MATHEMATICS

OLYMPIAD

Mock Test 1

Name : _____ Max. Marks : 50

Number of Questions : 50 Time : 2 Hours

There is no negative marking in the test.

1. Find the difference between largest and smallest 5 digit number.
   (a) 89900 (b) 89999
   (c) 89998 (d) All of these
2. Keeping the place of 6 in the number 6350947 same, the smallest number obtained by rearranging other digits is.
   (a) 6975430 (b) 6043579
   (c) 6034579 (d) 6034579
3. Find the surface area of a chalk box whose length, breadth and height are 10cm, 6cm and 3cm respectively.
   (a) 117 cm^2 (b) 275 cm^2
   (c) 216 cm^2 (d) All of these
4. The ratio between the rates of walking of A and B is 2 : 3 and therefore A takes 10 minutes more than the time taken by B to reach the destination. If A had walked at double the speed, then in what time would he have covered that distance?
   (a) 9 min. (b) 14 min.
   (c) 15 min. (d) 19 min.
5. If the denominator of a fraction is 1 more than thrice its numerator and if the numerator is increased by one and denominator is reduced by two then its value is 0.5. Find the fraction.
   (a) $\frac{1}{2}$ (b) $\frac{4}{13}$
   (c) $\frac{3}{10}$ (d) $\frac{2}{7}$
6. If A to the sout h of B and C is to the east of B, in what direction is A with respect to C?

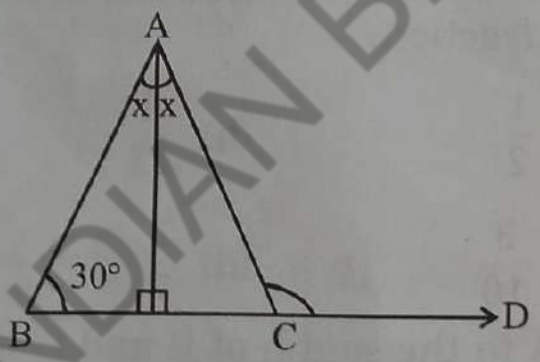
(a) North-east (b) North-west
(c) South-east (d) South-west

7. Mother asked Neelu and her brother to pick stones from the wheat. Neelu picked one fourth of the total stone in it and her brother also picked up one fourth of the stones. What fraction of the stone did both pick up together ?

(a) $\frac{1}{6}$ (b) $\frac{1}{2}$
(c) $\frac{3}{4}$ (d) $\frac{5}{2}$

8. Cost of 1 dozen pens is ₹180 and cost of 8 ball pens is ₹56. Find the ratio of cost of a pen to the cost of a ball pen.
(a) 7 : 8 (b) 15 : 7
(c) 7 : 17 (d) 15 : 8

9. Measure of angle ∠ACD in the given figure is



(a) 130° (b) 120°
(c) 150° (d) 115°

10. K 1, M 3, P 5, T 7, ?
(a) Y 9 (b) Y 11
(c) V 9 (d) V 11

11. A worker reaches his work place 15 minutes late when he walks at a speed of 4 km/h from his house. The next day he increases his speed by 2 km/h and reaches his work place on time. Find the distance from his house to his workplace.
(a) 4 km (b) 2 km
(c) 3 km (d) 6 km

12. Consider the following two statements.
Statement 1: The division of two unlike terms, without constant can not be reduced to its lowest term.
Statement 2: The product of two unlike terms is square of each of the term.
(a) Statement 1 and 2 are true
(b) Statement 1 is true and 2 is false
(c) Statement 1 is false and 2 is true
(d) All of these

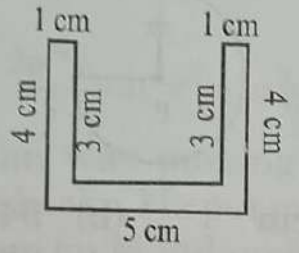
13. Roman numeral for the greatest three digit number is
(a) IXIXIX (b) CMIXIX
(c) CMXCIX (d) CMIIC

14. The smallest number of 4-digits exactly divisible by 12, 15, 20 and 35 is

(a) 1000 (b) 1160
(c) 1260 (d) None of these

15. The circle has :
(a) one line of symmetry
(b) two lines of symmetry
(c) three lines of symmetry
(d) many lines of symmetry

