

# ANSWERS

## Unit 1

- 1.** (d)    **2.** (c)    **3.** (d)    **4.** (d)    **5.** (b)    **6.** (c)  
**7.** (c)    **8.** (c)    **9.** (a)    **10.** (b)    **11.** (a)    **12.** (c)  
**13.** (d)    **14.** (a)    **15.** (b)    **16.** (d)    **17.** (c)    **18.** (c)  
**19.** (a)    **20.** (a)    **21.** (d)    **22.** (c)    **23.** (b)    **24.** (d)  
**25.** (a)    **26.** (c)    **27.** (d)    **28.** (c)    **29.** (d)    **30.** (b)  
**31.** a    **32.** 0    **33.** 3140    **34.**  $-3, 8, (-8), 8$     **35.** D  
**36.**  $y, x, z$     **37.** 0    **38.** 3    **39.** 11, 5, -55    **40.** -180  
**41.** 23    **42.** Whole, Negative    **43.** Even    **44.** Positive  
**45.** Negative    **46.** 1    **47.**  $(-1)$     **48.** 50    **49.** -210  
**50.** 45    **51.** 12, 5    **52.** 23, 1, -100, 1    **53.** 35    **54.** -47  
**55.** -1    **56.** -1    **57.** -2    **58.** 40    **59.** Minus  
**60.** Negative integer    **61.** Multiplication    **62.** -5    **63.** 10  
**64.** -45    **65.** 83    **66.** -75    **67.** -1    **68.** -113    **69.** -1  
**70.** -1    **71.** 1    **72.** True    **73.** False    **74.** True    **75.** False  
**76.** False    **77.** True    **78.** True    **79.** True    **80.** False    **81.** True  
**82.** True    **83.** True    **84.** False    **85.** False    **86.** False    **87.** True  
**88.** False    **89.** True    **90.** False    **91.** False    **92.** True    **93.** True  
**94.** False    **95.** True    **96.** True    **97.** False    **98.** True    **99.** True  
**100.** False    **101.** False    **102.** True    **103.** True    **104.** True    **105.** False  
**106.** False    **107.** True    **108.** False  
**109.** (a)  $-5 \times 2 = \underline{-10} = -15 - (-5)$   
                 $-5 \times 1 = \underline{-5} = \underline{-10 - (-5)}$

$$-5 \times 0 = 0 = \underline{-5 - (-5)}$$

$$-5 \times -1 = 5 = \underline{0 - (-5)}$$

$$-5 \times -2 = \underline{10} = \underline{5 - (-5)}$$

(b)  $7 \times 3 = \underline{21} = 28 - 7$

$$7 \times 2 = \underline{14} = \underline{21} - 7$$

$$7 \times 1 = 7 = \underline{14} - 7$$

$$7 \times 0 = \underline{0} = \underline{7} - \underline{7}$$

$$7 \times \underline{-1} = \underline{-7} = \underline{0} - \underline{7}$$

$$7 \times -2 = \underline{-14} = \underline{-7} - \underline{7}$$

$$7 \times -3 = \underline{-21} = \underline{-14} - \underline{7}$$

**110.** (a) 0 (b) +1 (c) -1      **111.** -1, -10, +3, -2

**112.** (a) 725 years (b) 71 years (c) 1383BC (d) Archimedes

**113.** Antarctica, Asia, N. America, Europe, S. America, Africa, Australia.

**114.** -2, 6    **115.**  $-5 \rightarrow 3$ ,  $6 \rightarrow -2$ ,  $-7 \rightarrow 1$ ,  $8 \rightarrow -1$ ,    **116.** -3, 12

**117.** (a)  $\rightarrow$  (vi), (b)  $\rightarrow$  (iii), c  $\rightarrow$  (v), d  $\rightarrow$  (vii), e  $\rightarrow$  (viii), f  $\rightarrow$  (iv)  
g  $\rightarrow$  (ii), h  $\rightarrow$  (ix), i  $\rightarrow$  (i)

**118.** ₹ [500 + 200 + 150 - 120 - 240] = ₹ 490

- 119.** (a) A number of solutions can be possible e.g.,  $4 + (-6) = -2$   
 (b) A number of solutions can be possible e.g.,  $8 + (-2) = 6$   
 (c) A number of solutions can be possible e.g.,  $-7 - (2) = -9$   
 (d) A number of solutions can be possible e.g.,  $4 - (-3) = 7$   
 (e) A number of solutions can be possible e.g.,  $-12 - (-7) = -5$   
 (f) A number of solutions can be possible e.g.,  $-4 + (-7) = -11 < -10$   
 (g) A number of solutions can be possible e.g.,  $-1 - 4 = -5 < -4$   
 (h) A number of solutions can be possible e.g.,  $-8 - (-9) = 1 > -6$   
 (i) A number of solutions can be possible e.g.,  $-2 - (-10) = 8$   
 (j) A number of solutions can be possible e.g.,  $-20 - (-9) = -11$   
 (k) A number of solutions can be possible e.g.,  $-3 \times 5 = -15$   
 (l) A number of solutions can be possible e.g.,  $4 \times 6 = 24$ .

**120.** Ramu went wrong in solving  $-(-3)$  and took it as -3 only.

**121.** Reeta went wrong in sloving  $+ (-6)$  and took it as +6.

- 122.** (a) C (b) D (c) A, C, B, D      **123.** 356 m.      **124.** (i) -3561  
 (ii) -4300 (iii) 5300 (iv) -1360    **125.** (i) 49 (ii) 28

**126.** (i)  $4 \Delta (-3) = 21$ ,  $(-3) \Delta 4 = 28$ , No

(ii)  $(-7) \Delta (-1) = -6$ ,  $(-1) \Delta (-7) = 42$ , No

**127.** (a)  $v = 1$

(b)  $w = 0$

(c)  $x = 4$

**128.** 2500m

**129.** Hydrogen  $-259^{\circ}\text{C}$ , Krypton  $-157^{\circ}\text{C}$ ,

Oxygen  $-223^{\circ}\text{C}$ , Helium  $-272^{\circ}\text{C}$ , Argon  $-189^{\circ}\text{C}$

**130.** Fatima.

**131.** Net profit ₹ 27    **132.** (i) 10    (ii) 30    **133.** Since Yash scored 94 marks So, Minimum correct responses  $= 94 \div (+2) = 47$ , Two possitities are there:

1. Correct answer 47, unattempated 3
2. Correct answer 48, unattempated, wrong answer 1

**134.** 60 sec or 1 min

**135.** 23<sup>rd</sup> January

**136.** 19,759 m

**(D)**

### Puzzle 1

(i)

-1	-9	4
3	-2	-7
-8	5	-3

(ii)

7	-2	-6	-1
-4	-3	1	4
0	-2	-3	3
-5	5	6	-8

### Puzzle 2

- |         |         |
|---------|---------|
| (i) -10 | (iv) -3 |
| (ii) 8  | (v) -33 |
| (iii) 7 | (vi) 18 |

### Increasing order

$$-33 < -10 < -3 < 7 < 8 < 18$$

E      U      C      L      I      D

### Puzzle 3

Solution: September

## Puzzel 4

(a)

## Puzzel 5

- (a) 6      (b) -2      (c) -8

## Puzzel 6

Arrange -12 in the centre and -2, 4, -5, 50, -25, 20 in clockwise order.

## Unit 2

- |     |  |                        |                 |           |                             |           |                                  |     |               |     |       |
|-----|--|------------------------|-----------------|-----------|-----------------------------|-----------|----------------------------------|-----|---------------|-----|-------|
| 1.  | (b)  | 2.                     | (c)             | 3.        | (c)                         | 4.        | (b)                              | 5.  | (d)           | 6.  | (a)   |
| 7.  | (c)  | 8.                     | (b)             | 9.        | (d)                         | 10.       | (c)                              | 11. | (b)           | 12. | (d)   |
| 13. | (c)  | 14.                    | (d)             | 15.       | (c)                         | 16.       | (b)                              | 17. | (d)           | 18. | (a)   |
| 19. | (c)  | 20.                    | (b)             | 21.       | $\frac{1}{7}$               | 22.       | $\frac{7}{3}$                    | 23. | 18            | 24. | 36    |
| 25. | $\frac{76}{3}$ or $25\frac{1}{3}$            | 26.                    | $\frac{15}{7}$  | 27.       | $\frac{2}{15}$              | 28.       | $\frac{17}{9}$ or $1\frac{8}{9}$ | 29. | $\frac{1}{5}$ |     |       |
| 30. | 10   | 31.                    | X               | 32.       | 32                          | 33.       | 25400                            | 34. | 9350          | 35. | 0.47  |
| 36. | 0.047  | 37.                    | 0.0047          | 38.       | Less                        | 39.       | multiply, reciprocal             | 40. | 4             |     |       |
| 41. | 100  | 42.                    | X               | 43.       | X                           | 44.       | 667                              | 45. | False         | 46. | False |
| 47. | False  | 48.                    | False           | 49.       | True                        | 50.       | True                             | 51. | True          | 52. | True  |
| 53. | False  | 54.                    | False           | 55.       | Yes, increase               |           |                                  |     |               |     |       |
| 56. | The value of fraction would increase         | 57.                    | D               | 58.       | 26.25                       | 59.       | $\frac{2}{5}$                    |     |               |     |       |
| 60. | $\frac{5}{12}$ part                          | 61.                    | 24 pages        | 62.       | $\frac{5}{14}$              | 63.       | Greater than 1.5                 |     |               |     |       |
| 64. | convert both into (1) decimals (2) fractions |                        |                 |           |                             |           |                                  |     |               |     |       |
| 65. | (a) $\frac{16}{25}$ gram                     | (b) $\frac{2}{5}$ gram | 66.             | (a) 1 tsp | (b) $1\frac{1}{2}$ tsp      | (c) 2 tsp |                                  |     |               |     |       |
| 67. | 24 boxes                                     | 68.                    | 142 book marker | 69.       | (a) 11.74 cm (approximatly) |           |                                  |     |               |     |       |
|     |  |                        |                 |           | (b) 11.14cm (approximatly)  | 70.       | (a) 10.15 cm                     |     |               |     |       |
|     |  |                        |                 |           |                             |           | (b) 6.10 cm                      |     |               |     |       |

**71.** (a) 58.718 cm (b) 40.506 cm **72.** ₹ 1471.25 **73.** (a) D, (b) E

(c)  $\frac{3}{6}$  or  $\frac{1}{2}$  or middle **74.** 741.6 km (approximetly) **75.** 1

**76.**  $\frac{27}{125}$  **77.**  $\frac{18}{31}$  **78.** 2 **79.** 64 **80.** ₹ 114.30 **81.** 4.5°F

**82.** (i) 1964, 1965, 1978, 1958, 2002  
(ii) 1946 should fall between 1965 and 1978

**83.** (a) 14.9920 (b) 11.9970 (c) 2.9950

**84.** Ravi + 0.01 cm, Kamal -0.08 cm, Tabish - 0.06 cm

**85.** 7.41 **86.** 70720 **87.** ₹ 104625 **88.**  $\frac{1}{4}$  m **89.** 90 bricks

**90.**  $14\frac{1}{4}$  m **91.** first usher **92.** ₹ 23.15

**93.** 3.27 minutes **94.** 11 days **95.** 0.93 kg

**96.** (a) 90 (b) 74 (c) 50 **97.**  $\frac{7}{8}$  L

**98.**  $\frac{1}{6}$  part of work,  $\frac{5}{6}$  part of work, complete work

**99.**  $\frac{1}{5}, \frac{23}{25}, \frac{7}{10}$  **100.** 5 pillows

**101.** 4 shirts **102.** 3 hours **103.** 600 km **104.** ₹ 200

**105.** (i) (a)  $\frac{5}{13}$  (b)  $\frac{10}{13}$  (ii) (c) 7 tonnes **106.** 5.1875

**107.** (1) → (d) (2) → (f) (3) → (c) (4) →(b) (5) → (a) (6) → (e)

**108.** 0.05 **109.** 2.4 **110.** 24.15 **111.**  $\frac{20}{3}$  cm or  $6\frac{2}{3}$  cm **112.**  $\frac{1}{3}$

**113.**  $305\frac{19}{25}$  cm<sup>2</sup> **114.** ₹ 300 **115.** 76 m **116.** 10.816

**117.** Greater than 1:  $\frac{2}{3} \div \frac{1}{2}, 6 \div \frac{1}{4}, 4\frac{1}{3} \div 3\frac{1}{2}, \frac{2}{3} \times 8\frac{1}{2}$

Less than 1:  $\frac{2}{3} \div \frac{2}{1}$ ,  $\frac{1}{5} \div \frac{1}{2}$

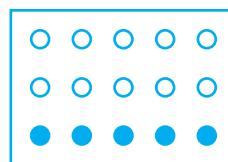
**118.** 37.5   **119.**  $\frac{7}{648}$    **120.**  $\frac{3}{2}$       **121.** 500    **122.** 0.00001

**123.** Error  $-0.30 > -0.25$

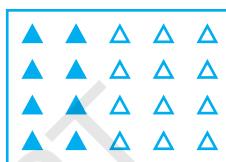
**124.** mixed fractions are not converted into improper fraction.   **125.**  $\frac{1}{7}$

**(D)**

1.



