

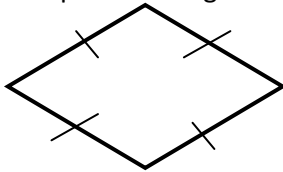
Answers to CUPA-Class VII

Section-A

1. (b) $\angle 2, \angle 3$ (1 Mark)
2. (b) Bisect angle between 90° and 180° (1 Mark)
3. (c) Rectangle (1 Mark)
4. (b) 18189 (1 Mark)
5. (a) $\frac{6}{9}$ (1 Mark)
6. (b) a square of side 10 cm (1 Mark)
7. (c) Become four times (1 Mark)
8. (d) $5a$ (1 Mark)
9. (a) $6(x+4)$ (1 Mark)
10. (a) There are more girls than boys (1 Mark)
11. (b) 100 cm (1 Mark)
12. (c) Tally marks are not grouped into fives (1 Mark)
13. 60 crore (1 Mark)

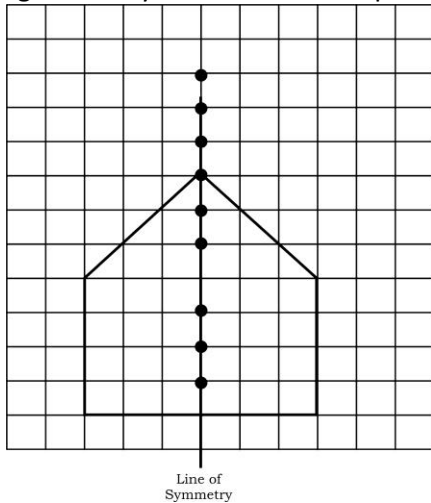
Section-B

14. When opened the figure would look like the given figure: (1 Mark)



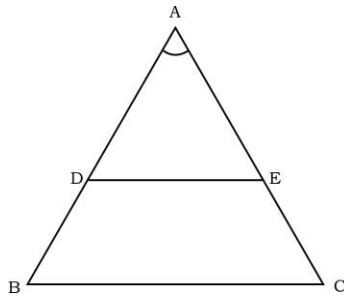
The symmetrical figure so obtained is a **Rhombus**. (1 Mark)

15. One of the exemplar answers is shown in the figure. However, a child could join the incomplete figure to any of the mentioned points.



(1 Mark for completing the figure + 1 Mark for making line of symmetry)

16. There can be multiple right answers. One exemplar answer is given.



$\triangle ABC$ and $\triangle ADE$
have a common angle i.e. $\angle A$

(1 Mark for making triangles with common angle + 1 Mark for naming the triangles)

17. $m\angle AOB = 70^\circ$

$m\angle COD = 60^\circ$

$m\angle AOD = 100^\circ$

$m\angle COB = m\angle AOB + m\angle COD - m\angle AOD$ (1 Mark)

$= 70^\circ + 60^\circ - 100^\circ$

$= 130^\circ - 100^\circ$

$= 30^\circ$

$m\angle COB = 30^\circ$ (1 Mark)

18. The number of sides in an octagon is eight/8 and the number of its diagonals is twenty/20.

(1 Mark + 1 Mark)

19. The sum of the digits is 5.

So, the digits can be (1,1,3) or (1,2,2)

But on interchanging the ones and hundreds digits the number is again prime. So, the ones and hundreds digit should be odd. Therefore, (1,2,2) cannot be the right choice. (1 Mark)

With 1,1,3 we can have following three digit numbers 131,113,311 and all are prime.

Also, 113 \leftrightarrow 311 are obtained by interchanging ones and hundreds digit.

Thus, The number is 131 or 311 or 113. (1 Mark)

20. No, the sum is not correct. (0.5 Mark)

$$\frac{3}{5} + \frac{3}{11}$$

LCM of 5 and 11 is 55 (0.5 Mark)

$$\frac{3}{5} + \frac{3}{11} = \frac{33+15}{55} = \frac{48}{55}$$

(1 Mark)

21.