16. Find the area of the figure shown below.

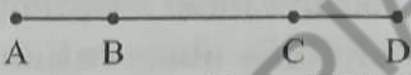


(a) 9 sq cm (b) 10 sq cm
(c) 11 sq cm (d) 15 sq cm

17. The value of $-8-2\,[6+4\{7-(2.8+1.4)\}]$ is :
(a) -34.4 (b) -42.4
(c) $+42.4$ (d) -34.4

18. Three boys step off together from the same spot. Their steps measure 63 cm, 70 cm and 77cm, respectively. What is the minimum distance each should cover, so that all can cover the distance in complete steps?
(a) 8228 (b) 2116
(c) 4320 (d) 6930

19. On a straight road four cities are there A, B, C and D

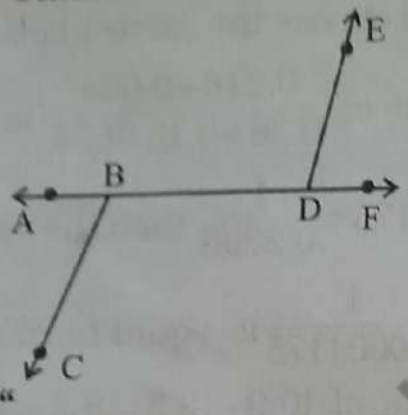


Distance between B and D is 39 km, between A and C is 27 km and between C and D is 15 km. How far is A from B?
(a) 6 km (b) 3 km
(c) 24 km (d) 12 km

20. Read the following statements carefully and choose the correct option.
(i) Value of $\frac{0.216+0.064}{0.36+0.16-0.24}$ is 1.
(ii) If $4.175=\frac{1}{0.2395}$ then the value of $\frac{1}{0.0004175}$ is equal to 2935.
(iii) Value of $[0.9-\{2.3-3.2-(7.1-5.4-3.5)\}]$ is 0.
(a) (i) and (ii) are true while (iii) is false.
(b) (i) and (iii) are true while (ii) is false.
(c) (ii) and (iii) are true while (i) is false.
(d) All the given (i), (ii) and (iii) are true.

21. Mean of a set of observations is the value which
    (a) occurs most frequently
    (b) divides observation into two equal parts
    (c) is a representative of the whole group
    (d) is the sum of observations

22. Read the information about the given figure and choose the false statement.



"$\angle ABC = 30°$, $\angle EDF = (40 - x°)$ and $\angle ADE = 13x + 20°$".
    (a) $\angle ABC = \angle EDF$
    (b) $\angle DBC + \angle EDF = 180°$
    (c) $BC \parallel DE$
    (d) $\angle BDE$ and $\angle DBC$ are supplementary angles.

23. Observe the figure carefully and answer the question. In the given figure, O and P are the centres of two equal three-quarter circles. The length of OP is 14 cm. The perimeter of the figure is $\left(\text{use} = \pi = \frac{22}{7}\right)$

    (a) 50 cm (b) 94 cm
    (c) 49 cm (d) 95 cm

24. Deeksha goes 8 km to the East from her house, then she turns to her right and goes 6 km. What minimum distance will be covered by her to come back to her house.
    (a) 14 km (b) 2 km
    (c) 10 km (d) None of these

25. The H.C.F of three numbers is 24. If they are in the ratio 35 : 55 : 77, then the numbers are _____, _____ and _____
    (a) 280, 440, 615
    (b) 105, 175, 231
    (c) 900, 1400, 1900
    (d) 840, 1320, 1848

26. The product of the polynomials, $(3u^2v - 5uv^2)$ and $\left(\frac{1}{5}u^2 + \frac{1}{5}v^2\right)$ is

(a) $\frac{3}{5}u^4v - u^3v^2 - uv^4 + \frac{3}{5}u^2v^3$

(b) $\frac{u^4v}{5} - 2uv^2 + u^2v^3 - \frac{5uv^4}{3}$

(c) $\frac{3u^4v}{5} - 4v^2 + 4u^2v^3 - \frac{5uv^4}{3}$

(d) $\frac{3u^4v}{5} - u^3v^2 + u^2v^3 - 5uv^4$

27. Sohan was putting covers on his note books. He put one fourth of the covers on Monday. He put another on fourth on Tuesday and the remaining on Wednesday. What fraction of the covers did he put on Wednesday ?