(a)



(b)



(c)

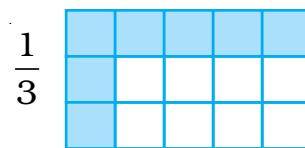
2.

(i)  $\frac{1}{4} \times \frac{1}{3}$



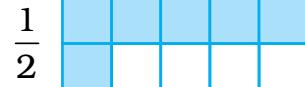
$$\frac{1}{4} \times \frac{1}{3} = \frac{1}{12}$$

(ii)  $\frac{1}{3} \times \frac{1}{5}$



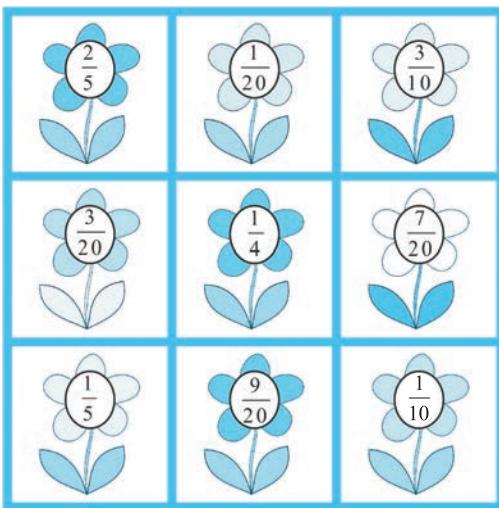
$$\frac{1}{3} \times \frac{1}{5} = \frac{1}{15}$$

(iii)  $\frac{1}{2} \times \frac{1}{5}$



$$\frac{1}{2} \times \frac{1}{5} = \frac{1}{10}$$

3.

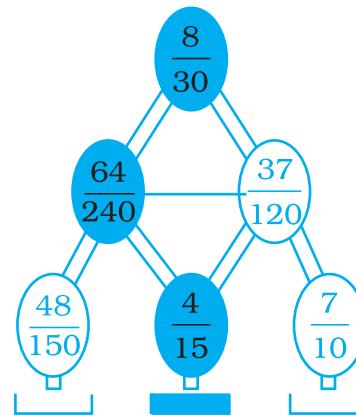


4. Sleep→8hrs, Study→3hrs, Meals→2hrs, School→7hrs and Personal time 4 hrs.

5.

Sl.No.	Ingredients	Given for One Cake	Triple Amount of Cake	Half Amount of Cake
(a)	Sugar	2 Cups	6 Cups	1 Cup
(b)	Milk	$\frac{3}{4}$ Cup	_____	_____
(c)	Coconut	1 Cup	_____	_____
(d)	Salt	$\frac{1}{8}$ Teaspoon	_____	_____
(e)	Cocopowder	1 Tablespoon	_____	_____
(f)	Butter	$1\frac{1}{2}$ Tablespoon	_____	_____
(g)	Eggs	2	_____	_____

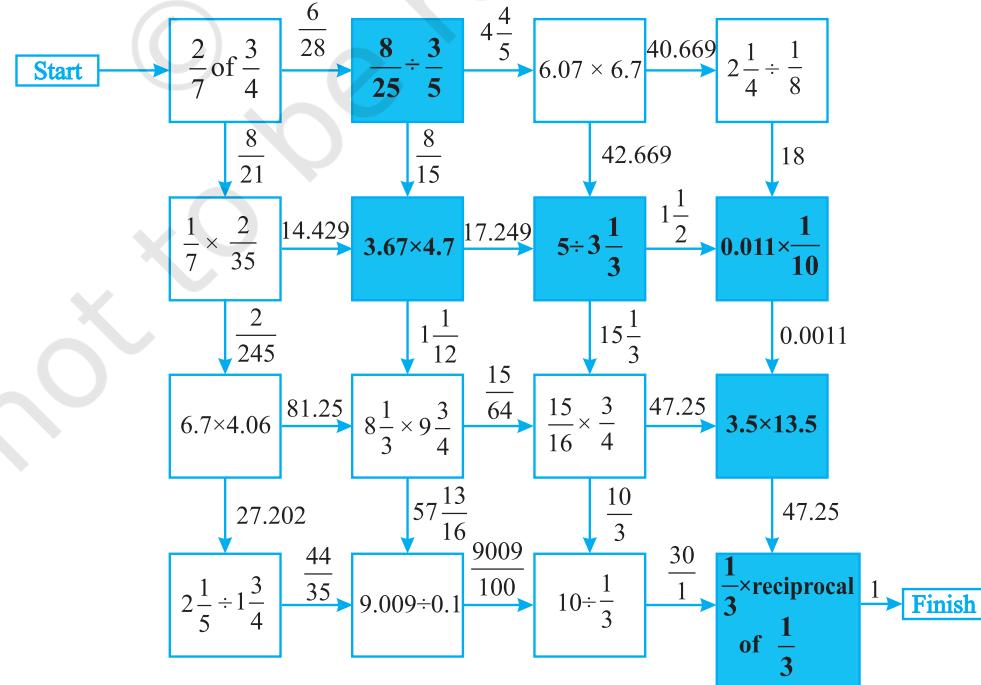
7.



8.

<b>Box 1</b>	<b>Box 2</b>	<b>Box 3</b>
0.096	0.376	1.808
0.001	0.4200	0.987
0.066	0.62	11.00
0.0864	0.578	0.888

9.

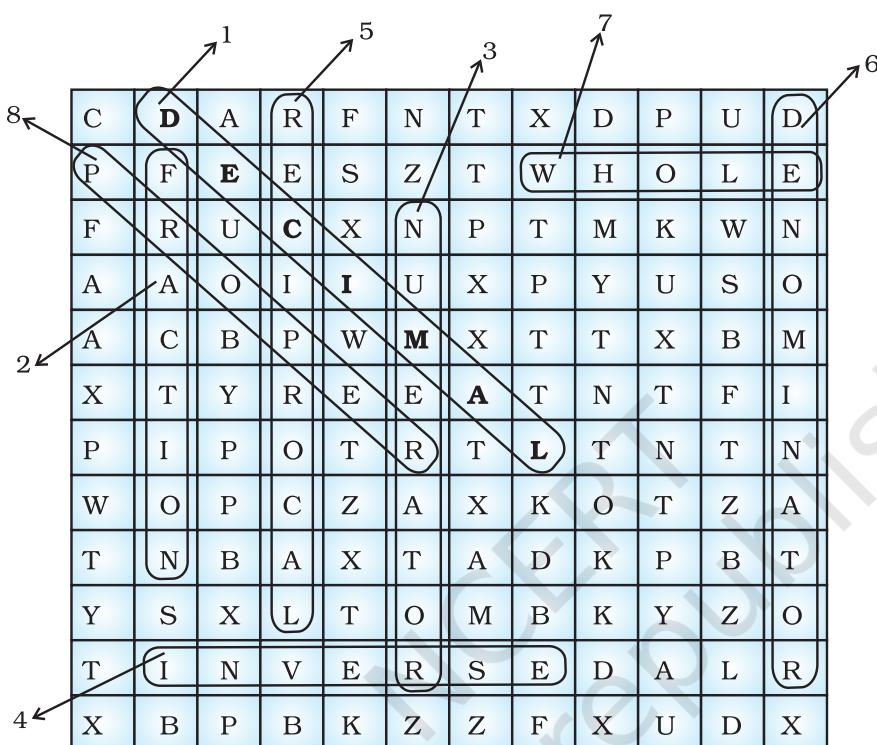


**10.** 1.  $20\text{ cm}$

2.  $\frac{40}{9}\text{ cm}$

3. Length of bottom of vertical support =  $9\text{ cm}$   
Length of upper of vertical support =  $3\text{ cm}$

**11.**



**12.**

- Across :** 1. Proper  
2. Denominator  
3. Equivalent  
4. Greater  
5. Improper  
6. One

- Down :** 1. Product  
2. Decimal  
8. Reciprocal  
9. Fraction

**13.**

$$\begin{array}{lllll} \text{(i)} & \frac{1}{2} + \frac{1}{4} & \text{(ii)} & \frac{1}{8} + \frac{1}{2} & \text{(iii)} \frac{1}{2} + \frac{1}{3} + \frac{1}{12} \\ & \frac{3}{4} & & \frac{5}{8} & \frac{13}{12} \end{array} \quad \begin{array}{lllll} \text{(iv)} & \frac{1}{3} + \frac{1}{11} + \frac{1}{231} & \text{(v)} & \frac{1}{1} + \frac{1}{5} + \frac{1}{15} & \\ & \frac{1}{3} + \frac{1}{11} + \frac{1}{231} & & \frac{1}{1} + \frac{1}{5} + \frac{1}{15} & \end{array}$$

## Unit 3

- 1.** (b)      **2.** (c)      **3.** (a)      **4.** (a)      **5.** (c)      **6.** (b)  
**7.** (c)      **8.** (b)      **9.** (c)      **10.** (b)     **11.** (b)     **12.** (d)  
**13.** (a)      **14.** (d)     **15.** (c)      **16.** (d)     **17.** Range  
**18.**  $\frac{\text{Sum of all observations}}{\text{Number of observations}}$       **19.** Mode    **20.** Median  
**21.** Central tendency    **22.** 1      **23.** 0      **24.** 1      **25.** 6  
**26.** A double bar graph    **27.** Bar graph      **28.** 3  
**29.** Minimum, Maximum    **30.** Odd      **31.** 52–55    **32.** False    **33.** True  
**34.** False      **35.** False    **36.** True      **37.** True      **38.** False    **39.** True  
**40.** False      **41.** False    **42.** True      **43.** True      **44.** False    **45.** False  
**46.** False      **47.** True      **48.** False      **49.** False      **50.** 10, 10, 10, Yes  
**51.** 11  
**52.** (Mode is the observation that occurs most frequently in a set of observation).  
**53.** (a) Black    (b) Mode    **54.** (a) 25    (b) 30.41    (c) 33    **55.** (a) 65.6  
    (b) 4    (c) 30    **56.** (a) 1    (b)  $\frac{2}{5}$     (c)  $\frac{1}{5}$     (d) 0    **57.** 4      **58.** 4.5    **59.** One  
**60.** Blue      **61.**  $\frac{4}{7}$       **62.**  $\frac{1}{6}$   
**63.** (a) Impossible to happen.  
    (b) May or may not happen.  
    (c) May or may not happen.  
    (d) Certain to happen.  
    (e) Impossible to happen.  
    (f) Certain to happen.  
**64.** Mean = 3.13,      Median = 3,      Mode = 2    **65.** 14    **66.** 10  
**67.** 11.14    **68.** 8  
**69.** (a) 154 cm  
    (b) 128 cm  
    (c) 26 cm  
    (d) 142 cm

- 70.** (a) 8 or 17 or 16 (except 15)  
 (b) Two times 15  
 (c) Three times 17
- 71.** (a) Group A Mode = 7 and 10  
 Range = 3  
 Group B  
 Mode = 12  
 Range = 5  
 (b) Range = 5, Mode = 7 and 12
- 72.** (a) Production of motor bikes by XYZ Automobiles Ltd. during January to June.  
 (b) 2100 (c) 300  
 (d) June, 500 (e) 767 bikes (nearest whole numbers)
- 73.** (a) 4 (b) 18  
 (c) 4 (d) 10  
 (e) 42
- 74.** (a) The production of rice (in million tonnes) by a country during the years 2005 to 2009.  
 (b) 2006 (c) 2006  
 (d) 54 million tonnes (e) 10 million tonnes
- 75.** (a) Marks obtained by a students in different subjects.  
 (b) Maths (c) 68.2  
 (d) Hindi, Maths (e) 68.2%
- 76.** (a) 1800 (b) 300  
 (c) Tamil (d) 2300
- 77.** (a) Cricket (b) 17  
 (c) 65 (d) Cricket  
 (e) 4 sports (hockey, football, tennis, badminton)  
 (f) 14 : 7 or 2 : 1
- 78.** (a) Comparison of sales of brand A and brand B during the month of January to June.  
 (b) March (c) 3 Lakh  
 (d) 41.8 Lakh (e) April, June  
 (f) 31 : 36
- 79.** (a) Comparison of minimum temperature during the months November to February for the years 2008 and 2009.  
 (b) 18 : 15 or 6 : 5 (c) Two February and November  
 (d) 11.25 (e) February



- 88.** (a) Give the double bar graph here  
 (b) In year 2007                   (c) 4420  
 (d) May                             (e) August  
 (f) February
- 89.** (a) Give the double bar graph here  
 (b) Town D                         (c) Town A
- 90.** (a) Give double bar graph here  
 (b) Mussoorie                     (c) Manali  
 (d) Manali, Nainital, Mussoorie, Kullu
- 91.** (a) Give double bar graph here  
 (b) Butterscotch (c) 46           (d) 21           (e) 5 : 6

