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 → 3, 6 → –2, –7 → 1, 8 → –1, 116. –3, 12

117. (a) → (vi), (b) → (iii), c → (v), d → (vii), e → (viii), f → (iv) g → (ii), h → (ix), i → (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 × 5 = –15

(l) A number of solutions can be possible e.g., 4 × 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 -259^0C, Krypton -157^0C, Oxygen -223^0C, Helium -272^0C, Argon -189^0C **130.** Fatima.

131. Net profit ₹ 27 **132.** (i) 10 (ii) 30 **133.** Since Yash scored 94 marks So, Minimum correct responses = 94 ÷ (+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 rd 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.** 4.5^0F

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^2 **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: $\frac{2}{3} \div \frac{2}{1}$, $\frac{1}{5} \div \frac{1}{2}$

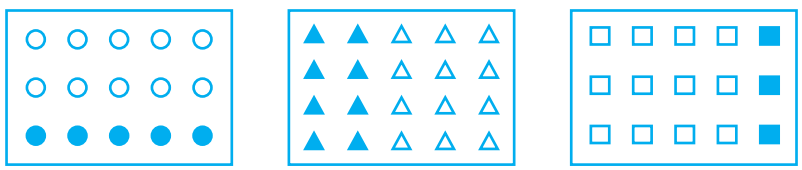
118. 37.5 **119.** $\frac{7}{648}$ **120.** $\frac{3}{2}$ **121.** 500 122. 0.00001

123. Error –0.30 > –0.25

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

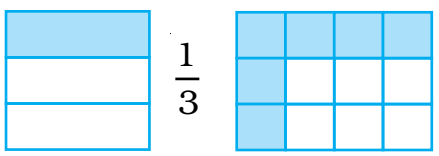
(D)

1.



(a) (b) (c)

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

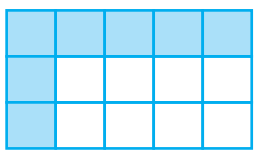


$\frac{1}{3}$

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

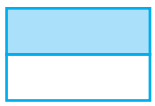
(ii) $\frac{1}{3} \times \frac{1}{5}$

$\frac{1}{3}$

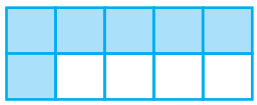


$\frac{1}{3} \times \frac{1}{5} = \frac{1}{15}$

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

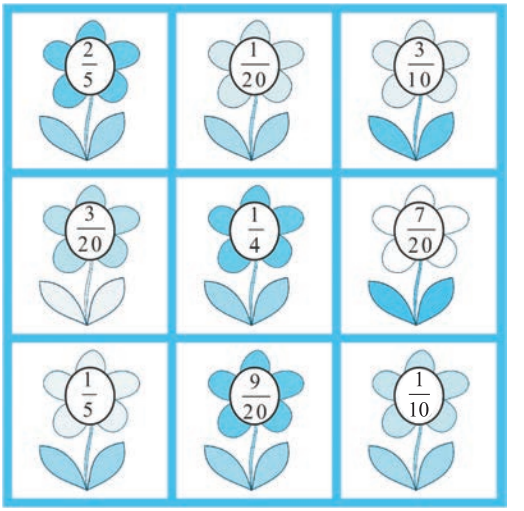


$\frac{1}{2}$



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

3.

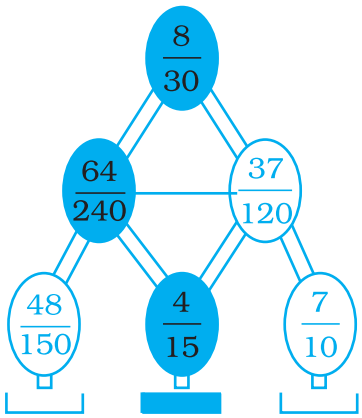


4. Sleep→8hrs, Study→3hrs, Meals→2hrs, School→7hrs and Personal time 4 hrs.

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	_____	_____

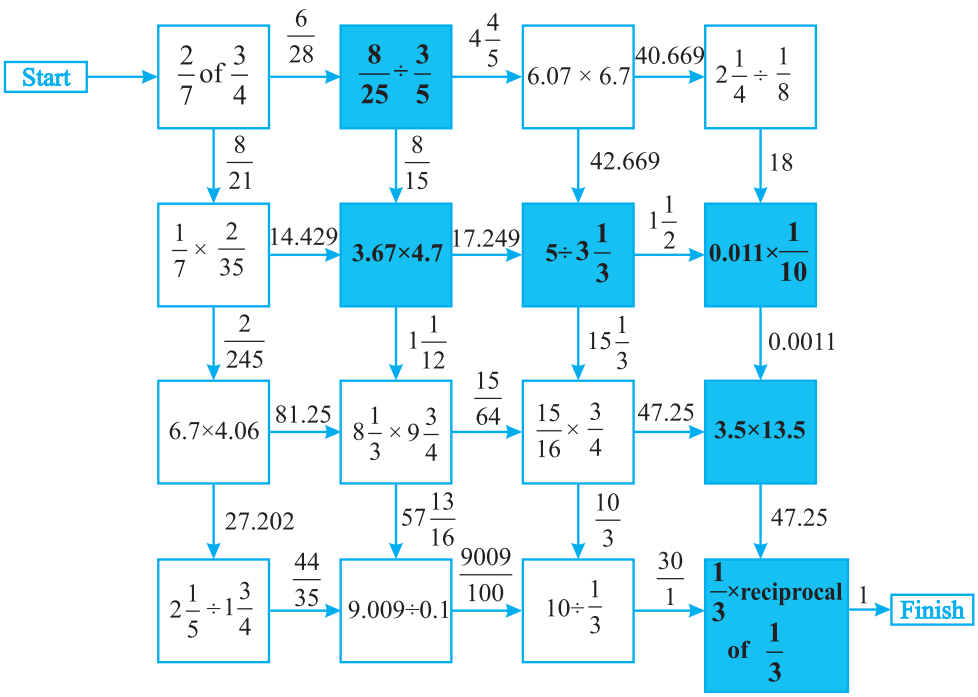
7.



8.

Box 1	Box 2	Box 3
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.