(a) $\frac{1}{4}$ (b) $\frac{1}{2}$

(c) $\frac{3}{4}$ (d) $\frac{2}{5}$

28. Namita travels 20km 50m everyday. Out of this she travels 10 km 200 m by bus and the rest by auto. How much distance does she travel by auto ?

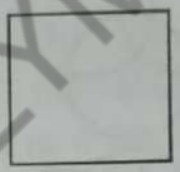
(a) 7.326 km (b) 9.850 km

(c) 11.260 km (d) 12.540 km

29. The ratio of the heights of A and B is 4 : 3. If B is 1.2 m tall, then the height of A is.

(a) 0.9 m (b) 1.8 m

(c) 1.6 m (d) None of these

30. 

The number of line of symmetries that the given figure have :

(a) 4 (b) 2

(c) 3 (d) 1

31. The length of a rectangle is $\frac{6}{5}$th of its breadth. If its perimeter is 132 m, its area will be _____.

(a) 1,080 m^2 (b) 640 m^2

(c) 1,620 m^2 (d) 2,160 m^2

32. What number should replace the question mark ?

27, 27, 30¼, 23¾, 33½, 20½, 36¾, 17¼, ?

(a) 30 (b) 20

(c) 40 (d) 10

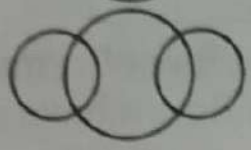
33. The difference of L.C.M. and H.C.F. of the numbers 40,240 and 480 is equal to twice a number. Find the number.

(a) 340 (b) 440

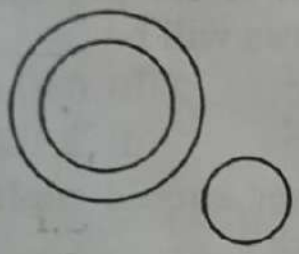
(c) 220 (d) 880

34. Which of the following diagrams correctly represents the relationship among Tennis fans, Cricket players and students.

(a) 

(b) 

(c) 

(d) 

35. A piece of wire $\frac{7}{8}$ metre long broke into two pieces. One piece was $\frac{1}{4}$ metre long. The length of other piece is.

(a) $\frac{1}{4}$m (b) $\frac{3}{4}$m

(c) $\frac{6}{8}$m (d) $\frac{5}{8}$m

36. Read the table and fill in the blanks with the value of A, B and C.

Time	Distance travel by Karan	Distance travel by Kriti
2 hrs	8 km	6 km
1 hr	4 km	B
4 hrs	A	C

(a) A = 16 km; B = 6 km; C = 12 km
(b) A = 20 km; B = 3 km; C = 12 km
(c) A = 16 km; B = 3 km; C = 12 km
(d) A = 16 km; B = 3 km; C = 14 km

37. The temperature dropped 15 degrees in the last 30 days. If the rate of temperature drop remains the same, how many degrees will the temperature drop in the next ten days ?

(a) 5 (b) 10
(c) 15 (d) 18

DIRECTIONS (Qs. 38 to 40) : Read the passage(s) given below and answer the questions that follow.

Passage

- A combination of locks requires 3 numbers to open
- The second number is 2d + 5 greater than the first number.

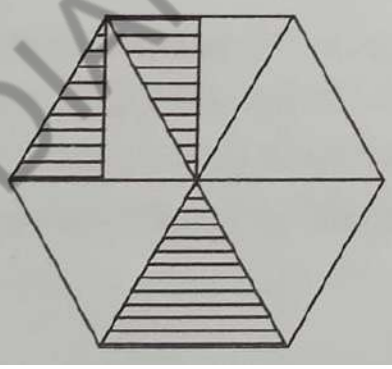
- The third number is 3d – 20 less than the second number.
- The sum of the three numbers is 10d + 9.