The L.C.M of 2,3 and 4 is 12 and converting into like fractions

$$\frac{1}{2} = \frac{6}{12}, \frac{2}{3} = \frac{8}{12} \text{ and } \frac{3}{4} = \frac{9}{12}$$

(1 Mark)

Since, $6 < 8 < 9$

$$\frac{6}{12} < \frac{8}{12} < \frac{9}{12}$$

So, $\frac{1}{2} < \frac{2}{3} < \frac{3}{4}$

(1 mark)

22. a second

(1 Mark)

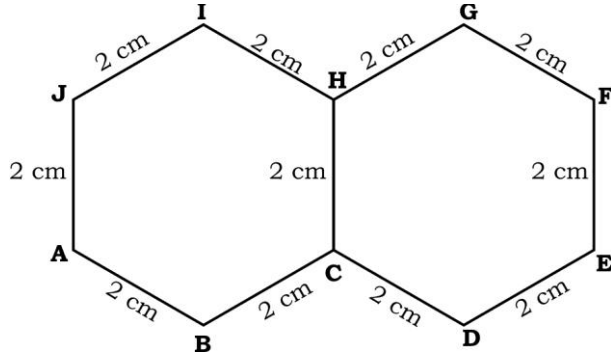
$\frac{1}{24}$ of a day = 1 hour

$\frac{1}{60}$ of an hour = 1 minute

(1 mark for working)

$\frac{1}{60}$ of a minute = 1 second

23.



$$\begin{aligned} \text{Perimeter} &= AB + BC + CD + DE + EF + FG + GH + HI + IJ + AJ \\ &= 2+2+2+2+2+2+2+2+2+2 = \underline{20} \text{ cm} \end{aligned}$$

(1 Mark)

(1 Mark)

24. Equation: $Y = 2X - 1$

(1 Mark)

Missing Number = 7

(1 Mark)

25.

No. of Matchsticks	No. of Triangles
3	1
5	2
7	3

So, Number of triangles = $\frac{1}{2}$ (number of matchsticks - 1)

(1 Mark)

So, for 11 matchsticks

Number of triangles = $\frac{1}{2}$ (11 - 1) = **5 (five)** triangles

(1 Mark)

(Marks may also be awarded if the child writes the answers by drawing the triangles)

26. Cost of 15 notebooks = Rs. 420

Cost of 1 notebook = Rs. $420 \div 15$

= Rs. 28

(1 Mark)

Number of books to be bought for Rs. 150 = Rs. $150 \div 28$

= 5 (+Rs. 10 would be left)

(1 Mark)

So, he can buy 5 more notebooks with Rs. 150.

(Full marks may be awarded for any other logical and mathematically correct working.)

27. (b) $\frac{2}{3}, \frac{4}{6}$ and (c) $\frac{8}{4}, \frac{2}{1}$ are pairs of equal ratios.

(1 mark)

Reason: $\frac{2}{3}$ and $\frac{4}{6}$ are equivalent fractions. Also, $\frac{8}{4}$ and $\frac{2}{1}$ are equivalent fractions. (1 Mark)

28. 10:21 can be written as $\frac{10}{21}$ and 21:93 can be written as $\frac{21}{93}$

Now comparing the two fractions

$$\frac{10}{21} \times \frac{93}{93} = \frac{930}{21 \times 93} \quad \text{and} \quad \frac{21}{93} \times \frac{21}{21} = \frac{441}{21 \times 93} \quad (1 \text{ Mark})$$

Since, $930 > 441$ So, $\frac{10}{21} > \frac{21}{93}$

Therefore, 10:21 is larger than 21:93. (1 Mark)

29. For preparing 1 kg cake, 800 g flour is used.

So, for preparing 3.5 Kg cake, flour used = $800 \text{ g} \times 3.5 = 2800 \text{ g}$ or **2.8 Kg** (1 Mark)

For preparing 1 kg cake, 100 g sugar is used.