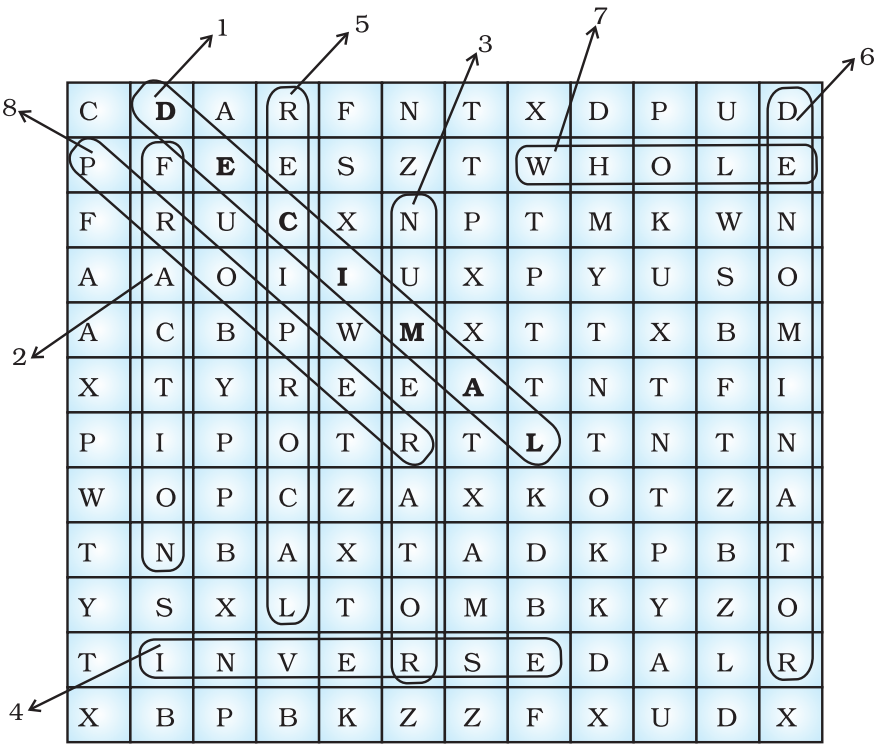


10. 1. 20 cm

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

3. Length of bottom of vertical support = 9 cm
Length of upper of vertical support = 3 cm

11.



C	**D**	A	R	F	N	T	X	D	P	U	D
P	F	**E**	E	S	Z	T	W	H	O	L	E
F	R	U	**C**	X	N	P	T	M	K	W	N
A	A	O	I	**I**	U	X	P	Y	U	S	O
A	C	B	P	W	**M**	X	T	T	X	B	M
X	T	Y	R	E	E	**A**	T	N	T	F	I
P	I	P	O	T	R	T	**L**	T	N	T	N
W	O	P	C	Z	A	X	K	O	T	Z	A
T	N	B	A	X	T	A	D	K	P	B	T
Y	S	X	L	T	O	M	B	K	Y	Z	O
T	I	N	V	E	R	S	E	D	A	L	R
X	B	P	B	K	Z	Z	F	X	U	D	X

12.

Across : 1. Proper
2. Denominator
3. Equivalent
4. Greator
5. Improper
6. One

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

13.

(i) $\frac{1}{2}+\frac{1}{4}$ (ii) $\frac{1}{8}+\frac{1}{2}$ (iii) $\frac{1}{2}+\frac{1}{3}+\frac{1}{12}$ (iv) $\frac{1}{3}+\frac{1}{11}+\frac{1}{231}$ (v) $\frac{1}{1}+\frac{1}{5}+\frac{1}{15}$

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

80. Give the double bar graph here

81. (a) number of students (boys and girls) in different section of Class VII.

(b) 110 boys (c) Sections VII A and VII D

(d) VII B (e) VII C

82. (a) Give the double bar graph here

(b) Thursday (c) 200

83. (a) Give the double bar graph here

(b) VIII (c) X

(d) 13 :14 (e) 10%

84. (a) Give the bar graph here

(b) Saturday (c) 267

(d) 9:20 (e) 44.5

(f) 4 days (Monday, Tuesday, Thursday, Saturday)

85. (a)

Building	Height	No. of stories	Height of each storey
MVRDC	156	35	4.45
Oberoi woods tower II	170	40	4.25
Oberoi woods tower III	170	40	4.25
RNA Nirage	180	40	4.25
Planet Godrej	181	51	3.5
UB Tower	184	20	9.2
Ashok Tower	193	49	3.9
The Imperial I	249	60	4.15
The Imperial II	249	60	4.15

86. (a) Give bar graph here

(b) 84% (c) 81.6%

(d) 34 : 35

(e) Three subjects(English, Hindi and S.Sc.)

(f) Soni, 11 marks

(g) In English and Science 14 marks.

87. (a) Give the double bar graph here

(b) 210 (c) Electronics

(d) Yoga (e) Yoga, Dramatics

(f) Fine Arts

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) ↔ (C) (ii) ↔ (E) (iii) ↔ (F) (iv) ↔ (D) (v) ↔ (B) (vi) ↔ (A)

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.** 35^0, 55^0 **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.** Δ = 7, * = 4