38. The first number is
(a) 3d – 11 (b) 2d + 19
(c) 3d – 7 (d) 5d – 11

39. Sum of first and third number is
(a) 5d + 11 (b) 3d + 7
(c) 5d – 11 (d) 6d + 5

40. Algebraic expression for clue number obtained in second clue
(a) Second number = First number + 2d + 5
(b) Second number = First number – (2d + 5)
(c) First number = Second number + 2d + 5
(d) None of these
Choose the correct algebraic expression for the second number

41. In the adjoining figure which fraction of the whole is represented by the shaded portion ?



(a) $\frac{3}{12}$ (b) $\frac{1}{4}$
(c) $\frac{1}{3}$ (d) $\frac{3}{8}$

42. x% of y + y% of x =
(a) 3% of xy (b) 2% of xy
(c) 5% of xy (d) 1% of xy

43. When the time is 4:20, the angle between the hands of the clock is –
(a) 20° (b) 15°
(c) 12½° (d) 10°

44. When a number is divided by 125, the remainder is 82. When the same number is divided by 25, the remainder will be
(a) 8 (b) 9
(c) 6 (d) 7

45. Consider the following statements.
(i) If L.C.M. of two numbers 6 and 8 is 24, then their H.C.F. is 2.
(ii) First number × second number = L.C.M × H.C.F
Which of the above statement(s) is /are correct?
(a) Only (i)
(b) Only (ii)
(c) Both (i) and (ii)
(d) Neither (i) nor (ii)

46. The average speed of a truck is 80 km/hr, the total distance covered in t hours is 240 km, then t is .....

(a) 3 hours (b) 4 hours

(c) $\frac{1}{2}$ hours (d) $4\frac{1}{2}$ hours

47. First, second and the third terms of a proportion are 5, 120 and 40. Then the fourth term is

(a) 89 (b) 480

(c) 960 (d) 98

DIRECTIONS (Qs. 48 to 50): Following pictograph represents some surnames of people listed in the telephone directory of a city.

Surname	Number of people = 100 people
Khan	
Patel	
Rao	
Roy	
Saikia	
Singh	

Observe the pictograph and answer the following questions:

48. How many people have surname 'Roy'?

(a) 400

(b) 500

(c) 300

(d) 450

49. Which surname appears the maximum number of times in the telephone directory?

(a) Roy

(b) Patel

(c) Khan

(d) Rao

50. Which two surnames appear an equal number of times?

(a) Singh, Roy

(b) Khan, Singh

(c) Patel, Khan

(d) Rao, Roy

MATHEMATICS

MOCK TEST-1

ANSWERS KEY

1	(b)	11	(c)	21	(c)	31	(a)	41	(c)
2	(c)	12	(b)	22	(d)	32	(c)	42	(b)
3	(c)	13	(c)	23	(b)	33	(c)	43	(d)
4	(c)	14	(c)	24	(c)	34	(a)	44	(d)
5	(c)	15	(d)	25	(d)	35	(d)	45	(c)
6	(d)	16	(c)	26	(a)	36	(c)	46	(a)
7	(b)	17	(b)	27	(b)	37	(a)	47	(c)
8	(b)	18	(d)	28	(b)	38	(c)	48	(a)
9	(c)	19	(b)	29	(c)	39	(a)	49	(b)
10	(a)	20	(b)	30	(a)	40	(a)	50	(d)

1. (b) The difference between largest and smallest 5 digit number is 89999.

2. (c) 6034579 is the smallest number obtained by rearranging other digits.

3. (c) Length = 10 cm,
Breadth = 6 cm,
Height = 3 cm
Surface area of the chalk box
$= 2(lb + bh + hl)$
$= 2(10 \times 6 + 6 \times 3 + 3 \times 10)\ cm^2$
$= 2\ (60 + 18 + 30)\ cm^2$
$= 2(108)\ cm^2$
$= 216\ cm^2$

4. (c) $\because$ Ratio of speeds = 2 : 3
Let the distance be D

$\therefore$ Time taken by A $= \dfrac{\text{Distance}}{\text{Speed}}$

$= \dfrac{D}{3x}$

Time taken by B $= \dfrac{D}{2x}$

$\therefore$ Ratio of times taken

$= \dfrac{D}{3x} : \dfrac{D}{2x} = 3 : 2$

Given $3x - 2x = 10 \Rightarrow x = 10$
So, A would have taken 30 minutes.
But if *A* walks with double the speed, then he takes half the time, *i.e.*, 15 minutes.