So, for preparing 3.5 Kg cake, sugar used = $100 \text{ g} \times 3.5 = 350 \text{ g}$ (1 Mark)

30. Marks in making the pictograph may be bifurcated as follows:

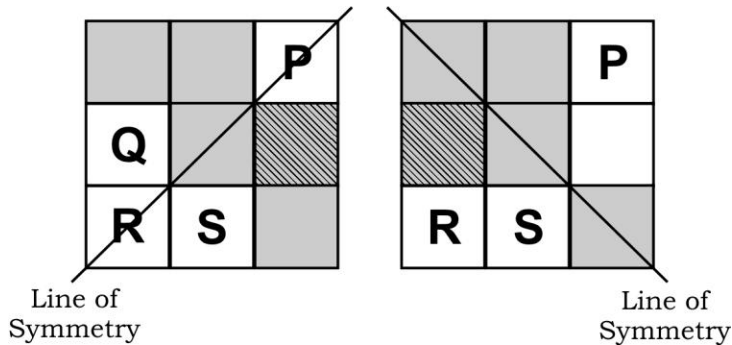
(a) for choosing the suitable scale (0.5 Mark)

(b) for drawing the correct number of pictures in the three columns. (3×0.5 Mark = 1.5 Mark)

Section C (3 Marks)

31. Minimum number of squares to be shaded = 1 (1 Mark)

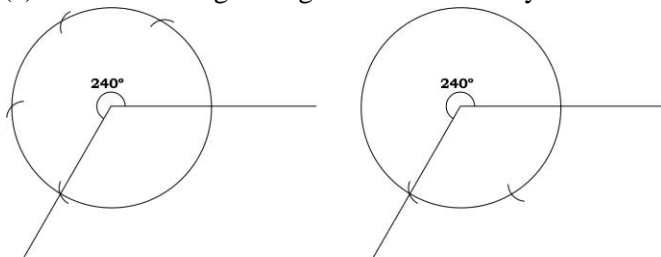
Possible answers:



(1 Mark for shading the square + 1 Mark for drawing the line of symmetry)

32. Marks in the construction may be bifurcated as follows:

(a) for constructing an angle of 240° correctly (2 Marks)



(b) for labeling the angle (1 Mark)

33. Neither Harish nor Manika would be successful in making the triangle. (1 Mark)

Harish's triangle: The angles given are 120° , 30° and 60°

So, $120^\circ + 30^\circ + 60^\circ = 210^\circ$, but the sum of all angles of a triangle cannot be greater than 180° . (1 Mark)

Manika's triangle: The sides given are 2 cm, 3 cm and 7 cm.

2 cm + 3 cm = 5 cm which is less than the third side, whereas the sum of two sides of the triangle should be greater than the third side. (1 Mark)

(Note: If a child is able to recognize why the above mentioned triangles cannot be constructed and is able to show in any other way, marks may be awarded.)

34. Yes, $AC=BD$. (1 Mark)

Since, it is given $AB=CD$

So, adding the length BC to both sides

$AB+BC= BC+CD$ (1 Mark)

$AC=BD$ (1 Mark)

35. Common factors= 2, 5 and 7

L.C.M. of 2,5 and 7=70 (1 Mark)

Numbers= 70, 140, 210, 280, 350 and so on. (1 Mark)

Choosing and writing any 3 multiples of 70. (1 Mark)

36. (a) 0°C to 10°C show the minimum rise in temperature as the difference in temperature is 10°C . (1 Mark)

Difference in temp in (a)= $10^\circ\text{C} - 0^\circ\text{C} = 10^\circ\text{C}$

Difference in temp in (b)= $8^\circ\text{C} - (-4)^\circ\text{C} = 12^\circ\text{C}$

Difference in temp in (b)= $14^\circ\text{C} - (-15)^\circ\text{C} = 29^\circ\text{C}$ (2 Marks for explanation)

(Note: If a child is able to communicate the reason through any other logical and mathematically correct explanation, marks may be awarded)

37. (i) There could be many set of four integers whose sum is equal to 3.