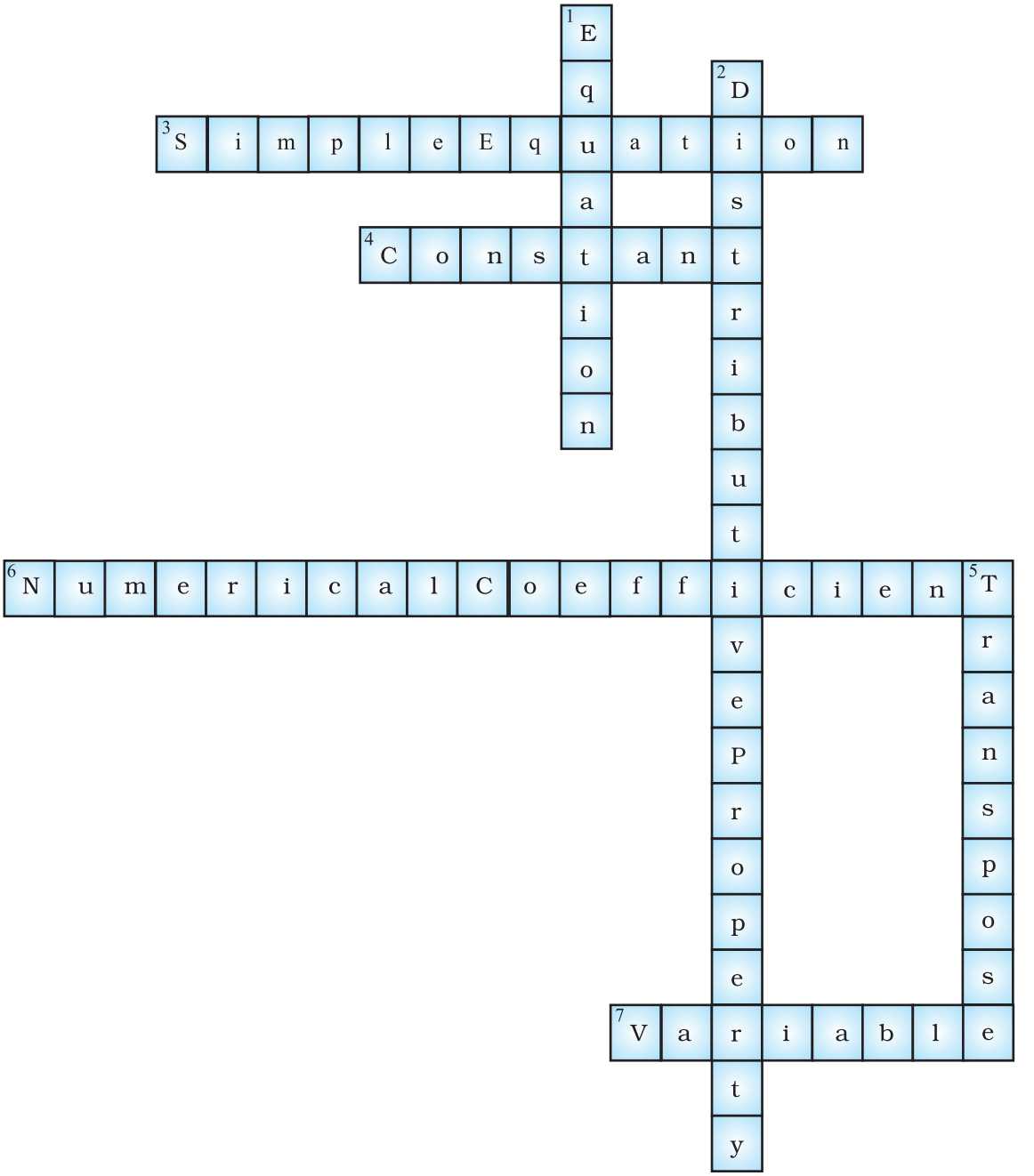
107. ▨ = 6 kg, ◍ = 10 kg

(D)

1.

6 **1**					
1 **9**			10 **7**	**8**	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

1. (b)	**2.** (c)	**3.** (b)	**4.** (b)	**5.** (b)	**6.** (d)
7. (b)	**8.** (d)	**9.** (d)	**10.** (c)	**11.** (d)	**12.** (a)
13. (a)	**14.** (a)	**15.** (b)	**16.** (c)	**17.** (b)	**18.** (a)
19. (a)	**20.** (c)	**21.** (a)	**22.** (b)	**23.** (b)	**24.** (a)
25. (d)	**26.** (d)	**27.** (c)	**28.** (d)	**29.** (b)	**30.** (b)
31. (c)	**32.** (d)	**33.** (a)	**34.** (a)	**35.** (c)	**36.** (b)
37. (d)	**38.** (d)	**39.** (c)	**40.** (b)	**41.** (a)	

42. Complementary **43.** Supplementary **44.** Distinct

45. 180^0 **46.** Arm **47.** Same **48.** Opposite **49.** Parallel

50. Linear **51.** Obtuse **52.** Right angle **53.** Acute **54.** 90^0

55. 45^0 **56.** 60^0 **57.** False **58.** False **59.** False **60.** True

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

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

72. (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) $\angle BOC, \angle AOC$

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

77. 83° **78.** 90°

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°

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

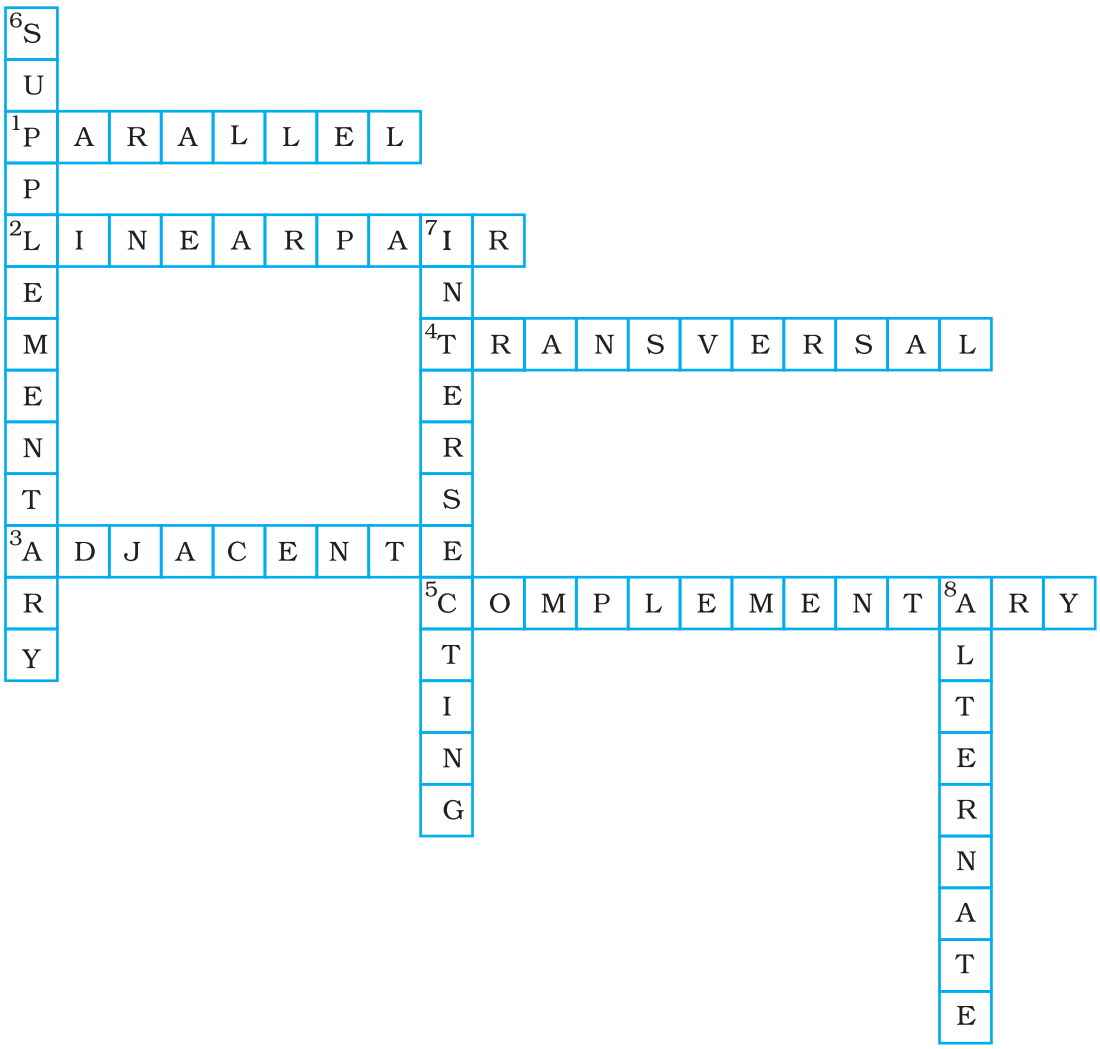
90. (i) 30° (ii) 105° (iii) 75° (iv) 75°

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

93. $\angle AOD = 139°$ **94.** 110° **95.** 44^0, 46° **96.** 100°, 80°

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

(D) 2.