5. (c) Case I
Let the numerator be x
then denominator = $3x + 1$

$\therefore$ Fraction $= \dfrac{x}{3x+1}$

Case II
New numerator = $x + 1$
New denominator = $3x + 1 - 2$
$= 3x - 1$

New fraction $= \dfrac{x+1}{3x-1}$

Given $\dfrac{x+1}{3x-1} = 0.5$

$$\frac{x+1}{3x-1}=\frac{5}{10}$$

$$\frac{x+1}{3x-1}=\frac{1}{2}$$

$2(x+1)=3x-1$

$2x+2=3x-1$

$2x-3x=-1-2$

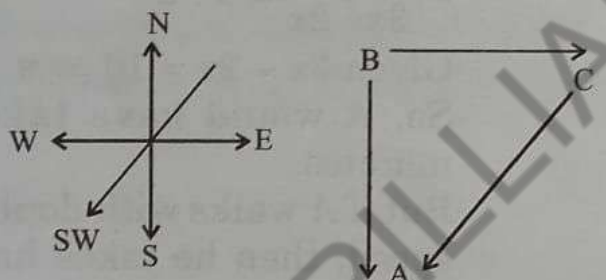
$-x=-3$

$x=3$

$\therefore$ Original fraction

$$=\frac{3}{3\times3+1}=\frac{3}{10}$$

6. **(d)** Clearly comparing the direction of A w.r.t C in the second diagram with that in the first diagram, A will be south-west of C.



7. **(b)** $\frac{1}{4}+\frac{1}{4}=\frac{1+1}{4}=\frac{2}{4}=\frac{2\div2}{4\div2}=\frac{1}{2}$

Hence, both together picked fraction $\frac{1}{2}$ of the stones.

8. **(b)** 1 dozen = 12 items

$\because$ Cost of 12 pens = ₹180

$\therefore$ Cost of 1 pen = $₹\frac{180}{12}$ = ₹15

$\because$ Cost of 8 ball pens = ₹56

$\therefore$ Cost of 1 ball pen = $₹\frac{56}{8}$ = ₹7

$\therefore$ Ratio of cost of a pen to the cost of a ball pen = $\frac{15}{7}$ = 15 : 7.

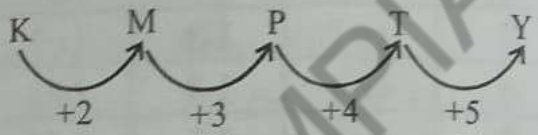
9. **(c)** $90°+30°+x°=180°$

$x°=180°-120°=60°$

$\angle ACD=x°+90°$

$=60°+90°=150°$

10. **(a)** Alphabets follow the sequence



And numbers are increasing by 2.

11. **(c)** Let the distance from workers house and his workplace be d and t be the actual time.

$\because$ Distance = Speed × time

$\therefore d=4(t+15)$ ...(1)

$\because$ Worker increases his speed by 2 km/h and reaches his workplace on time.

$\therefore d=(4+2)t$

$d=6t$ ...(2)

From (1) and (2);

$6t=4(t+15)$

$6t=4t+60$

$6t-4t=60$

$2t=60$

$$t=\frac{60}{2}$$

$$t=30\text{ min}=\frac{30}{60}\text{h}$$

Therefore, the required distance = 6t

$$=6\times\frac{30}{60}$$

$= 3$ km

12. **(b)** Let two unlike terms without constant terms are x and y.

The division of the terms = $\frac{x}{y}$

and it can not be reduced.

13. (c) CMXCIX = (1000 – 100) + (100 – 10) + (10 –1)
= 900 + 90 + 9 = 999

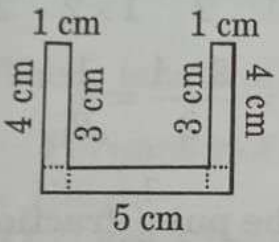
14. (c) LCM of 12, 15, 20 and 35 = 420

$$420\overline{)1000}\,(2$$
$$\underline{840}$$
$$160$$

∴ Required number
= 1000 + (420 – 160) = 1260.

