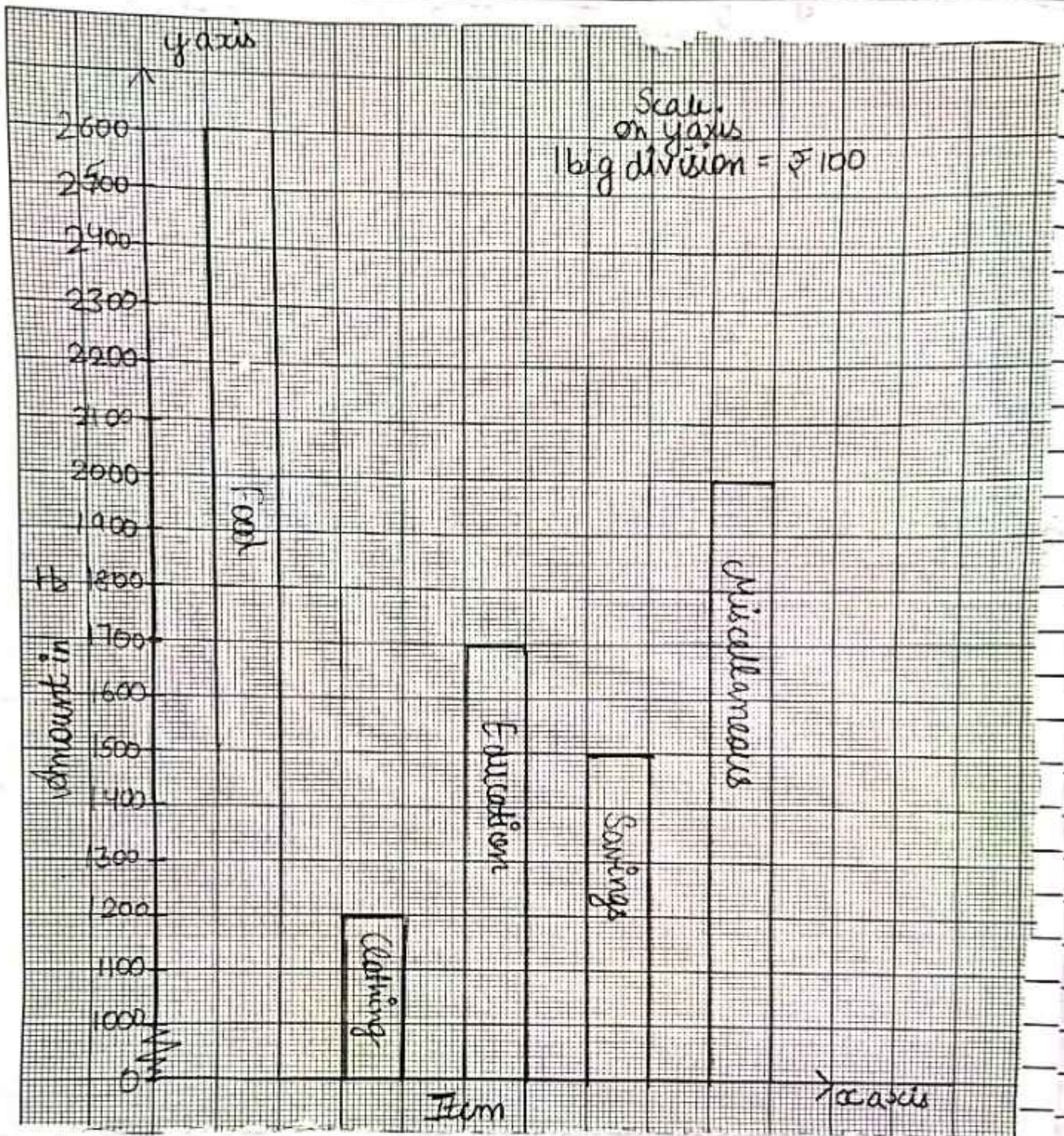
$$= 5720 \text{ cm}^2$$

Total caps  $= 1 + 6 = 7$

Area required for 7 caps  $= \frac{7 \times 5720}{7}$

$$= 5720 \text{ cm}^2$$

Ques 13



$(\frac{1}{2} \times 6 = 3)$

Ques 14 Circumference of the dome = 17.6 m

$2\pi r = 17.6$

$2 \times \frac{22}{7} \times r = 17.6$

$r = \frac{17.6 \times 7}{2 \times 22}$

$r = 2.8 \text{ m}$