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° **55.** equal **56.** equal **57.** 90° **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.** ΔXZY

65. ΔRSP **66.** ΔDRQ **67.** ΔPQO **68.** (i) ΔADC, (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°, 60°, 20° **108.** 35° **109.** (i) $a = 20°$, $b = 130°$, $c = 50°$, (ii) $a = 65°$, $b = 115°$, $c = 25°$ **110.** $y = 30°$

111. $\angle A = 30°$ **112.** Triangle, Obtuse angled triangle **113.** 10 km

114. 40 m **115.** $\angle Q = 75°$, $\angle R = 75°$ **116.** $\angle x = 75°$, $\angle y = 135°$

117. $\angle PON = 90°$, $\angle NPO = 20°$ **118.** $x = 70°$, $y = 80°$ **119.** 50°

120. 55° **121.** 20°, 80°, 80° **122.** 36°, 54°, 90° **123.** 360°

124. $\angle B = 40°, \angle A = 70°, \angle C = 70°$ **125.** $x = 80°, y = 75°$

126. $x = 20°$ **127.** 70°, 60°, 50° **128.** $x = 30°, y = 40°. z = 110°$

129. $x = 60°, y = 120°, z = 30°$ **130.** 40° and 80°

131. $\angle P = 80°, \angle Q = 60°, \angle R = 40°$ **132.** (i) $\angle F = 50°$ (ii) $\angle EOF = 120°$

133. $\angle S = 90°$

134. (a) not possible (b) $\Delta ABD \cong \Delta CDB$

(c) $\Delta XYZ \cong \Delta LMN$ (d) not possible

(e) $\Delta MNO \cong \Delta PON$ (f) $\Delta AOD \cong \Delta BOC$

135. (a) $\Delta ABD \cong \Delta ACD$ (b) $\Delta XYZ \cong \Delta UZY$

(c) $\Delta ACE \cong \Delta BDE$ (d) $\Delta ABC \cong \Delta CDE$

(e) not possible (f) $\Delta LOM \cong \Delta CDE$

136. $x = 50°$ **137.** $y = 51°, x = 129°$ **138.** Yes **139.** 100cm **140.** $z = 160°$

141. 49 cm, sum of two sides should be greater than third side.

142. (a) $\angle S = \angle D, \angle T = \angle E, \angle U = \angle F,$ ST = DE, TU = EF, SU = DF

(b) $\angle A = \angle L, \angle B = \angle M, \angle C = \angle N,$ AB = LM, BC = MN, AC = LN

(c) $\angle Y = \angle P, \angle Z = \angle Q, \angle X = \angle R,$ YZ = PQ, ZX = QR, YX = PR

(d) $\angle X = \angle M, \angle Y = \angle L, \angle Z = \angle N,$ XY = ML, YZ = LN, XZ = MN

143. (a) $\Delta ABC \cong \Delta NLM$ (b) $\Delta LMN \cong \Delta GHI$

(c) $\Delta LMN \cong \Delta LON$ (d) $\Delta ZYX \cong \Delta WXY$

(e) $\Delta AOB \cong \Delta DOE$ (f) $\Delta STU \cong \Delta SVU$

(g) $\Delta PSR \cong \Delta RQP$ (h) $\Delta STU \cong \Delta PQR$

144. (a) AB = AC, BD = CD, AD = AD

(b) Yes, (SSS)

145. (a) LM = ON, LN = OM, MN = NM

(b) Yes, (SSS)

146. Yes, SSS, $\angle N = 40°$ 147. Yes, (SSS)

148.(i) $\Delta PQR \cong \Delta TUS$ (ii) Not congruent

(iii) $\Delta BCD \cong \Delta BAE$ (iv) $\Delta STU \cong \Delta XZY$

(v) $\Delta DOF \cong \Delta HOC$ (vi) Not congruent

(vii) $\Delta PSQ \cong \Delta RQS$ (viii) $\Delta LMN \cong \Delta OMN$

149.(i) $\Delta PQR \cong \Delta STU$ (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)

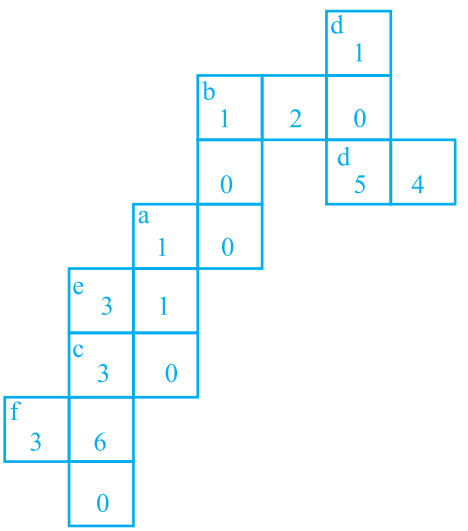
(ii) Yes, CPCT

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

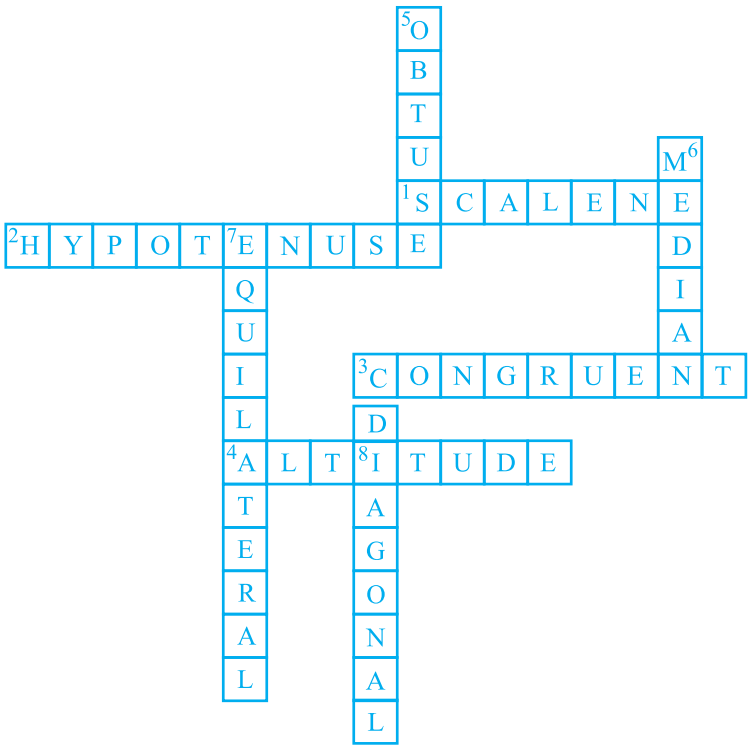
158.AB = EO, $\angle ABC = \angle EOD = 90°$, CA = DE, yes, (RHS)