15. (d) The circle has infinite number of lines of symmetry.

16. (c)



Area = (3 × 1) + (1 × 1) + (3 × 1) + (1 × 1) + (3 ×1)
= 3 + 1 + 3 + 3 + 1
= 11 sq cm.

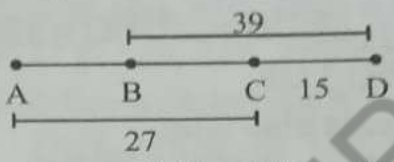
17. (b) – 8 – 2 [6 + 4{7 – (4.2)}]
= – 8 – 2[6 + 4 {7 – 4.2}]
= – 8 – 2 [6 + 4{2.8}]
= – 8 – 2 [6 + 11.2]
= – 8 – 2 [17.2]
= – 8 – 34.4 = – 42.4

18. (d)

2	63, 70, 77
3	63, 35, 77
3	21, 35, 77
5	7, 35, 77
7	7, 7, 77
11	1, 1, 11
	1, 1, 1

∴ L.C.M. of 63, 70 and 77
= 2 × 3 × 3 × 5 × 7 × 11.
= 6930.
Hence, the minimum distance each should cover so that all cover the distance in complete steps is 6930 cm.

19. (b)



BC = BD – CD
= 39 – 15
= 24 km

∴ AB = AC – BC
= 27 – 24
= 3 km

20. (b) (i) $\frac{0.216+0.064}{0.36+0.16-0.24}$

$= \frac{0.28}{0.28} = 1$

(ii) $\frac{1}{0.0004175} = \frac{10000}{4.175}$
=10,000 × 0.2395
= 2395

(iii) Given expression is equal to [0.9 – {2.3 – 3.2 – (7.1 – 8.9)]
= [0.9 – {2.3 – 3.2 + 1.8}]
= [0.9 – {4.1 – 3.2}]
= [0.9 – 0.9] = 0

21. (c) Mean of a set of observations is the value which is a representative of the whole group.

22. (d) ∠ADE + ∠EDF =180°
⇒ 13x + 20 + 40 – 20 = 180°
x = 10
∴ ∠EDF = 30° = ∠ABC.
(a) is true.
Also, ∠DBC + ∠ABC = 180° (Straight angle)

$\angle DBC = 180° - 30°$
$= 150°$

and $\angle EDF + \angle EDB = 180°$ (Straight angle)

$\angle EDB = 180° - 30°$
$= 150°$

$\because \angle EDB = \angle DBC = 150°$

BC || DE

$\therefore$ (c) is also true.

Also, $\angle DBC + \angle EDF$
$= 150° + 30° = 180°$

$\therefore$ (b) is also true.

23. (b) Required perimeter = circumferences of both the circles + 2 radii of each of the circles.

$$= 2\left[2\pi r - \frac{2\pi r}{4}\right] + (7 \times 4)$$

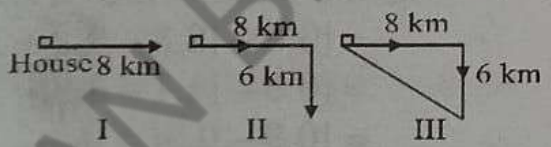
$$= 2\left[\frac{6\pi r}{4}\right] + 28 = 3\pi r + 28$$

where $r = 7$

$$= 3 \times \frac{22}{7} \times 7 + 28$$

$= 66 + 28 = 94$ cm

24. (c)



Minimum distance

$$= \sqrt{(8)^2 + (6)^2}$$

$$= \sqrt{64 + 36} = \sqrt{100} = 10 \text{ km}.$$

25. (d) $35x = 5 \times 7 \times x$,
$55x = 5 \times 11 \times x$,
$77x = 7 \times 11 \times x$