**Unit 4**

- 1.** (c)           **2.** (a)           **3.** (d)           **4.** (d)           **5.** (c)           **6.** (d)  
**7.** (b)           **8.** (d)           **9.** (a)           **10.** (a)           **11.** (c)           **12.** (d)  
**13.** (c)           **14.** (c)           **15.** (b)           **16.** (a)           **17.** (c)           **18.** (b)  
**19.** (a)  $60 - x$    (b)  $60 - 2x$  (c)  $-2x = 30$   
       (d) 15           (e) 45, 15  
**20.** (a)  $81 - x$  or  $2x$    (b)  $2x = 81 - x$    (c)  $x = 27$            (d) 54, 27  
**21.** (a)  $2x$            (b)  $4x + 3x = 280$            (c)  $x = 40$            (d) 80  
**22.** (a)  $2x$            (b)  $6x$  or  $2(2x + x)$            (c)  $6x = 60$    (d)  $x = 10$   
**23.** (a) ₹ 5x           (b) ₹ 2x           (c)  $5x + 2x = 70$            (d) 10, 10  
**24.** (a)  $30 - x$    (b)  $2000x + 1000(30 - x)$  (c)  $1000x + 30000 = 52000$   
       (d)  $x = 22$    (e) 22, 8   **25.** 2   **26.**  $x = 3$    **27.**  $x = -1$            **28.** 5  
**29.** No           **30.** No           **31.** No           **32.** One           **33.**  $3x + 5 = 4x - 7$   
**34.**  $x = 3$            **35.** 4           **36.** 0           **37.** -3           **38.** 4  
**39.** Satisfies, root   **40.** sig n   **41.** 2           **42.** 7           **43.** 0  
**44.** 0           **45.** 75           **46.** 25           **47.** 72           **48.**  $\frac{7}{4}$            **49.** True  
**50.** False   **51.** False   **52.** False   **53.** True   **54.** False   **55.** False  
**56.** (i)  $\leftrightarrow$  (C)   (ii)  $\leftrightarrow$  (E)   (iii)  $\leftrightarrow$  (F)   (iv)  $\leftrightarrow$  (D)   (v)  $\leftrightarrow$  (B)   (vi)  $\leftrightarrow$  (A)

## MATHEMATICS

**57.**  $2x - 13 = 3$     **58.**  $\frac{x}{5} = x - 5$     **59.**  $x = 7 + \frac{x}{3}$     **60.**  $6x = 10 + x$

**61.**  $\frac{x}{2} - 10 = 4$     **62.**  $p - 5 = 2$     **63.**  $5x + 7 = 27$     **64.**  $x + (x + 3) = 43$

**65.**  $\frac{1}{2}(x-1)=7$     **66.**  $\frac{x}{2} + 5 = 9$     **67.**  $2x + 4 = 18$     **68.** 9 years

**69.** 30, 42    **70.** 2    **71.** ₹ 20    **72.** ₹ 425    **73.** 560

**74.** 2    **75.** 2    **76.** 6    **77.**  $6\frac{1}{4}$  years

**78.** 5 years    **79.** 18 years    **80.** 18    **81.** 16 kg, 64 kg    **82.** 72

**83.** 6    **84.** 4, 8    **85.** 1, 2, 3    **86.** 36    **87.** 16 m

**88.** 6 cm, 12 cm, 12 cm    **89.** 8, 10    **90.**  $35^\circ, 55^\circ$     **91.** 50, 100

**92.** 45, 15    **93.** 9    **94.** 50    **95.** 180 km    **96.** 9.6

**97.** 6    **98.** 11 years, 39 years    **99.** width = 30 cm, length = 60 cm

**100.** ₹ 30    **101.** 1867    **102.** ₹ 13740    **103.** 16

**104.** (a)  $X - V = V$     (b)  $VI + IV = X$ ,  $VI + V = XI$     **105.**  $i = 1$ ,  $u = 4$ ,  
 $a = 5$ ,  $q = 3$ ,  $t = 2$ ,  $s = 8$ ,  $p = 9$ ,  $c = 6$ ,  $k = 7$     **106.**  $\Delta = 7$ ,  $* = 4$

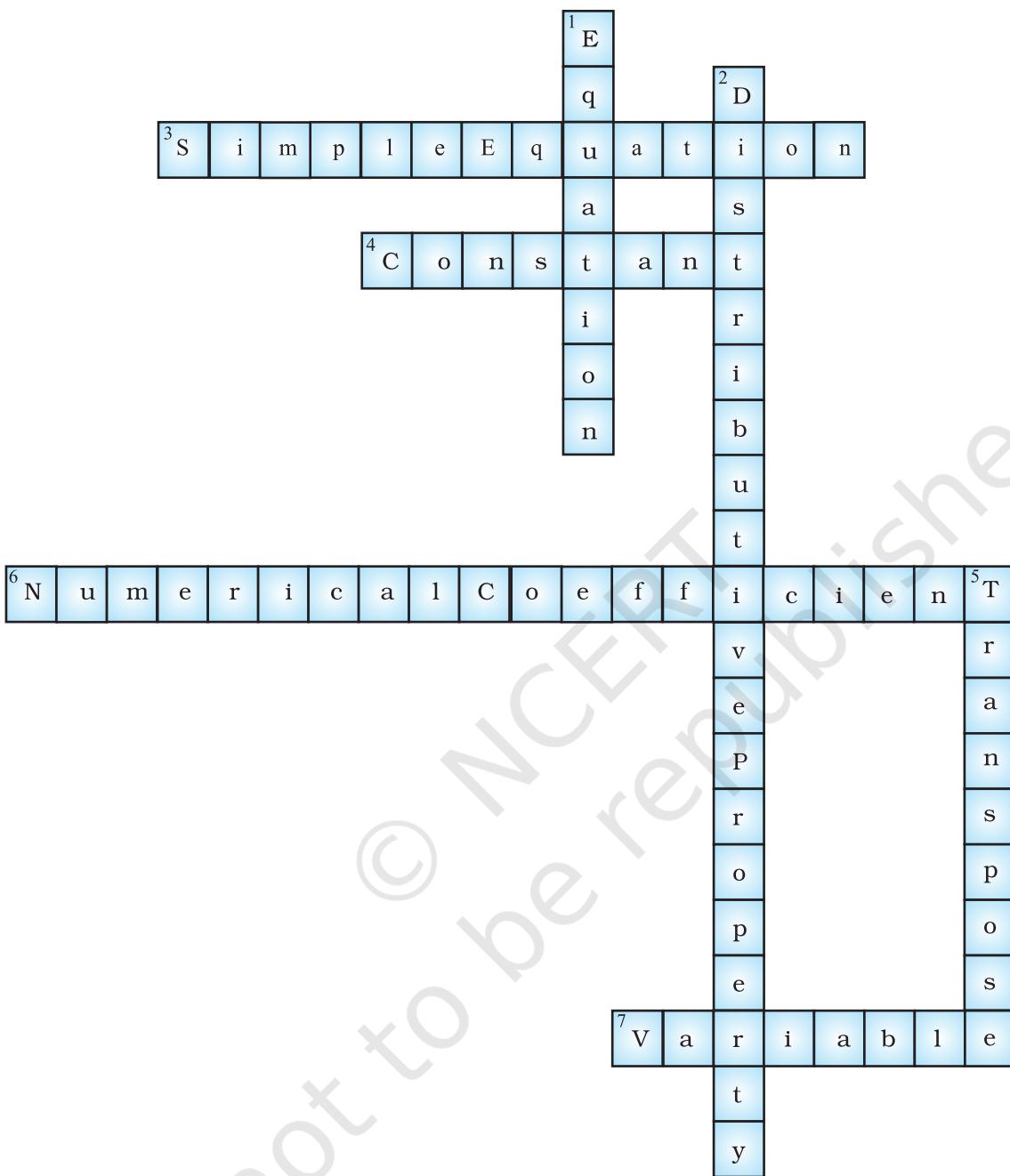
**107.** = 6 kg, = 10 kg

**(D)**

1.

6 1						
1 9				10 7		4 3
	5 5	2 5				0
	3 1	0	9 8			0
8 4			7 4		9	0
3		11 1				
	12 1	2	5			

2.



3.

First you must split the pearls into equal groups. Place any three pearls on one side of the scale and any other three on the other side. If one side weighs less than the other, then the fake pearl is on that side. But you are

not done yet! You still need to find the imitation, and you can use the scale only once more. Take any of the two pearls from the lighter pan, and weigh them against each other. If one pan is lighter, then that pan contains the fake pearl. If they balance, then the leftover pearl of the group is the fake.

If the scale balances during the first weighing, then you know the fake is in the third group. Then you can choose two pearls from that group for the second weighing. If the scale balances, the fake is the one left. If it is unbalanced, the false pearl is the lighter one.

### Unit 5

- |  |                                 |                                 |                     |                       |                  |
|--|---------------------------------|---------------------------------|---------------------|-----------------------|------------------|
| <b>1.</b> (b)  | <b>2.</b> (c)                   | <b>3.</b> (b)                   | <b>4.</b> (b)       | <b>5.</b> (b)         | <b>6.</b> (d)    |
| <b>7.</b> (b)  | <b>8.</b> (d)                   | <b>9.</b> (d)                   | <b>10.</b> (c)      | <b>11.</b> (d)        | <b>12.</b> (a)   |
| <b>13.</b> (a)   | <b>14.</b> (a)                  | <b>15.</b> (b)                  | <b>16.</b> (c)      | <b>17.</b> (b)        | <b>18.</b> (a)   |
| <b>19.</b> (a)   | <b>20.</b> (c)                  | <b>21.</b> (a)                  | <b>22.</b> (b)      | <b>23.</b> (b)        | <b>24.</b> (a)   |
| <b>25.</b> (d)   | <b>26.</b> (d)                  | <b>27.</b> (c)                  | <b>28.</b> (d)      | <b>29.</b> (b)        | <b>30.</b> (b)   |
| <b>31.</b> (c)   | <b>32.</b> (d)                  | <b>33.</b> (a)                  | <b>34.</b> (a)      | <b>35.</b> (c)        | <b>36.</b> (b)   |
| <b>37.</b> (d)   | <b>38.</b> (d)                  | <b>39.</b> (c)                  | <b>40.</b> (b)      | <b>41.</b> (a)        |                  |
| <b>42.</b> Complementary   |                                 | <b>43.</b> Supplementary        |                     | <b>44.</b> Distinct   |                  |
| <b>45.</b> $180^\circ$   | <b>46.</b> Arm                  | <b>47.</b> Same                 | <b>48.</b> Opposite | <b>49.</b> Parallel   |                  |
| <b>50.</b> Linear  | <b>51.</b> Obtuse               | <b>52.</b> Right angle          | <b>53.</b> Acute    | <b>54.</b> $90^\circ$ |                  |
| <b>55.</b> $45^\circ$  | <b>56.</b> $60^\circ$           | <b>57.</b> False                | <b>58.</b> False    | <b>59.</b> False      | <b>60.</b> True  |
| <b>61.</b> True  | <b>62.</b> True                 | <b>63.</b> False                | <b>64.</b> True     | <b>65.</b> True       | <b>66.</b> False |
| <b>67.</b> False   | <b>68.</b> True                 | <b>69.</b> False                | <b>70.</b> True     | <b>71.</b> False      |                  |
| <b>72.</b> (i) (a) $\angle AOB$ , $\angle BOC$   | (b) $\angle AOB$ , $\angle BOD$ |                                 |                     |                       |                  |
|  | (c) $\angle BOC$ , $\angle COD$ | (d) $\angle AOC$ , $\angle COD$ |                     |                       |                  |
| (ii) (a) $\angle PQR$ , $\angle PQT$   | (b) $\angle SPR$ , $\angle RPQ$ |                                 |                     |                       |                  |
|  | (c) $\angle PRQ + \angle QRU$   |                                 |                     |                       |                  |
| (iii) (a) $\angle TSV$ , $\angle VSU$  | (b) $\angle SVU$ , $\angle SVT$ |                                 |                     |                       |                  |
| (iv) (a) $\angle AOC$ , $\angle AOD$   | (b) $\angle AOD$ , $\angle BOD$ |                                 |                     |                       |                  |
|  | (c) $\angle BOD$ , $\angle BOC$ | (d) $\angle BOC$ , $\angle AOC$ |                     |                       |                  |
| <b>73.</b> (a) (i) $\angle 1$ , $\angle 3$ ; $\angle 2$ , $\angle 4$ ; $\angle 5$ , $\angle 7$ ; $\angle 6$ , $\angle 8$ |                                 |                                 |                     |                       |                  |

(ii)  $\angle 1, \angle 2; \angle 2, \angle 3; \angle 3, \angle 4; \angle 4, \angle 1; \angle 5, \angle 6; \angle 6, \angle 7;$   
 $\angle 7, \angle 8; \angle 8, \angle 5$

(b) (i) NIL (ii) NIL

(c) (i) \_\_\_\_\_ NIL

(ii)  $\angle ABD, \angle DBC; \angle ABE, \angle EBC$

(d) (i)  $\angle ROQ, \angle POS; \angle ROP, \angle QOS$

(ii)  $\angle ROP, \angle POS; \angle ROT, \angle TOS; \angle QOS, \angle SOP; \angle QOT, \angle TOP;$   
 $\angle ROQ, \angle QOS; \angle ROQ, \angle ROP$

**74.** (i)  $\angle AOD, \angle AOC; \angle AOC, \angle BOC; \angle BOC, \angle BOD; \angle AOD, \angle BOD$

(ii)  $\angle POS, \angle SOQ, \angle POR, \angle QOR$

(iii)  $\angle 1, \angle 2; \angle 3, \angle 4; \angle 5, \angle 6$

**75.**  $\angle QUR = 138^\circ$       **76.** (a) 4 (b) 4 (c) (i)  $45^\circ, 45^\circ$  (ii)  $60^\circ, 30^\circ$

**77.**  $83^\circ$       **78.**  $90^\circ$

**79.** (a)  $\angle TQS, \angle SQR$

(b)  $\angle SQR, \angle SQP; \angle TQR, \angle TQP;$

(c)  $\angle SQR, \angle SQT; \angle TQR, \angle TQP; \angle SQT, \angle TOP; \angle PQS, \angle SQR$

**80.** (i)  $\angle x, \angle y; \angle x + \angle y, \angle z; \angle y, \angle z, \angle y + \angle z, \angle x$

(ii)  $\angle x = \angle y = \angle z, \angle x, \angle y, \angle y, \angle z, \angle z, \angle x$

**81.** (a) 13

(b) Linear pair, Supplementary, Vertically opposite. Angles, Adjacent angles.