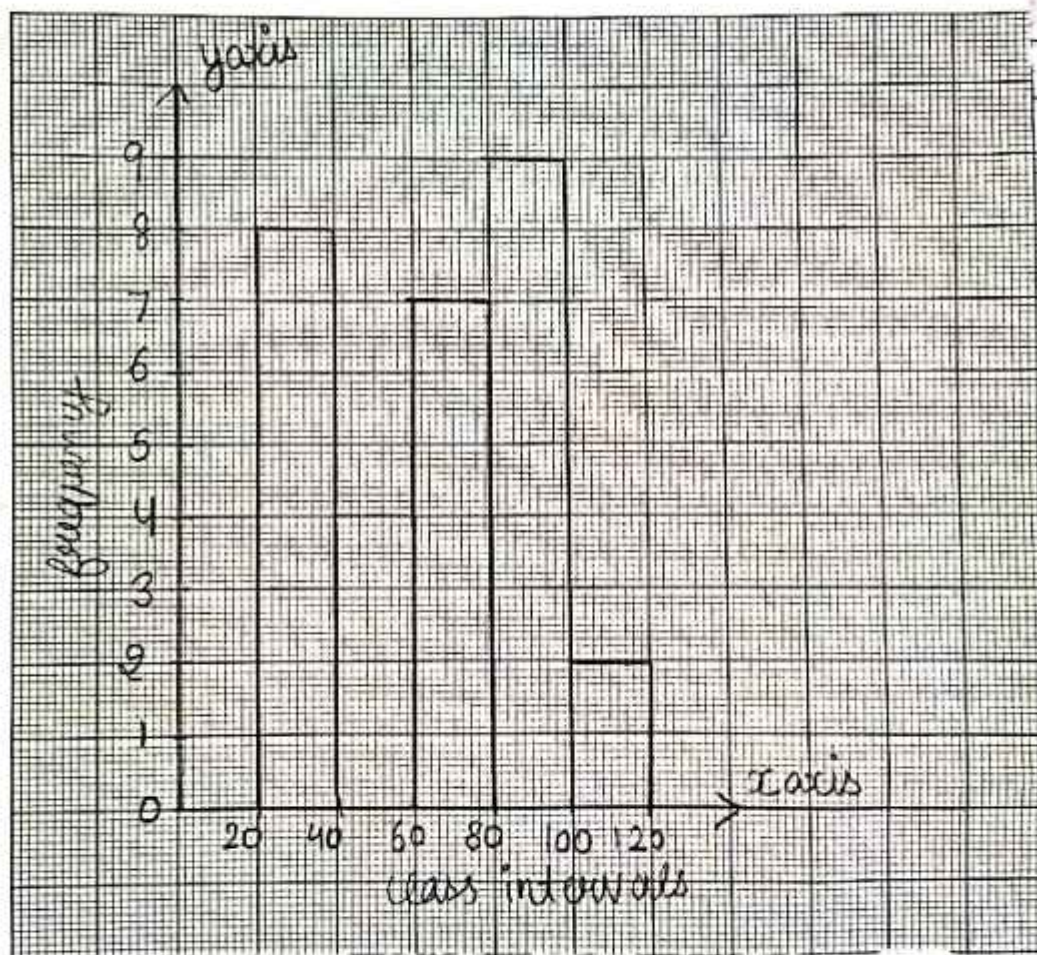
$(\frac{1}{2})$

$$\begin{aligned} \text{Area to be painted} &= 275^2 \\ &= \frac{2 \times 23}{1} \times 2.8 \times 2.8 \\ &= 49.28 \text{ m}^2 \end{aligned} \quad (1)$$

$$\begin{aligned} \text{Cost} &= 49.28 \text{ m}^2 \times 100 \\ &= ₹ 4928 \end{aligned} \quad (2)$$

Ques 15

Ques 15



$$\left(\frac{1}{2} \times 6 = 3\right)$$