Exemplar answers could be (-2,0,2,3), (6,4,-5,-2), etc. (2×1 Mark=2 Marks)

(ii) 2 or 5 or 8 could come in the blank. A child could write any of the 3 numbers. (1 Mark)

38. Number of calculators = 30

Number of batteries in one calculator= 5

Total batteries required= $30 \times 5 = 150$ batteries (1.5 Marks)

Number of batteries in 1 pack = 15

Number of packs required = $150 \div 15$
=10 packs (1.5 Marks)

39. A child could draw rectangles with $l=3$ cm, $b=1$ cm and $l=1$ cm, $b=3$ cm and squares with side 2 cm on the grid. (3×1 Mark=3 Marks)

40. Meera's daily expenditure = x
So Meera's weekly expenditure = $7x$ (1 Mark)

Meera's saving per week = y
Income (per week) = Expenditure + Saving
= $7x + y$ (1 Mark)

Income after 3 weeks = $3(7x + y) = 21x + 3y$ (1 Mark)

Alternate Way:

Meera's daily expenditure = x

Meera's weekly expenditure = $7x$

So, Meera's expenditure after 3 weeks = $3 \times 7x = 21x$ (1 Mark)

Meera's saving per week = y

Meera's saving after 3 weeks = $3y$ (1 Mark)

Income after 3 weeks = Expenditure + Saving
= $21x + 3y$ (1 Mark)

41. (a) Number of students getting less than 20 marks
= Students getting less than 10 marks + Students getting marks between 10 and 20
= $20 + 10 = 30$ students (1 Mark)

(b) Number of students getting marks between 10 and 49
= Students getting marks between 10 and 19 + Students getting marks between 20 and 29 + Students getting marks between 30 and 39 + Students getting marks between 40 and 49
= $10 + 20 + 30 + 15$
= 75 students (1 Mark)

(c) Students getting 100% marks
= students getting 50 marks
= 5 students (1 Mark)

SECTION D (5 Marks)

42. There can be many ways of doing the calculations without using the digit '7'.

(Full marks may be awarded for logical and mathematical correct answers)

Exemplar solution is given:

1) $3945 + 56 + 1$ or $3945 + 55 + 2$ (2 Marks)

2) $456 \times 96 + 456$ or $456 \times 100 - 456 \times 3$ (3 Marks)

43. Factors of the numbers are 2, 3, 4, 5, 6 and 7

L.C.M.(2, 3, 4, 5, 6, 7) = 420

So the numbers nearest to 10,000 which are exactly divisible by each of 2, 3, 4, 5, 6 and 7 are multiples of 420 nearest to 10,000.

So, the numbers are 9,660 (420×23) and 10,080 (420×24).

(3 marks for working + 2 Marks for writing the two numbers)

44. Construction may be bifurcated as follows:

- (a) Constructing a circle (1 Mark)
- (b) Constructing two chords of a circle (1 Mark)
- (c) Constructing the perpendicular bisectors of the two chords (2 Marks)
- (d) Naming the point of intersection as 'Centre' (1 Mark)

45. (a) (i) **Parallelogram** (1 Mark)

$AB \parallel CD \Rightarrow$ one pair of opposite sides are parallel

$AD \parallel BC \Rightarrow$ another pair of opposite sides is also parallel

$\angle DAB = 60^\circ$

In ABCD opposite sides are parallel \Rightarrow ABCD is a non-rectangular parallelogram

(0.5 Mark for drawing the figure or showing the working)

(ii) **Rectangle** (1 Mark)

$AB = CD \Rightarrow$ one pair of opposite sides is equal

$AD = BC \Rightarrow$ another pair of opposite sides is also equal

AD is perpendicular to AB

In ABCD opposite sides are equal and adjacent sides are perpendicular \Rightarrow ABCD is a rectangle

(0.5 Mark for drawing the figure or showing the working)

(b) Angle formed by a circle at its centre = 360° (1 Mark)

Number of angles formed by 24 spokes = 24

Measure of each angle = $360^\circ \div 24$

= 15°

(1 Mark)