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

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

134. ₹ 12,000 **135.** ₹ 5,000 **137.** 45

138. a) Mean = 1435000km^2, Median = 475000km^2, Mode = 3,10,000 km^2

b) 4.19 c) 50% d) 21.1% **139.** 44528685 km^2

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

(ii)

Across		Down	
1.	20	6.	32
2.	1520	7.	6000
3.	72	8.	75
4.	3000	2.	1200
5.	25	9.	490
		10.	9000
		4.	385
		5.	216

(iii)

Across		Down	
1.	50	2.	24
2	240	5.	104
3.	5	6.	40
4.	300	7.	9

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 ÷ 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 ↔ (c), (ii) ↔ (e), (iii) ↔ (a), (iv) ↔ (b), (v) ↔ (d)

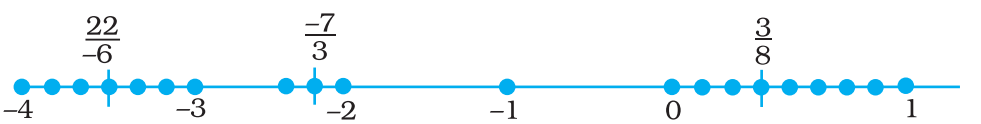
67. $\frac{-5}{8}, \frac{-15}{28}, \frac{17}{13}$ **68.** (i) $\frac{27}{36}$ (ii) $\frac{-60}{-80}$

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		√	√	√	√

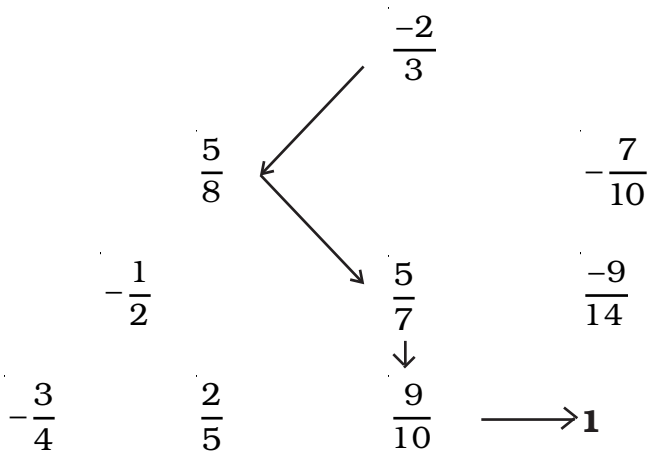
103. $\frac{49}{51}$, 99 **104.** 45 **105.** 7 : 2; $\frac{7}{2}$ **106.** (d) **107.** (c)

108. (b) **109.** (a)

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

(D)

1.



2.

$\frac{-1}{4}$	$\frac{-1}{6}$
$-\frac{3}{8}$	$-\frac{11}{60}$
$\frac{-1}{2}$	$\frac{-1}{5}$
$-\frac{5}{12}$	$-\frac{12}{70}$
$\frac{-1}{3}$	$\frac{-1}{7}$

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

1. (a)	**2.** (c)	**3.** (b)	**4.** (b)	**5.** (c)	**6.** (d)
7. (d)	**8.** (a)	**9.** (d)	**10.** (c)	**11.** (a)	**12.** (c)
13. (c)	**14.** (a)	**15.** (a)	**16.** (c)	**17.** (a)	**18.** (b)
19. (c)	**20.** (c)	**21.** (b)	**22.** (c)	**23.** (d)	**24.** (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.** $18cm^2$

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

45. π **46.** 9 **47.** $3.14/\frac{22}{7}$ **48.** π **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.** $64m^2$ **76.** $16.25m^2$ **77.** 24 m **78.** 8cm, $20cm^2$

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

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

87. 6 cm **88.** 32 cm **89.** l = 9m, and m = 15m, other side = 30m

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

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

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

100. Yes, It increases by 32 cm

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

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

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

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

112. (a) $188.68m^2$, (b) Rs 67776.80, (c) 62.6m (d) 251

113. (a) $(5x + 65)m^2$ (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. 31.5m² **115.** 9086m² **116.** ₹ 1530 **117.** 1320cm²

118. 1000cm² **119.** Area in both cases is 86 cm² **120.** 144

121. 57 m **122.** 35 cm², 2.8 cm **123.** 108 **124.** 40 cm²

125. (i) ₹ 4440 (ii) ₹ 69600 (iii) 22m² **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 cm² **128.** 7550 cm² **129.** 7mm **130.** 2411520 km

131. ₹497.64

(D)

1. (i) 87.78 m (ii) 436.64 m² (iii) 10.50 m² (iv) 2.62 m² (v) 7.88m²

2. (i) 39 m (ii) 81.74 m² (iii) 12.238 m² (iv) 10.26 m²

3. (i) 32 m² (ii) 13050 m² (iii) 470 m

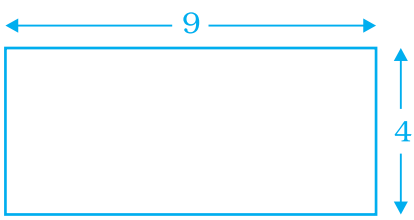
4. (i) 1344.15 m² (ii) 293.2 m

5.

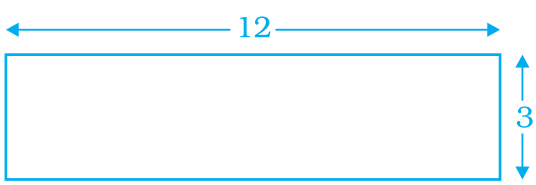
	Radius	Diameter	Circumference
Foot ball	11.3 cm	22.6 cm	71 cm
Basket ball	12.4 cm	24.8 cm	77.872 cm
Cricket ball	3.66 cm	7.32 cm	23 cm
Volley ball	10.3 cm	20.6 cm	64.684 cm
Hockey ball	3.565 cm	7.13 cm	22.4 cm
Lawn Tennis ball	3.175 cm	6.35 cm	19.939 cm
Shot put	65 mm	130 mm	408.2 mm

6.