(c) Vertically opposite angles – (1, 3); (2, 4)

Linear Pairs: 1,2; 2,3; 3,4; 4,1.

**82.** (a) Yes (b) No (c) No (d) No

**83.**  $\angle 7, \angle 2; \angle 1, \angle 8; \angle 5, \angle 6; \angle 6, \angle 3; \angle 3, \angle 4; \angle 4, \angle 5$

**84.** (a) obtuse

(b) acute

(c) right angle

**85.** No      **86.**  $\angle 1, \angle 2; \angle 2, \angle 3; \angle 3, \angle 4; \angle 4, \angle 1.$       **87.**  $152^\circ$

**88.**  $\angle a = 30^\circ, \angle b = 150^\circ, \angle c = 150^\circ$       **89.**  $\angle x = 35^\circ, \angle y = 145^\circ$

**90.** (i)  $30^\circ$  (ii)  $105^\circ$  (iii)  $75^\circ$  (iv)  $75^\circ$

**91.**  $\angle x = 60^\circ, \angle y = 120^\circ, \angle z = 60^\circ$       **92.**  $\angle EFD = 70^\circ$

**93.**  $\angle AOD = 139^\circ$       **94.**  $110^\circ$       **95.**  $44^\circ, 46^\circ$       **96.**  $100^\circ, 80^\circ$

- 97.**  $45^\circ, 135^\circ$     **98.**  $89^\circ, 91^\circ$     **99.**  $60^\circ, 120^\circ$     **100.**  $40^\circ$   
**101.**  $67^\circ, 48^\circ$     **102.**  $396^\circ$     **103.**  $65^\circ, 70^\circ$     **104.**  $100^\circ$   
**105.** (i)  $142^\circ$     (ii)  $45^\circ$     **106.**  $281^\circ$     **107.**  $114^\circ, 132^\circ$   
**108.**  $20^\circ, 40^\circ, 30^\circ$     **109.**  $m \parallel n$ .    **110.** (i) No, (ii) yes    **111.**  $EF \parallel GH$   
**113.**  $110^\circ, 100^\circ$

(D) 2.

<sup>6</sup> S	
U	
<sup>1</sup> P	A R A L L E L
P	
<sup>2</sup> L	I N E A R P A
E	N
M	R A N S V E R S A L
E	
N	R
T	S
<sup>3</sup> A	D J A C E N T
R	E
Y	
<sup>5</sup> C	O M P L E M E N T
	T
	I
	N
	G
<sup>8</sup> A	R Y
	L
	T
	E
	R
	N
	A
	T
	E

## Unit 6

- 1.** (d)    **2.** (c)    **3.** (b)    **4.** (c)    **5.** (d)    **6.** (c)  
**7.** (c)    **8.** (c)    **9.** (c)    **10.** (a)    **11.** (c)    **12.** (b)  
**13.** (b)    **14.** (c)    **15.** (c)    **16.** (d)    **17.** (a)    **18.** (d)  
**19.** (b)    **20.** (c)    **21.** (c)    **22.** (c)    **23.** (b)    **24.** (a)  
**25.** (c)    **26.** (b)    **27.** (d)    **28.** (b)    **29.** (c)    **30.** (d)  
**31.** (c)    **32.** (b)    **33.** (a)    **34.** (d)    **35.** (d)    **36.** (b)  
**37.** (b)    **38.** (d)    **39.** (d)    **40.** (c)    **41.** (b)    **42.** (b)  
**43.** (b)    **44.** (d)    **45.** (b)    **46.** (c)    **47.** (a)    **48.** (b)  
**49.** (c)    **50.** Obtuse    **51.** a right angle    **52.** hypotenuse  
**53.** Altitude    **54.**  $60^\circ$     **55.** equal    **56.** equal    **57.**  $90^\circ$     **58.** two  
**59.** equal    **60.** congruent    **61.** Length and breadth    **62.** side  
**63.** (i)  $\angle Z$  (ii)  $XZ$  (iii)  $\angle Y$  (iv)  $XY$  (v)  $X$  (vi)  $ZY$     **64.**  $\Delta XZY$   
**65.**  $\Delta RSP$     **66.**  $\Delta DRQ$     **67.**  $\Delta PQQ$     **68.** (i)  $\Delta ADC$ , (ii) DC, (iii)  $\angle DCA$ ,  
(iv)  $\angle BAD$  and  $\angle BCD$     **69.** (i)  $\angle PQR + \angle PRQ$     (ii)  $\angle QRP + \angle QPR$   
**70.** False    **71.** False    **72.** True    **73.** False    **74.** False    **75.** False  
**76.** False    **77.** True    **78.** False    **79.** False    **80.** True    **81.** False  
**82.** False    **83.** True    **84.** False    **85.** False    **86.** False    **87.** True  
**88.** False    **89.** True    **90.** False    **91.** True    **92.** True    **93.** True  
**94.** False    **95.** True    **96.** True    **97.** True    **98.** False    **99.** True  
**100.** False    **101.** True    **102.** False    **103.** False    **104.** True    **105.** False  
**106.** False    **107.**  $100^\circ, 60^\circ, 20^\circ$     **108.**  $35^\circ$     **109.** (i)  $a = 20^\circ$ ,  
 $b = 130^\circ, c = 50^\circ$ , (ii)  $a = 65^\circ, b = 115^\circ, c = 25^\circ$     **110.**  $y = 30^\circ$   
**111.**  $\angle A = 30^\circ$     **112.** Triangle, Obtuse angled triangle    **113.** 10 km  
**114.** 40 m    **115.**  $\angle Q = 75^\circ, \angle R = 75^\circ$     **116.**  $\angle x = 75^\circ, \angle y = 135^\circ$   
**117.**  $\angle PON = 90^\circ, \angle NPO = 20^\circ$     **118.**  $x = 70^\circ, y = 80^\circ$     **119.**  $50^\circ$



- 148.** (i)  $\triangle PQR \cong \triangle TUS$       (ii) Not congruent  
 (iii)  $\triangle BCD \cong \triangle BAE$       (iv)  $\triangle STU \cong \triangle XZY$   
 (v)  $\triangle DOF \cong \triangle HOC$       (vi) Not congruent  
 (vii)  $\triangle PSQ \cong \triangle RQS$       (viii)  $\triangle LMN \cong \triangle OMN$

- 149.** (i)  $\triangle PQR \cong \triangle STU$       (ii) Not congruent

- 150.** (i) Yes, (SAS)

(ii) Yes, CPCT

- 151.** Yes, (SAS)    **152.** yes, (ASA)

- 153.** (i) Yes, (ASA)

(ii) Yes, CPCT

(iii) Yes, CPCT

- 154.** (i) Yes, (RHS)

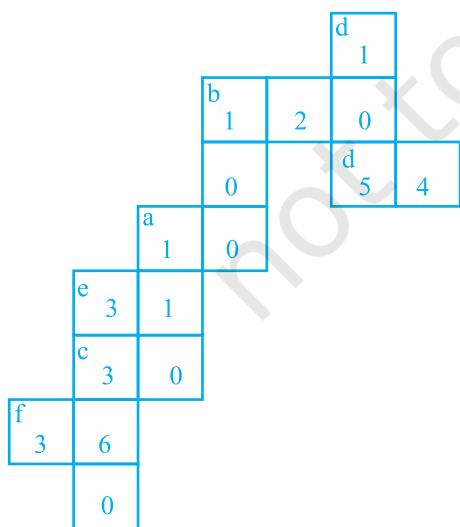
(ii) Yes, CPCT

- 155.** 38m    **156.** 12m    **157.** 6m

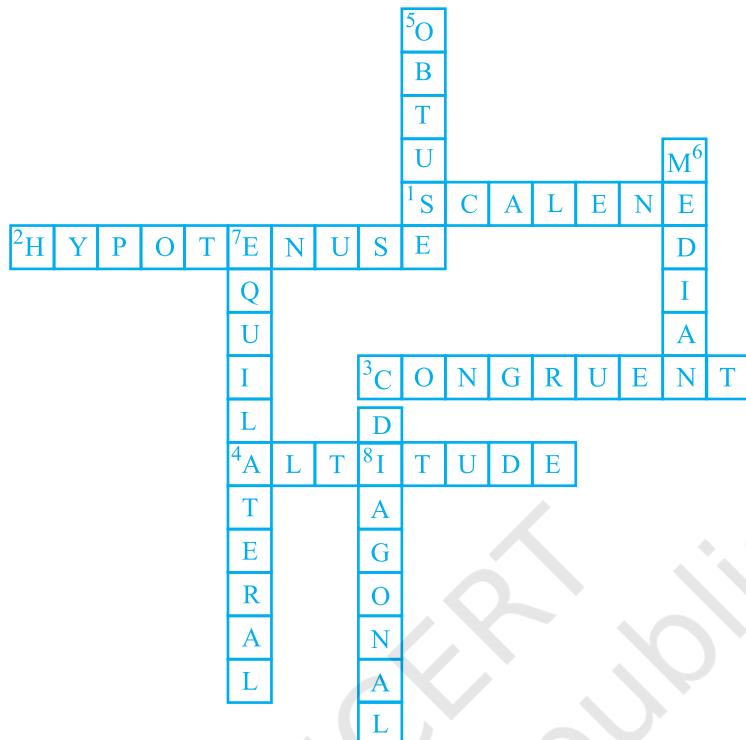
- 158.** AB = EO,  $\angle ABC = \angle EOD = 90^\circ$ , CA = DE, yes, (RHS)

**(D)**

6.



7.



### Unit 7

- |                |                |               |                |                    |                     |
|----------------|----------------|---------------|----------------|--------------------|---------------------|
| 1. (d)         | 2. (c)         | 3. (a)        | 4. (b)         | 5. (c)             | 6. (a)              |
| 7. (c)         | 8. (b)         | 9. (a)        | 10. (b)        | 11. (a)            | 12. (c)             |
| 13. (c)        | 14. (d)        | 15. (b)       | 16. (c)        | 17. (d)            | 18. (b)             |
| 19. (d)        | 20. (c)        | 21. (c)       | 22. (c)        | 23. (a)            | 24. $66\frac{2}{3}$ |
| 25. 3 : 16     | 26. ₹ 108      | 27. 60 km     | 28. 250        | 29. 160            |                     |
| 30. fraction   | 31. 30         | 32. 10        | 33. 46         | 34. 88             | 35. 900             |
| 36. 90         | 37. ₹ 83       | 38. ₹ 96      | 39. ₹ 8100     | 40. $7\frac{1}{7}$ |                     |
| 41. Profit, 10 | 42. Loss 10    | 43. ₹ 5355000 | 44. Profit, 20 |                    |                     |
| 45. Profit, 10 | 46. Profit, 14 | 47. ₹ 900     | 48. ₹ 20800    |                    |                     |

**49.** ₹ 5250      **50.** 0.5      **51.** 60

**52.** T = Time period, R% = Rate of Interest, P = Principal

**53.** ₹168    **54.** Multiply    **55.** Right    **56.** Sum    **57.** More

**58. attached sheet**

**59. aattachd seheet**

**60.** True    **61.** False

**62.** False    **63.** False    **64.** True    **65.** False    **66.** False

**67.** False    **68.** False    **69.** True    **70.** False    **71.** False    **72.** False

**73.** False    **74.** False    **75.** True    **76.** False    **77.** False    **78.** False

**79.** False    **80.** (i) 1250, (ii) 1250, (iii) 800, (iv) 900

**81.** (a) 75    (b) 75    (c) 17;51    (d) 30

**82.** 16.6% or  $\frac{50}{3}\%$     **83.**  $22\frac{1}{2}\%$     **84.** 1%    **85.**  $\frac{4}{5}$     **86.** 1 : 3

**87.** 1 : 6    **88.** 3 : 2    **89.** 364    **90.** 8.9%    **91.** 156%

**92.** 3    **93.** 6400    **94.** 500    **95.** 50%    **96.** 0.069%

**97.** 100%    **98.** 2kg    **99.** 125%    **100.** 15%    **101.** 1200

**102.** Carbon = 75g, Calcium = 250 g    **103.** 96 kg    **104.** gain of 18.5%

**105.** ₹ 7500    **106.** ₹ 800    **107.** ₹ 5760    **108.** 20% by Car,  
80% by Train    **109.** ₹ 1600    **110.** ₹ 6750    **111.** ₹ 80,000

**112.** 8 : 25    **113.** ₹ 50,000    **114.** ₹ 12,000    **115.** 82

**116.** (a) 3:2    (b) 68 mm Hg    (c) 259 : 169

**117.** (a) 9300 cm    (b) 36 kg    (c) 0.000000085

**118.** (a) 3 : 2; 3 : 2; 8 : 5; 8 : 3;    9 : 5  
(b) 60%; 60%; 61.53%, 72.72%; 64.28%

**119.**  $\frac{6}{10000}$     **120.**  $48 \neq 36$     **121.** ₹ 256    **122.** 12.5%

**123.** 4.5m    **124.** Nancy    **125.** ₹ 25,000

**126.** 83%    **127.** ₹ 30,000    **128.** ₹ 756

**129.** (i)  $\leftrightarrow$  E, (ii)  $\leftrightarrow$  H, (iii)  $\leftrightarrow$  O, (iv)  $\leftrightarrow$  J, (v)  $\leftrightarrow$  G, (vi)  $\leftrightarrow$  L, (vii)  $\leftrightarrow$  B,  
(viii)  $\leftrightarrow$  A, (ix)  $\leftrightarrow$  F, (x)  $\leftrightarrow$  K, (xi)  $\leftrightarrow$  D, (xii)  $\leftrightarrow$  I,    **130.** 25

**131.** ₹ 6000 and ₹ 4000    **132.** 12.5%    **133.** 30 years

## MATHEMATICS

**134.** ₹ 12,000

**135.** ₹ 5,000

**137.** 45

**138.** a) Mean = 1435000 km<sup>2</sup>, Median = 475000 km<sup>2</sup>, Mode = 3,10,000 km<sup>2</sup>

b) 4.19

c) 50%

d) 21.1%

**139.** 44528685 km<sup>2</sup>

**140.** Red = 37.5%, Blue 12.5%, Green = 50%

### (D)

- (i)** 1. Cost Price,      2. Interest,      3. Per cent,      4. Profit  
 5. Principal,      6. Proportion,      7. Selling Price,      8. Amount

<b>(ii)</b>	<b>Across</b>	<b>Down</b>	<b>(iii)</b>	<b>Across</b>	<b>Down</b>
1.	20	6. 32		1. 50	2. 24
2.	1520	7. 6000		2. 240	5. 104
3.	72	8. 75		3. 5	6. 40
4.	3000	2. 1200		4. 300	7. 9
5.	25	9. 490			
		10. 9000			
		4. 385			
		5. 216			

### Unit 8

**1.** (d)

**2.** (c)

**3.** (d)

**4.** (b)

**5.** (a)

**6.** (b)

**7.** (c)

**8.** (c)

**9.** (c)

**10.** (c)

**11.** (b)

**12.** (c)

**13.** negative **14.** positive **15.**  $\frac{2}{7}$  **16.**  $\frac{-3}{4}$  **17.** left **18.** right

**19.** smaller **20.** smaller **21.** different **22.** same **23.**  $\frac{-2}{3}$  **24.**  $-\frac{1}{5}$

**25.**  $-1$  **26.**  $\frac{-1}{2}$  **27.** 1 **28.**  $-36$  **29.** 12 **30.**  $-1$

**31.**  $<$  **32.**  $>$  **33.**  $<$  **34.**  $<$  **35.**  $=$  **36.** zero

**37.** 1 **38.**  $\frac{9}{49}$  **39.** 0 **40.** 0 **41.**  $-\frac{5}{2}$  **42.**  $-1$

- 43.**  $b \div m$    **44.** positive, negative   **45.** simplest   **46.** zero  
**47.** True   **48.** True   **49.** True   **50.** False   **51.** True   **52.** True  
**53.** True   **54.** False   **55.** True   **56.** True   **57.** True   **58.** True  
**59.** False   **60.** False   **61.** True   **62.** False   **63.** True   **64.** False  
**65.** False   **66.** (i)  $\leftrightarrow$  (c), (ii)  $\leftrightarrow$  (e), (iii)  $\leftrightarrow$  (a), (iv)  $\leftrightarrow$  (b), (v)  $\leftrightarrow$  (d)  
**67.**  $\frac{-5}{8}, \frac{-15}{28}, \frac{17}{13}$    **68.** (i)  $\frac{27}{36}$    (ii)  $\frac{-60}{-80}$   
**69.** (i)  $\frac{-5}{6}$    (ii)  $\frac{-1}{4}$    **70.** (i)  $\frac{2}{5}$ , (ii)  $\frac{-2}{7}$ , (iii)  $\frac{-3}{7}$ , (iv)  $\frac{-13}{7}$
- 71.** Yes. Since standard form of  $\frac{-8}{28} = -\frac{2}{7}$  and standard form of  $\frac{32}{-112} = -\frac{2}{7}$ .
- 72.**  $\frac{-7}{10}, \frac{2}{-3}, \frac{5}{-8}, \frac{-3}{5}, \frac{-1}{4}$ .
- 73.** 
- 74.** - 20
- 75.** (i)  $\frac{-6}{8}, \frac{-9}{12}, \frac{-12}{16}$    (ii)  $\frac{14}{22}, \frac{21}{33}, \frac{28}{44}$
- 76.** (i)  $\frac{20}{-25}, \frac{24}{30}, \frac{28}{-35}$    (ii)  $\frac{-40}{35}, \frac{-48}{42}, \frac{-56}{49}$
- 77.**  $\frac{42}{56}, \frac{44}{56}, \frac{46}{56}, \frac{48}{56}$
- 78.** (i)  $\frac{127}{143}$ , (ii) 1   **79.** (i)  $\frac{83}{28}$ , (ii)  $\frac{9}{13}$
- 80.** (i)  $\frac{1}{3}$ , (ii)  $\frac{42}{11}$    **81.** (i) - 13, (ii)  $\frac{3}{7}$

**82.** (i)  $\frac{-55}{49}$       (ii)  $-2$

**83.** (i)  $\frac{7}{8}$       (ii)  $3\frac{1}{9}$

**84.** It has more than one answer like  $\frac{-78}{17}, \frac{-79}{18}$ .

**85.** (i)  $\frac{-11}{40}, \frac{19}{40}, -\frac{3}{80}, \frac{-4}{15}$

**86.** (i)  $\frac{8}{25}$     (ii)  $\frac{4641}{80}$     (iii)  $\frac{-4}{15}$     (iv)  $\frac{-3}{10}$

**87.**

+	$-\frac{1}{9}$	$\frac{4}{11}$	$-\frac{5}{6}$
$\frac{2}{3}$	$\frac{5}{9}$	$\frac{34}{33}$	$-\frac{1}{6}$
$-\frac{5}{4}$	$-\frac{49}{36}$	$-\frac{39}{44}$	$-\frac{25}{12}$
$-\frac{1}{3}$	$-\frac{4}{9}$	$\frac{1}{33}$	$-\frac{7}{6}$

**88.**  $\frac{6}{8}, \frac{7}{2}, \frac{1}{1}, \frac{1}{4}, \frac{0}{1}, \frac{5}{3}$

**89.**  $\frac{m}{n}$

**90.** (a)  $\frac{p}{q} < \frac{r}{s}$ , (b)  $p \times s = r \times q$ , (c)  $\frac{p}{q} > \frac{r}{s}$

**91.** (a)  $\frac{-34}{48}$ , (b)  $\frac{-24}{4}$ , (c)  $\frac{-5}{17}$ , (d)  $\frac{1600}{81}$

**92.** (a)  $\frac{7}{20}$ , (b)  $\frac{6}{5}$ , (c)  $\frac{-45}{7}$ , (d)  $\frac{-2}{7}$ , (e)  $\frac{5}{9}$

**93.** (a) 0, (b)  $\frac{5}{36}$ , (c)  $\frac{-136}{234}$ , (d)  $\frac{3}{40}$

**94.** (a)  $\frac{31}{36}$ , (b)  $\frac{1}{36}$ , (c)  $\frac{-5}{6}$ , (d)  $-\frac{48}{45}$ , (e)  $-36$

(f)  $\frac{3}{20}$

(g)  $\frac{-56}{135}$

(h)  $-\frac{17}{36}$

(i)  $\frac{13}{36}$

(j)  $-\frac{56}{135}$

(k)  $-\frac{5}{4}$

95.  $\frac{3}{2}$

96.  $\frac{1}{3}$

97.  $\frac{8}{5}$

98.  $-\frac{1}{2}$

99. 16

100. 2.25m

101. (i)  $\frac{-3}{20}, \frac{-6}{40}, \frac{-9}{60}$  (ii)  $-5, \frac{-10}{2}, \frac{-15}{3}$

102.

Number	Natural No.	Whole No.	Integer	Fraction	Rational No.
-114			✓		✓
$\frac{19}{17}$				✓	✓
$\frac{623}{1}$	✓	✓	✓	✓	✓
$-19\frac{3}{4}$					✓
$\frac{73}{71}$				✓	✓
0		✓	✓	✓	✓

103.  $\frac{49}{51}, 99$

104. 45

105. 7 : 2;  $\frac{7}{2}$

106. (d)

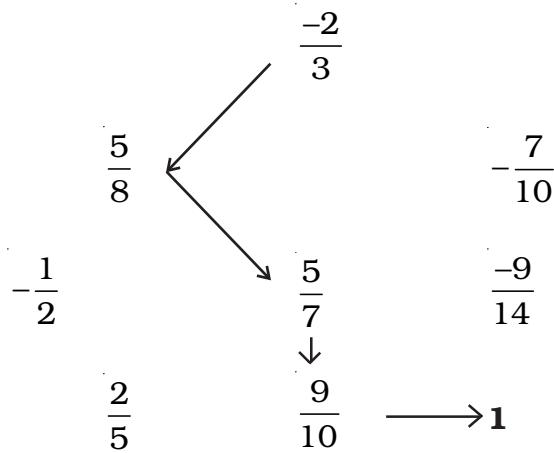
107. (c)

108. (b) 109. (a)

110. She divided numerator by 5 but denominator by -5

**(D)**

**1.**



**2.**

$-\frac{1}{4}$
$-\frac{3}{8}$
$-\frac{1}{2}$
$-\frac{5}{12}$
$-\frac{1}{3}$

$-\frac{1}{6}$
$-\frac{11}{60}$
$-\frac{1}{5}$
$-\frac{12}{70}$
$-\frac{1}{7}$

0	$-\frac{1}{2}$	-1
-2		
$-\frac{5}{2}$		
-3		
-4	$-\frac{9}{2}$	-5

**3.**  $\frac{-112}{224}$

**4.** (Make from graph)

### Unit 9

- |                |                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|
| <b>1.</b> (a)  | <b>2.</b> (c)  | <b>3.</b> (b)  | <b>4.</b> (b)  | <b>5.</b> (c)  | <b>6.</b> (d)  |
| <b>7.</b> (d)  | <b>8.</b> (a)  | <b>9.</b> (d)  | <b>10.</b> (c) | <b>11.</b> (a) | <b>12.</b> (c) |
| <b>13.</b> (c) | <b>14.</b> (a) | <b>15.</b> (a) | <b>16.</b> (c) | <b>17.</b> (a) | <b>18.</b> (b) |
| <b>19.</b> (c) | <b>20.</b> (c) | <b>21.</b> (b) | <b>22.</b> (c) | <b>23.</b> (d) | <b>24.</b> (b) |

**25.** (d)    **26.** (b)    **27.** (b)    **28.** (c)    **29.** (b)    **30.** (c)

**31.** (b)    **32.** (a)    **33.** (a)    **34.** (b)    **35.** (b)    **36.** (a)

**37.** (a)    **38.** no. of sides    **39.** perimeter, area    **40.**  $18\text{cm}^2$

**41.**  $35\text{cm}^2$     **42.** base    **43.** height/altitude    **44.** circumference

**45.**  $\pi$     **46.** 9    **47.**  $3.14/\frac{22}{7}$     **48.**  $\pi$     **49.**  $r$     **50.** 10000

**51.** 100    **52.** 10,000    **53.** Height    **54.** 10,00,000

**55.** 3,60,000    **56.**  $\frac{1}{1000}$  or 0.001    **57.** True    **58.** (a) True (b) False,

(c) False (d) True    **59.** False    **60.** True    **61.** False    **62.** True