(i)

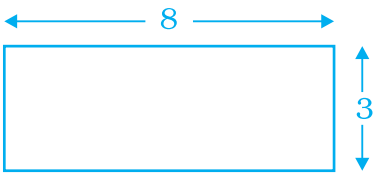


Area = 36
Perimeter = 26

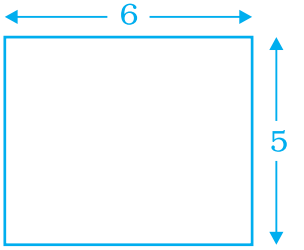


Area = 36
Perimeter = 30

(ii)

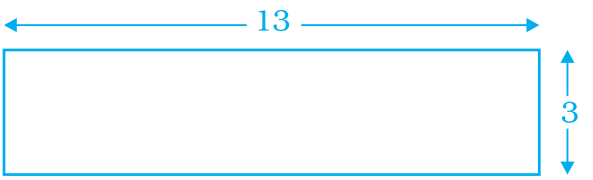


Area = 24
Perimeter = 22

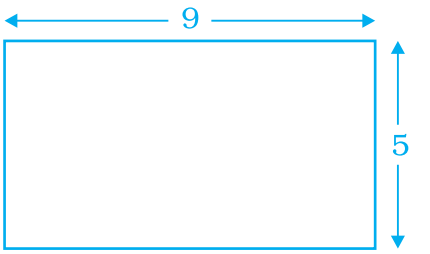


Area = 30
Perimeter = 22

(iii)

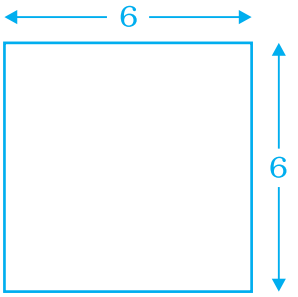


Area = 39
Perimeter = 32

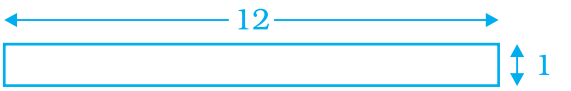


Area = 45
Perimeter = 28

(iv)

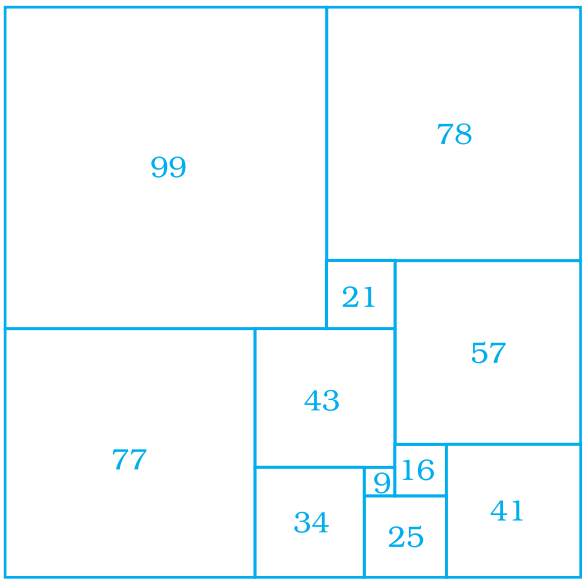


Area = 36
Perimeter = 24



Area = 12
Perimeter = 26

7.



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

Unit 10

1. (c) **2.** (c) **3.** (a) **4.** (c) **5.** (d) **6.** (b)

7. (d) **8.** (a) **9.** (c) **10.** (a) **11.** (c) **12.** (a)

13. (d) **14.** (a) **15.** (d) **16.** (d) **17.** a like term

18. π **19.** like **20.** Unlike **21.** r **22.** one

23. n, $6n$ **24.** constant **25.** $55y$ **26.** binomial **27.** $2x^2$

28. $b + c$ **29.** $2y$, $2y^2$ **30.** $2x$ or $-4y^2$ or $-z$ **31.** $-23x^2$

32. $15xy$ **33.** T **34.** F **35.** T **36.** F **37.** 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) $y^3 - y - 22$

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. $y\left[x - \frac{1}{2}z\right]$ **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) $\frac{1}{4}(x + 7)$, $\frac{1}{4}(7 + x)$ (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)

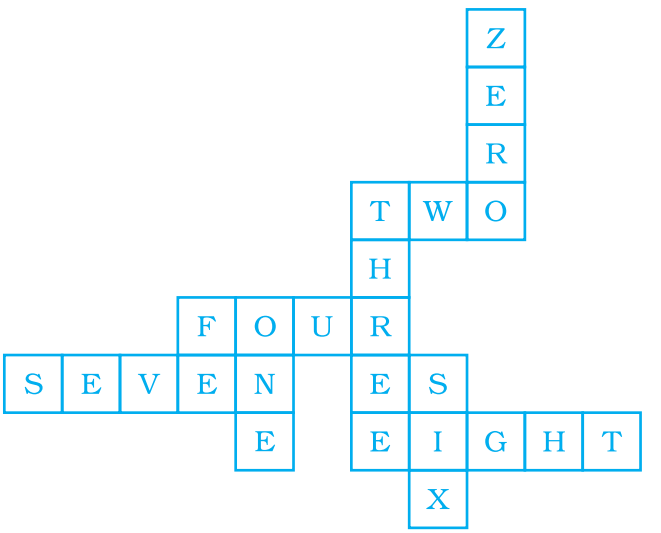
99. Expression : $24 + 4(a - 2)$, 'a' stands for the present age of dog or cat

Age	**[24 + 4(a – 2)]**	**Age (Human Years)**
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}, $\frac{3^5}{3^2}$, $3^2 \times 3^0$, 2×2^2

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) 3×7^3 (c) $\frac{3^2 \times 2^4}{5^3 \times 7}$ **79.** (a) 2^6 (b) 2^9 (c) 5.28×10^5

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) 7.647×10^6 (b) 8.19×10^7 (c) 5.83×10^{11} (d) 2.4×10^{10}

83. 1.44×10^{11}m

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

(d) a^7 (e) $\left(\frac{3}{5}\right)^5$ (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) 6×10^1 (2) 3.6×10^3 (3) 8.64×10^4 (4) 2.6×10^6 (5) 3.2×10^7

(6) 3.2×10^8

89. 12 : 5 **90.** c = 3 **91.** (a) 9.46×10^{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) 1×10^{100} (b) 10^{200} **97.** He has left power of 3 which is 5.

(D)

Down 1.

2.

3.

4.

5.

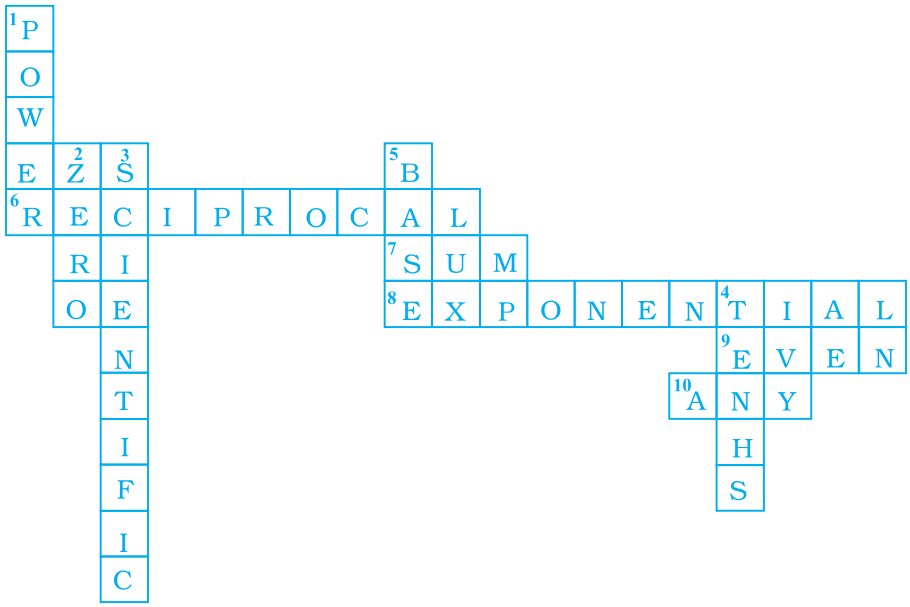
Across 6.

7.

8.

9.

10.



Activities 2

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

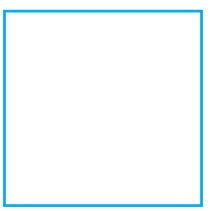
75. True **76.** False **77.** True **78.** False **79.** True **80.** False

81. True **82.** False **83.** False **84.** True **85.** False **86.** True

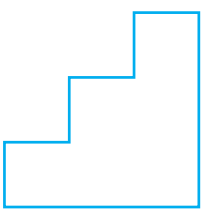
87. False **88.** True **89.** False **90.** True **91.** False **92.** False

93.

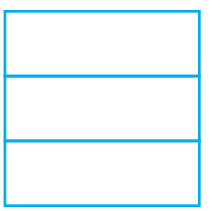
(i) Top



Side view



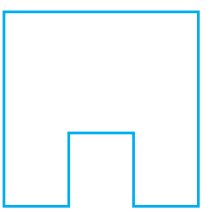
Front view



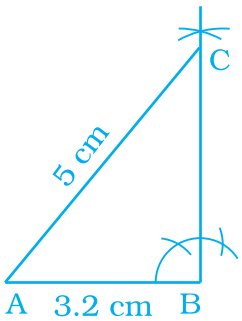
(ii) Top

Side

Front



95.



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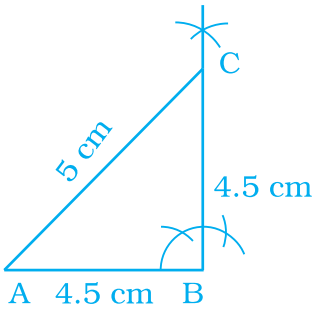

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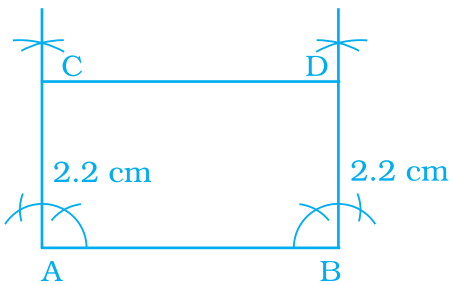

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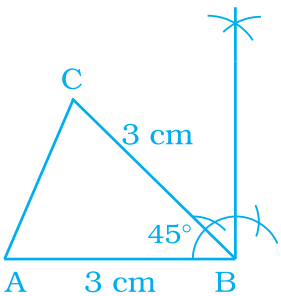

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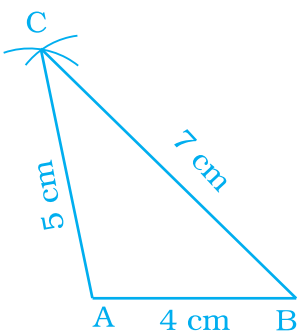
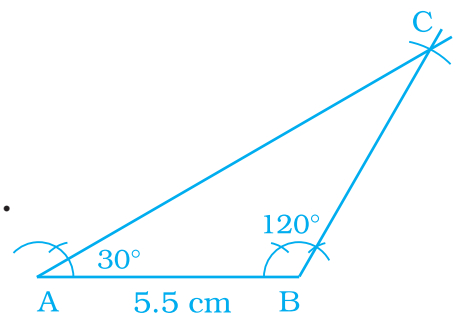
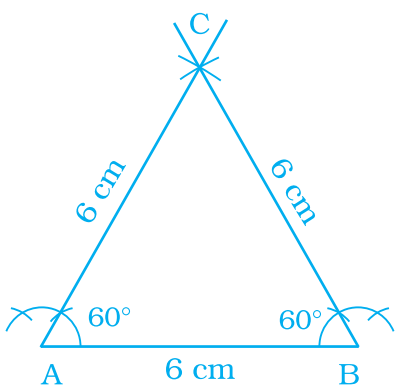


100.



101.



102. 60°

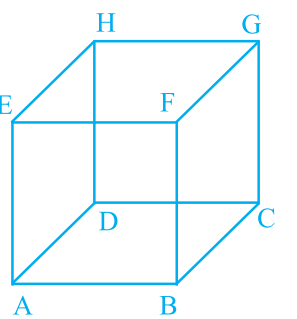
103.

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

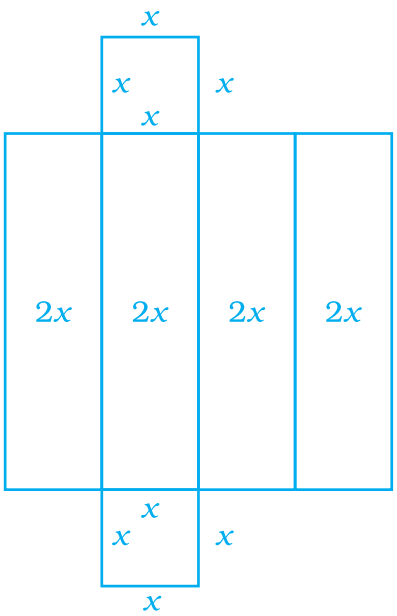
104. (i) EF (ii) ABFE, BFGC (iii) ABEF, ABCD, ADHE

(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

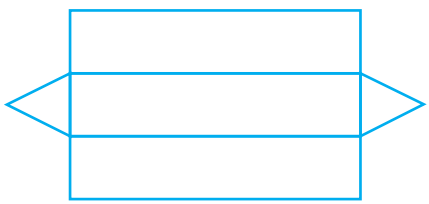


105.

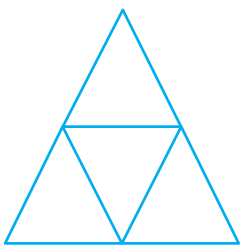


106.