**63.** False    **64.** True    **65.** True    **66.** True    **67.** False    **68.** True

**69.** False    **70.** Flase    **71.** True    **72.** True    **73.** 540

**74.** 377.1498    **75.**  $64\text{m}^2$     **76.**  $16.25\text{m}^2$     **77.** 24 m    **78.** 8cm,  $20\text{cm}^2$

**79.** XY = 6 cm, YZ = 8cm    **80.** (i) 180m (ii)  $2975\text{m}^2$     **81.**  $42\text{ cm}^2$

**82.** circular pizza    **83.** 33 m    **84.**  $450\text{m}^2$     **85.**  $30\text{cm}^2$     **86.** 36 cm

**87.** 6 cm    **88.** 32 cm    **89.**  $l = 9\text{m}$ , and  $m = 15\text{m}$ , other side = 30m

**90.** 15 cm and 17 cm    **91.** 120 cm    **92.**  $98\text{ cm}^2$     **93.**  $56\text{cm}^2$

**94.**  $46.45\text{cm}^2$     **95.**  $82\text{ cm}^2$     **96.**  $55\text{ cm}^2$     **97.**  $227\text{cm}^2$

**98.**  $308\text{ cm}^2$     **99.**  $149\frac{3}{16}\text{cm}^2$

**100.** Yes, It increases by 32 cm

**101.**  $64\text{ cm}^2$     **102.** perimetr = 26 cm, area =  $24\text{ cm}^2$

**103.** 205cm    **104.**  $2.97\text{cm}^2$ , ₹ 72.08    **105.**  $28200\text{m}^2$

**106.** ₹ 5400    **107.** ₹ 26400    **108.** 88cm, circle    **109.** 550 m

**110.** 31.43 m (app.),  $75.43\text{m}^2$  (app.) ,    **111.**  $6.75\text{m}^2$ , 13 : 27

**112.** (a)  $188.68\text{m}^2$ , (b) Rs 67776.80, (c) 62.6m (d) 251

**113.** (a)  $(5x + 65)\text{m}^2$  (b) 44m (c) ₹ 250 ( $x + 21$ ) including lobby between two bedrooms, ₹ 150 ( $x + 35$ ) excluding lobby between two bedrooms. (d) ₹ 150 ( $15 - x$ )    (e) 7m

**114.**  $31.5\text{m}^2$     **115.**  $9086\text{m}^2$     **116.** ₹ 1530    **117.**  $1320\text{cm}^2$

**118.**  $1000\text{cm}^2$     **119.** Area in both cases is  $86\text{ cm}^2$     **120.** 144

**121.** 57 m    **122.**  $35\text{ cm}^2$ , 2.8 cm    **123.** 108    **124.** 40  $\text{cm}^2$

**125.** (i) ₹ 4440    (ii) ₹ 69600    (iii)  $22\text{m}^2$     **126** (a) (i) 20.10m (ii) 22.68 m  
 (iii) 21.78m (iv) 12.16m (v) 10.94m (b) ₹ 1848, ₹ 5929.36, ₹ 1478,  
 ₹ 5737.86, ₹ 5008.52 (family room) (c) ₹ 43830

**127.**  $2086\text{ cm}^2$     **128.**  $7550\text{ cm}^2$     **129.** 7mm    **130.** 2411520 km

**131.** ₹497.64

### (D)

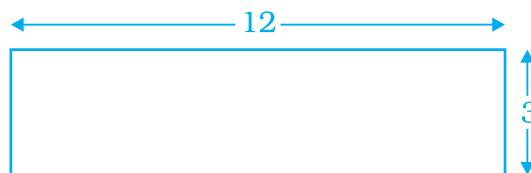
1. (i) 87.78 m (ii)  $436.64\text{ m}^2$  (iii)  $10.50\text{ m}^2$  (iv)  $2.62\text{ m}^2$  (v)  $7.88\text{m}^2$
2. (i) 39 m    (ii)  $81.74\text{ m}^2$     (iii)  $12.238\text{ m}^2$     (iv)  $10.26\text{ m}^2$
3. (i)  $32\text{ m}^2$     (ii)  $13050\text{ m}^2$     (iii) 470 m
4. (i)  $1344.15\text{ m}^2$     (ii) 293.2 m

5.	<b>Radius</b>	<b>Diameter</b>	<b>Circumference</b>
Foot ball	11.3 cm	22.6 cm	71 cm
Basket ball	12.4 cm	24.8 cm	77.872 cm
Cricket ball	3.66 cm	7.32 cm	23 cm
Volley ball	10.3 cm	20.6 cm	64.684 cm
Hockey ball	3.565 cm	7.13 cm	22.4 cm
Lawn Tennis ball	3.175 cm	6.35 cm	19.939 cm
Shot put	65 mm	130 mm	408.2 mm

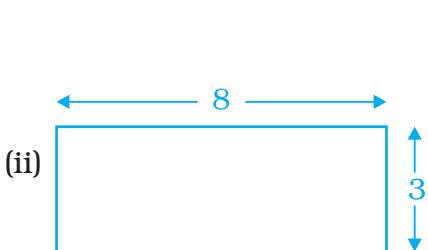
**6.**



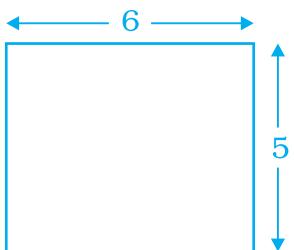
$$\text{Area} = 36 \\ \text{Perimeter} = 26$$



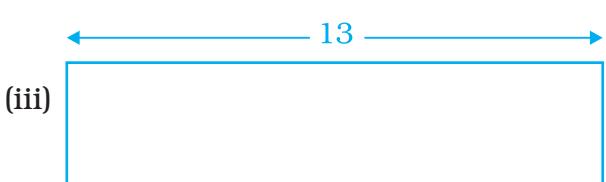
$$\text{Area} = 36 \\ \text{Perimeter} = 30$$



Area = 24  
Perimeter = 22



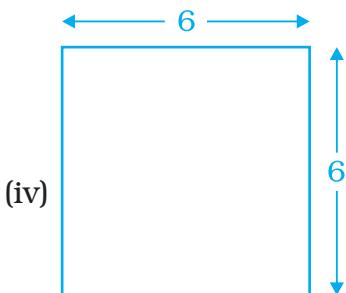
Area = 30  
Perimeter = 22



Area = 39  
Perimeter = 32



Area = 45  
Perimeter = 28

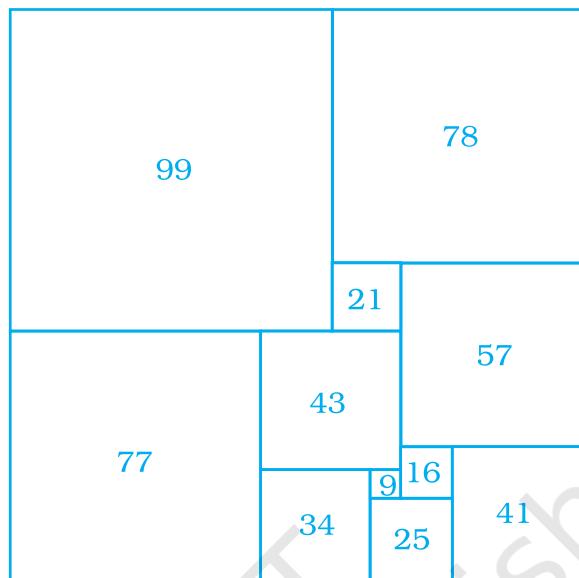


Area = 36  
Perimeter = 24



Area = 12  
Perimeter = 26

7.



- 8.** (i) Circumference      (ii) Perimeter      (iii) Area  
 (iv) Parallelogram      (v) Square      (vi) Triangle  
 (vii) One      (viii) Diameter

## Unit 10

- |                    |                       |                                    |                     |                        |                |
|--------------------|-----------------------|------------------------------------|---------------------|------------------------|----------------|
| <b>1.</b> (c)      | <b>2.</b> (c)         | <b>3.</b> (a)                      | <b>4.</b> (c)       | <b>5.</b> (d)          | <b>6.</b> (b)  |
| <b>7.</b> (d)      | <b>8.</b> (a)         | <b>9.</b> (c)                      | <b>10.</b> (a)      | <b>11.</b> (c)         | <b>12.</b> (a) |
| <b>13.</b> (d)     | <b>14.</b> (a)        | <b>15.</b> (d)                     | <b>16.</b> (d)      | <b>17.</b> a like term |                |
| <b>18.</b> $\pi$   | <b>19.</b> like       | <b>20.</b> Unlike                  | <b>21.</b> $r$      | <b>22.</b> one         |                |
| <b>23.</b> $n, 6n$ | <b>24.</b> constant   | <b>25.</b> $55y$                   | <b>26.</b> binomial | <b>27.</b> $2x^2$      |                |
| <b>28.</b> $b + c$ | <b>29.</b> $2y, 2y^2$ | <b>30.</b> $2x$ or $-4y^2$ or $-z$ |                     | <b>31.</b> $-23x^2$    |                |
| <b>32.</b> $15xy$  | <b>33.</b> T          | <b>34.</b> F                       | <b>35.</b> T        | <b>36.</b> F           | <b>37.</b> T   |

**38.** F      **39.** F      **40.** T      **41.** T      **42.** F      **43.** F

**44.** T      **45.** F      **46.** T      **47.** F      **48.** F      **49.** F

**50.** F      **51.** T      **52.** F      **53.** (a)  $x^2 + xy$ , Binomial

(b)  $r - (3p \times 2q)$ , Binomial      (c)  $p \times 2q \times 3r$ , Monomial

(d)  $ab + bc + ca$ , Trinomial      (e)  $3x$ , Monomial

(f)  $2p + 2q$ , Binomial      (g)  $\frac{1}{2}mn$ , monomial

(h)  $x^2$ , Monomial      (i)  $t^3 - s^3$ , Binomial

(j)  $(x \div 15)x$ , Monomial or  $\frac{x^2}{15}$       (k)  $x^2 + z^3$ , Binomial

(l)  $q^3 - 2q$ , Binomial      **54.** (i) 1,      (ii) -2      (iii) 3      (iv)  $y^3$

**55.** (i) 1, 1, -3, 5, -7      (ii) 10, -7, -9, 2, 2

**56.** (a)  $4x^2yz^2 + 4xy^2z$  Binomial      (b)  $x^4 - 3xy^3 + y^4$  Trinomial

(c)  $p^3q^2r + pq^2r^3 - 6p^2qr^2$  Trinomial      (d)  $2a - 2b + 2c$  Trinomial

(e)  $60x^3 + 49x + 15$  Trinomial      **57.** (a)  $-2p^2 - 9pq + 6q^2$

(b)  $2x^3 - 3x^2y + 2xy^2 - y^3 + 4y$       (c) zero      (d)  $p^2 + q^2 + r^2$

(e)  $x^3y^2 + 4x^2y^3 + x^4 + 7y^4$       (f)  $p^2qr - 2pq^2r - pqr^2$       (g) zero

(h)  $a^2 + b^2 + c^2 + 2ab + 2bc + 2ac$       (i)  $p^5 + \frac{5}{8}p^4 - p^3 + \frac{25}{8}p^2 - 17p + \frac{31}{4}$

(j)  $33t^3 - 6t^2 - 10t - 20$       **58.** (a)  $4p^2qr$       (b)  $a^2 + b^2 + 2ab$

(c)  $x^3 + y^3 + 3x^2y + 3xy^2$       (d)  $x^4 - 4x^3y^3 + 2y^4$       (e)  $-2ab + 2bc + 2ac$

(f)  $a^2 + b^2 + 2ab$       (g)  $x^4 + y^4 - x^3y^2 + 6xy^3$       (h)  $-3ab - 3bc - 3ac$

(i)  $-4.5x^5 + 5x^4 + 0.2x^2 - 7.3x - 5.7$       (j)  $y^3 - y - 22$

## MATHEMATICS

**59.** (a)  $-3x^2y - 3xy^2$     (b)  $-3p^2q^2 + pq$       **60.** (a)  $x^3 - x^2y - xy^2 - y^3$

(b)  $m^2 + 2n^2 - 2mn$       **61.**  $68a^3 - 47a^2 + 6a + 16$

**62.**  $y^4 - 17y^3 - 46y^2 + 52y - 54$       **63.**  $-13p^3 + 98p^2 - 72p + 94$

**64.**  $-99x^3 + 33x^2 + 13x + 41$     **65.**  $-9a^2 + 15a - 2$

**66.** (A) 1      (B) 25      (C) 1      (D) -125      (E)  $\frac{13}{3}$

(F)  $-\frac{5}{3}$       (G)  $\frac{-13}{6}$       (H) 6    **67.** (A) 2 (B) 6 (C) 8 (D) -1

(E) 14      (F) 9      **68.** (i)  $4x^2 + 6x - 10$       (ii)  $6x^2 - 6$

(c)  $12x^2 - 8x - 4$     **69.**  $a = -2$       **70.**  $-x^2$       **71.**  $-3a^2 + 3b^2 - 20ab$