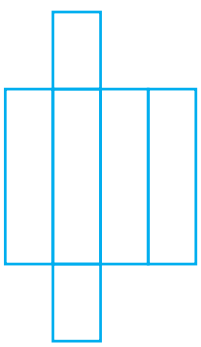
(i) Triangle prism



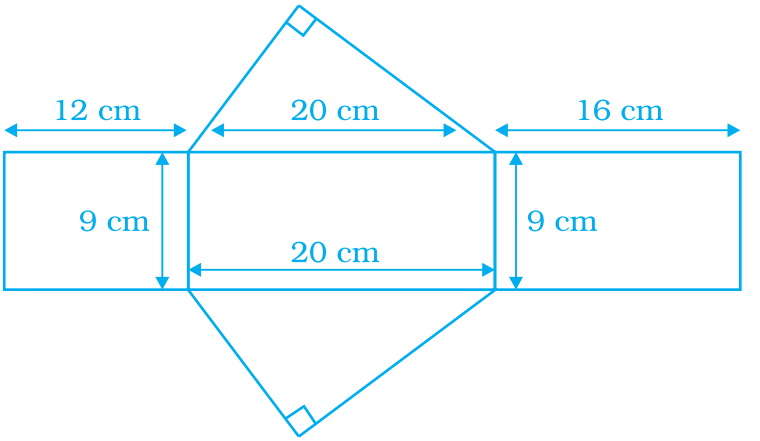
(ii)



(iii)

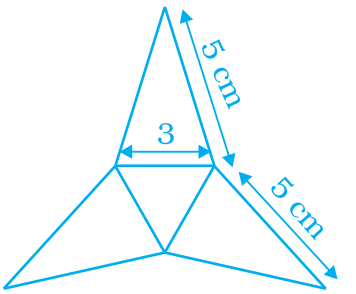


107.

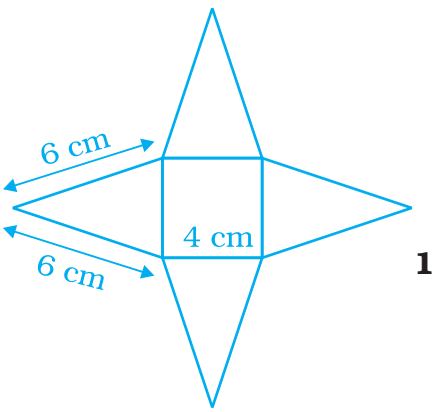


109. (i) HG (ii) CD

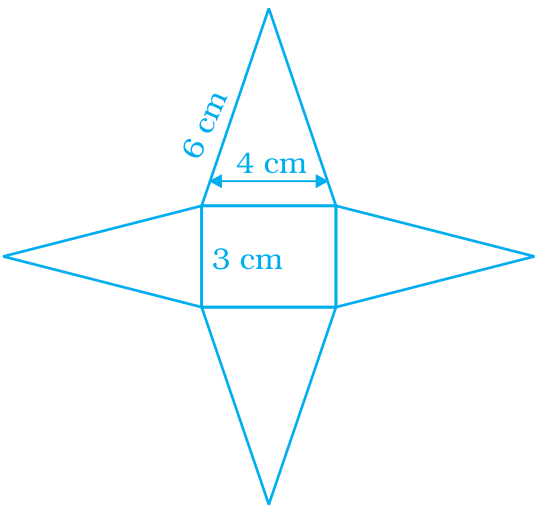
110.



111.



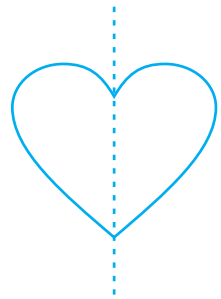
112.



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

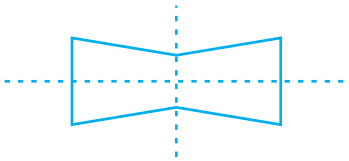
114.

(a) (b) (c)



One line of symmetry

No line of symmetry

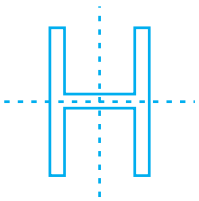


Two line symmetry

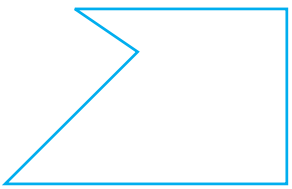
115. 16

116.

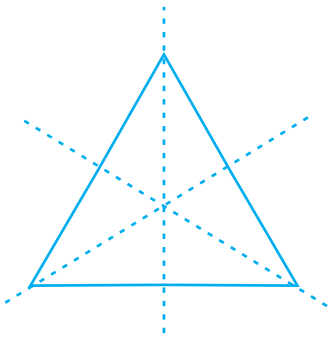
(a) (b) (c)



2 lines of symmetry



No line of symmetry



3 lines of symmetry

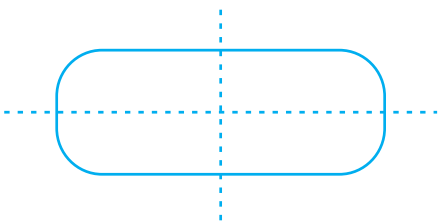
117.

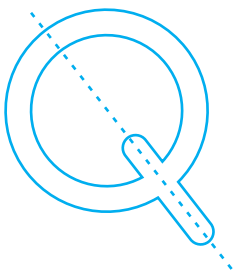
(a) Yes (b) No (c) Yes

(d) Yes (e) Yes (f) Yes

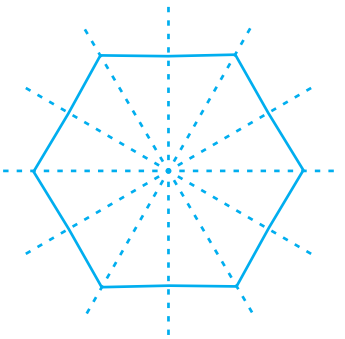
118-

(a) (b)

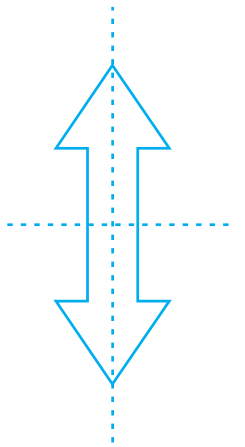




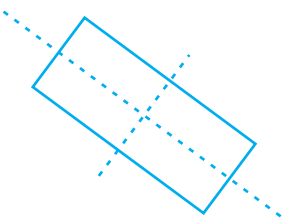
(c)



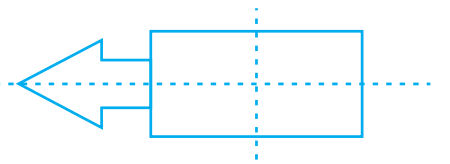
(d)



(e)



(f)



119. (a) Yes (b) Yes (c) No (d) Yes **120.** No

121. 2 **122.** (a) and (c) **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		**Down**	
1.	ISOMETRIC	2.	CENTRE OF ROTATION
3.	PARALLEL	4.	SPHERE
5.	CONE	6.	EDGE
7.	CIRCLE	8.	NET
9.	TRIANGULAR PRISM	10.	SQUARE

Notes