**72.**  $10x^2 - 8y^2 + x$     **73.** (a)  $22y + 120$  (b)  $8x + 14y$

**74.**  $y[x - \frac{1}{2}z]$     **75.**  $\frac{3}{2}m^2$     **76.**  $8x + 50$

**77.**  $350 + 50x$  or  $50(x + 7)$     **78.**  $9 + 3x$     **79.**  $4x + 2y$     **80.**  $\frac{1}{2}xyz$

**81.**  $14x + 2y$     **82.** ₹  $(10x + 20)$     **83.** (a)  $4x + 1$  (b)  $\frac{1}{3}(4x + 1)$

**84.**  $11xy^2$     **85.** (i)  $18r + 6b = 6(3r + b)$ , (ii)  $6p + 6g = 200(p + g)$

**86.** (i) 15      (ii) 66      (iii) 410      **87.** 385

**88.** (a) 385      (b) 550      (c) 1045

**89.** (i)  $8\frac{7}{2}$       (ii) 1    **90.** (i)  $\frac{-9}{2}$  (ii)  $\frac{303}{8}$

**91.** Three subtracted from four times 'b'.

**92.** Eight times the sum of m and five.

**93.** Quotient on dividing seven by the difference of eight and  $x$  ( $x < 8$ ).

**94.** Seventeen times quotient of sixteen by w.

**95.** (i)  $\frac{1}{4}(x + 7)$ ,    (ii)  $\frac{n-5}{3}$

**96.**  $2n + 1$ , yes

**97.** Less than 11

**98.** 1 → (e),      2 → (c),      3 → (d),      4 → (a),      5 → (g)  
6 → (h), 7 → (f),      8 → (b)

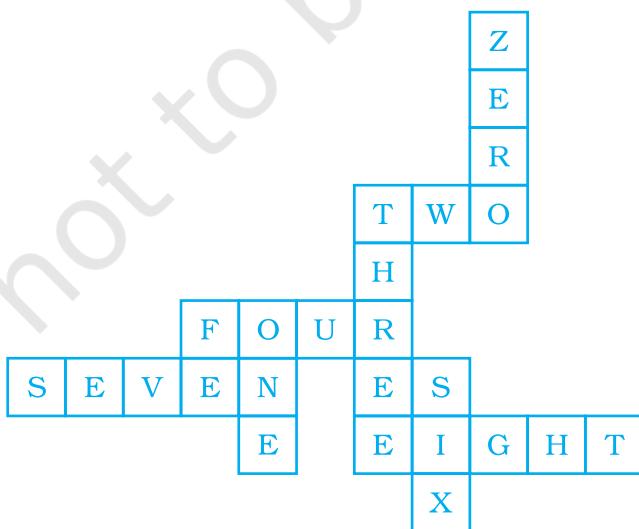
**99.** Expression :  $24 + 4(a - 2)$ , 'a' stands for the present age of dog or cat

<b>Age</b>	<b>[<math>24 + 4(a - 2)</math>]</b>	<b>Age (Human Years)</b>
2	$24 + 4(2 - 2)$	24
3	$24 + 4(3 - 2)$	28
4	$24 + 4(4 - 2)$	32
5	$24 + 4(5 - 2)$	36
6	$24 + 4(6 - 2)$	40

**100.** (i)  $x + y = y + x$ , (ii)  $x \times y = y \times x$ ,  
 (iii)  $x + (y + z) = (x + y) + z$ , (iv)  $x \times (y \times z) = (x \times y) \times z$ ,  
 (v)  $x \times (y + z) = x \times y + x \times z$

(D)

3.



**Unit 11**

- 1.** (b)      **2.** (b)      **3.** (c)      **4.** (c)      **5.** (c)      **6.** (c)  
**7.** (c)      **8.** (d)      **9.** (c)      **10.** (b)      **11.** (c)      **12.** (d)  
**13.** (c)      **14.** (c)      **15.** (d)      **16.** (c)      **17.** (d)      **18.** (d)  
**19.** (c)      **20.** (c)      **21.** (c)      **22.** (b)      **23.** 44      **24.** 3  
**25.**  $\frac{11}{15}$       **26.** 8      **27.** 12      **28.** 0      **29.** 32      **30.**  $\frac{13}{14}$   
**31.** 11      **32.** 5      **33.** 6      **34.** 6      **35.** 3      **36.** 5.37  
**37.** 8.888      **38.** 7      **39.** 8      **40.** (a) < (b) < (c) > (d) < (e) <  
**41.** False      **42.** True      **43.** False      **44.** False      **45.** True      **46.** True  
**47.** False      **48.** True      **49.** False      **50.** False      **51.** False      **52.** False  
**53.** True      **54.** True      **55.** True      **56.** False      **57.** False      **58.** False  
**59.** False      **60.** True      **61.** True      **62.** False      **63.** False      **64.** True  
**65.** False      **66.** Ascending order:  $4^0$ ,  $2^3 \times 2$ ,  $2^3 \times 3^1$ ,  $3^3$ ,  $2^5$ ,  $3^5$  ( $3^3$ ) $^2$   
**67.** Descending order:  $2^3 \times 5^2$ ,  $(2^2)^3$ ,  $2^{2+3}$ ,  $\frac{3^5}{3^2}$ ,  $3^2 \times 3^0$ ,  $2 \times 2^2$   
**68.**  $(-4)^2$  or 16      **69.**  $m = 5$       **70.**  $729/64$       **71.**  $\frac{32}{27}$   
**72.** (a) 1, (b) 1, (c) 1, (d) -3, (e) 24, (f) 0      **73.**  $n = 0$   
**74.** (a) 80100000      (b) 0.00175  
**75.** (a) 32, (b) -243, (c) -256      **76.** (a)  $27a^4 = 3^3a^4$  (b)  $a^2b^3c^4$  (c)  $S^4 \times t^3$   
**77.**  $30^6$       **78.** (a)  $2^{10}$  (b)  $3 \times 7^3$  (c)  $\frac{3^2 \times 2^4}{5^3 \times 7}$       **79.** (a)  $2^6$  (b)  $2^9$  (c)  $5.28 \times 10^5$   
**80.** (a)  $2^3 \times 3^2 \times 5^3$  (b)  $3^4 \times 5^2$  (c)  $2^5 \times 5^2$   
**81.** (a)  $6^3$  (b)  $4^4$  (c)  $35^2$  (d)  $5^6$  (e)  $(30)^3$  (f)  $11^2 \times (-2)^5 = -3872$   
**82.** (a)  $7.647 \times 10^6$  (b)  $8.19 \times 10^7$  (c)  $5.83 \times 10^{11}$  (d)  $2.4 \times 10^{10}$   
**83.**  $1.44 \times 10^{11}m$

**84.** (a)  $(3/7)^2$       (b)  $\frac{7}{11}^5$       (c)  $3^8$

(d)  $a^7$       (e)  $\frac{3}{5}^5$       (f)  $5^{10}$

**85.** (a)  $49a^2b^3$       (b) 3920      (c)  $\frac{25}{8}a^3$       (d) 729  
 (e)  $1/75$       (f)  $6075/2$       (g) 1

**86.** Gibson, Australia; Thar, India; Great Victoria, Australia; Kalahari, South Africa; Sahara, North Africa.

**87.** Jupiter, Saturn, Neptune, Uranus, Earth, Venus, Mars, Mercury, Pluto.

**88.** (1)  $6 \times 10^1$  (2)  $3.6 \times 10^3$  (3)  $8.64 \times 10^4$  (4)  $2.6 \times 10^6$  (5)  $3.2 \times 10^7$   
 (6)  $3.2 \times 10^8$

**89.** 12 : 5      **90.**  $c = 3$       **91.** (a)  $9.46 \times 10^{12}$  km, (b) less than

**92.** 9      **93.**  $2^{18}$       **94.** 3060 kg

**95.** Red blood cell has a greater diameter than a platelet.

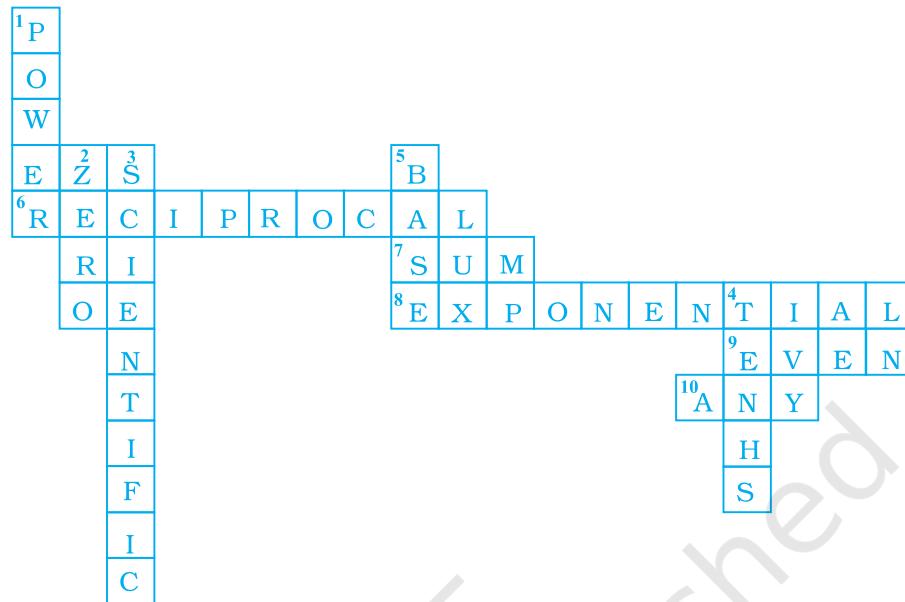
**96.** (a)  $1 \times 10^{100}$       (b)  $10^{200}$       **97.** He has left power of 3 which is 5.

**(D)**

**Down** 1.

- 2.
- 3.
- 4.
- 5.
- 7.
- 8.
- 9.
- 10.

**Across** 6.

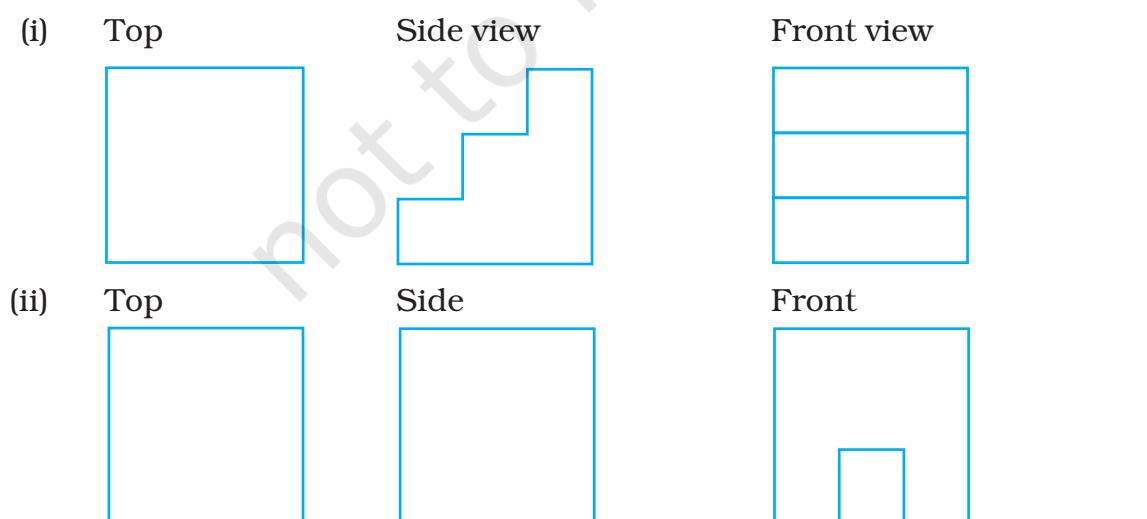


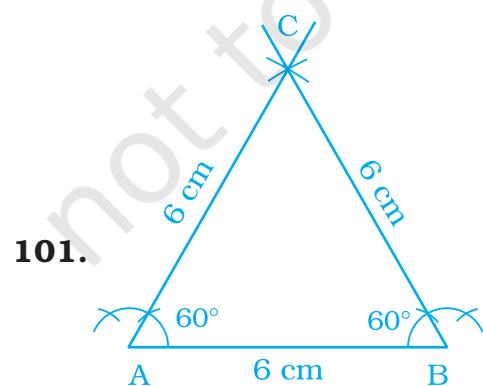
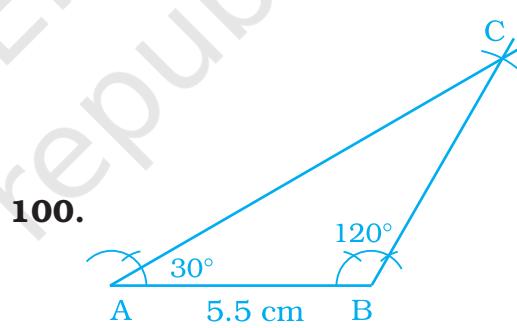
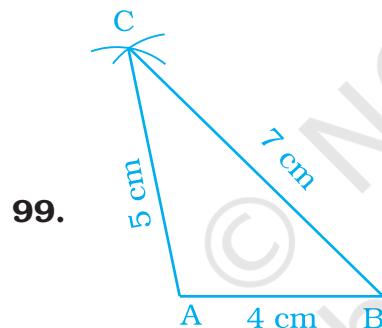
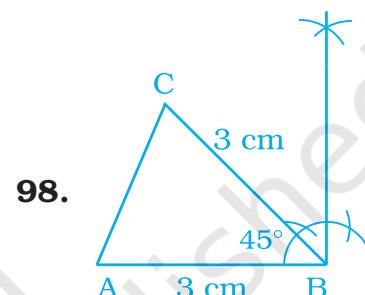
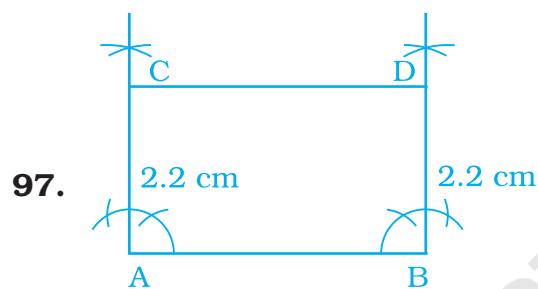
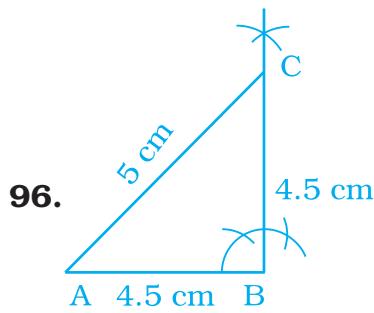
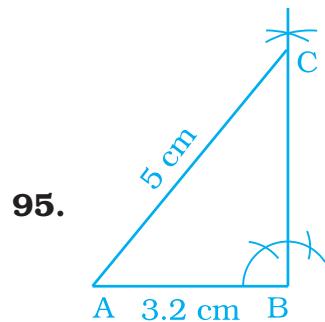
## Activities 2

	1	5	7	6	7
8	5		2	3	4
10	1	9	1		3
4	2		2	0	
	1	5	1	0	0

**Unit 12**

- 1.** (b)    **2.** (a)    **3.** (c)    **4.** (b)    **5.** (c)    **6.** (b)  
**7.** (b)    **8.** (c)    **9.** (d)    **10.** (c)    **11.** (b)    **12.** (c)  
**13.** (a)    **14.** (a)    **15.** (a)    **16.** (c)    **17.** (a)    **18.** (d)  
**19.** (b)    **20.** (c)    **21.** (c)    **22.** (c)    **23.** (a)    **24.** (b)  
**25.** (c)    **26.** (b)    **27.** (a)    **28.** (c)    **29.** one    **30.** 2,2  
**31.** Isosceles    **32.** Quadrilateral    **33.** M and W    **34.** Edge  
**35.** Face    **36.** Vertices    **37.** Sphere    **38.** 5, 9, 6    **39.** 4, 6, 4  
**40.** 5, 8, 5    **41.** 5, 3, 2    **42.** Triangle    **43.** 5, 4, 1  
**44.** 5, 4, rectangle    **45.** 2    **46.** 2    **47.** Infinite  
**48.** Rectangle    **49.** Bisector    **50.** No    **51.** 8    **52.** Scalene  
**53.** Prism    **54.** 0, 0, 1    **55.** Cone    **56.** Triangle Prism  
**57.** 1    **58.** 10    **59.** False    **60.** True    **61.** False    **62.** False  
**63.** True    **64.** True    **65.** False    **66.** False    **67.** False    **68.** False  
**69.** False    **70.** False    **71.** True    **72.** True    **73.** False    **74.** True  
**75.** True    **76.** False    **77.** True    **78.** False    **79.** True    **80.** False  
**81.** True    **82.** False    **83.** False    **84.** True    **85.** False    **86.** True  
**87.** False    **88.** True    **89.** False    **90.** True    **91.** False    **92.** False

**93.**

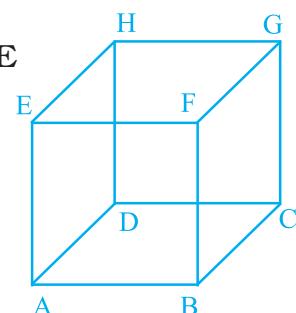


102.  $60^\circ$

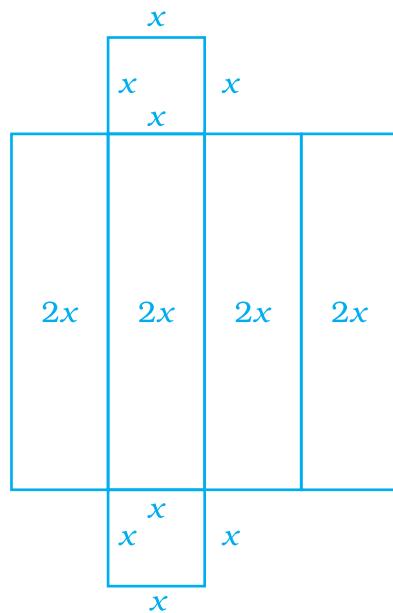
103.

Figure	Number of Lines of Symmetry	Order of Rotation of Symmetry
a	1	1
b	1	1
c	1	1
d	2	2
e	1	2
f	0	1
g	1	1
h	0	3
i	4	4
j	1	1
k	0	1
l	1	1
m	0	2
n	0	1
o	1	1
p	1	1
q	1	1
r	0	3
s	3	3
t	1	1
u	10	10
v	3	3
w	0	1

104. (i) EF (ii) ABFE, BFGC (iii) ABEF, ABCD, ADHE  
 (iv) D (v) CD, EF, GH (vi) AE, EF, GH, HD  
 (vii) AE, BF, AD, BC (viii) Several group of points like – A, E, C, B



**105.**

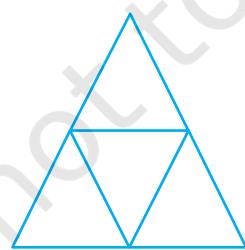


**106.**

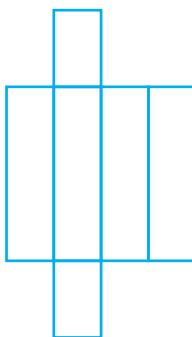
(i) Triangle prism



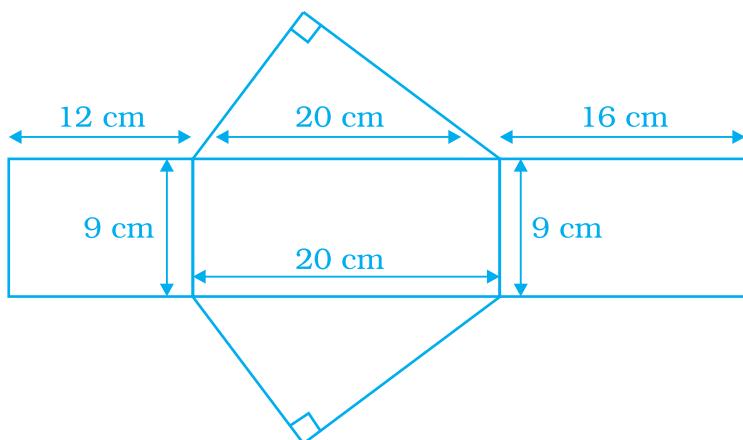
(ii)



(iii)

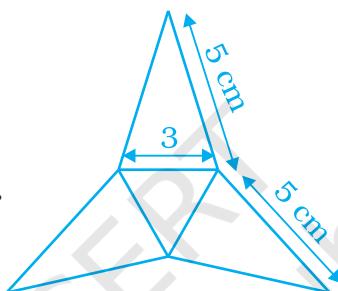


**107.**

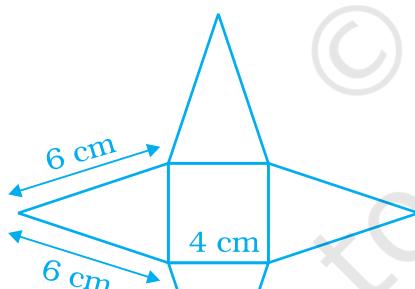


**109.** (i) HG (ii) CD

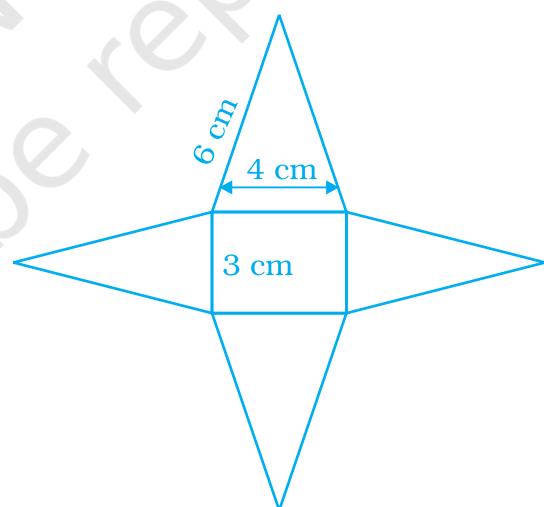
**110.**



**111.**



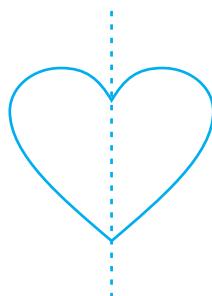
**112.**



**113.** (a) 6 (b) 8 (c) 7 (d) 8 (e) 6 (f) 8 (g) 6 (h) 8

**114.**

(a)



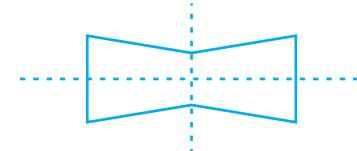
One line of symmetry

(b)



No line of symmetry

(c)

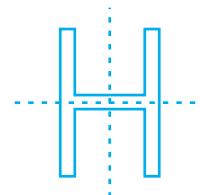


Two line symmetry

**115.** 16

**116.**

(a)



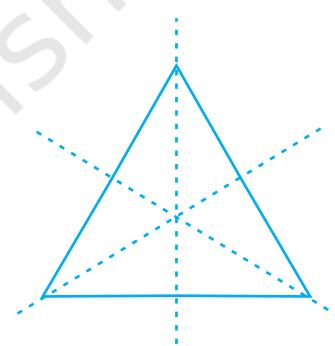
2 lines of symmetry

(b)



No line of symmetry

(c)



3 lines of symmetry

**117.**

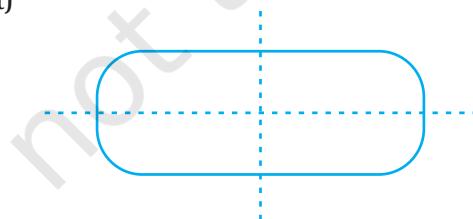
- (a) Yes
- (d) Yes

- (b) No
- (e) Yes

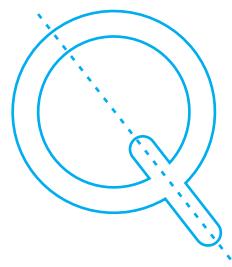
- (c) Yes
- (f) Yes

**118.**

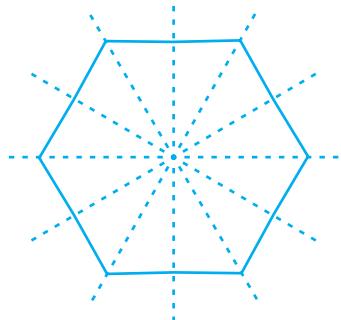
(a)



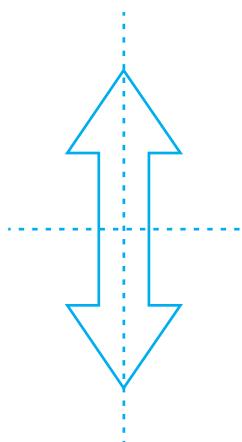
(b)



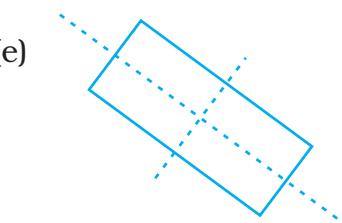
(c)



(d)



(e)



(f)

**119.** (a) Yes (b) Yes (c) No (d) Yes**121.** 2**122.** (a) and (c)**120.** No**123.** d

Extra Question:-

Write the name 5 letter of English alphabet which have no line of symmetry

**124.** F, G, J, L, N, P, Q, R, S, Z,**(D)****Across**

1. ISOMETRIC
2. CENTRE OF ROTATION
3. PARALLEL
4. SPHERE
5. CONE
6. EDGE
7. CIRCLE
8. NET
9. TRIANGULAR PRISM
10. SQUARE

**Down**

not to be republished  
© NCERT