$\therefore$ H.C.F $= 24 = x$

$\therefore$ Numbers are 35×24, 55×24, 77×24
i.e. 840, 1320, 1848

26. (a) Product

$$= (3u^2v - 5uv^2)\left(\frac{1}{5}u^2 + \frac{1}{5}v^2\right)$$

$$= 3u^2v\left(\frac{1}{5}u^2 + \frac{1}{5}v^2\right)$$

$$- 5uv^2\left(\frac{1}{5}u^2 + \frac{1}{5}v^2\right)$$

$$= \frac{3}{5}u^4v + \frac{3}{5}u^2v^3 - u^3v^2 - uv^4$$

27. (b) $\frac{1}{4} + \frac{1}{4} = \frac{1+1}{4} = \frac{2}{4} = \frac{2 \div 2}{4 \div 2} = \frac{1}{2}$

$$1 - \frac{1}{2} = \frac{1}{1} - \frac{1}{2} = \frac{1 \times 2}{1 \times 2} - \frac{1}{2}$$

$$= \frac{2}{2} - \frac{1}{2} = \frac{2-1}{2} = \frac{1}{2}$$

Hence, he put $\frac{1}{2}$ fraction of the covers on Wednesday.

28. (b) Distance travelled everyday
= 20 km 50 m
= 20 km + 50 m

$$= 20 \text{ km} + \frac{50}{1000} \text{km}$$

$= 20$ km $+ 0.050$ km

$$\left| \because 1 \text{ m} = \frac{1}{1000} \text{km} \right.$$

$= (20 + 0.050)$ km $= 20.050$ km

Distance travelled by bus
= 10 km 200 m
= 10 km + 200 m

$$= 10 \text{ km} + \frac{200}{1000} \text{km}$$

$= 10$ km $+ 0.200$ km

$\left| \because 1\,m = \frac{1}{1000}\,km \right.$

$= (10 + 0.200)\ km = 10.200\ km$

$\therefore$ Distance travelled by auto
$= 20.050\ km - 10.200\ km$
$= 9.850\ km$

29. (c) Height of A $= \frac{4}{3} \times$ height of B

$= \frac{4}{3} \times 1.2 = 1.6\ m$

30. (a) The figure given is a square. Square has four lines of symmetry.

31. (a) Let the breadth of rectangle be x

Then, length of rectangle $= \frac{6}{5}x$

$\because$ Perimeter of rectangle
$= 132\ m$
2 (length + breadth) $= 132$

$$2\left(\frac{6}{5}x + x\right) = 132$$

$$2 \times \frac{11}{5}x = 132$$

$$x = 132 \times \frac{5}{2 \times 11}$$

$$x = 30$$

$$\therefore \text{Length} = \frac{6}{5}x = \frac{6}{5} \times 30 = 36$$

Breadth $= x = 30$
$\therefore$ Area of rectangle
= length × breadth
$= 36 \times 30$
$= 1080\ m^2$

32. (c) There are 2 series :
→ (+ 3¼ to each term) 27, 30¼, 33½, 36¾, 40

(– 3¼ to each term) 27, $23\frac{3}{4}$, $20\frac{1}{2}$, $17\frac{1}{4}$.

33. (c) L.C.M (40, 240, 480) = 480
H.C.F. (40, 240, 480) = 40
Let the number be x.
$\because$ Difference of L.C.M. and H.C.F. is eqal to twice of the number.
$\therefore 480 - 40 = 2x$
$440 = 2x$

$$x = \frac{440}{2} = 220$$

Hence, required number is 220.

34. (a)

35. (d) Length of the original piece of wire $= \frac{7}{8}$ metre

Length of one piece $= \frac{1}{4}$ metre

$\therefore$ Length of the other piece

$$= \left(\frac{7}{8} - \frac{1}{4}\right) \text{metre}$$

$$= \left(\frac{7}{8} - \frac{1 \times 2}{4 \times 2}\right) \text{metre}$$

$$= \left(\frac{7}{8} - \frac{2}{8}\right) \text{metre}$$

$$= \frac{7-2}{8}\ \text{metre} = \frac{5}{8}\ \text{metre}.$$

36. (c) $\because$ Distance covered by Karan in 2 hours = 8 km
$\therefore$ Distance covered by Karan

in 1 hours = $\frac{8}{2}$ = 4 km

Distance covred by Karan in 4 hours = 4 × 4 = 16 km

∴ A = 16 km

∵ Distance covered by Kriti in 2 hours = 6 km

∴ Distance covered by Kriti in 1 hour = 3 km

Distance covered by Kriti in 4 hours = 4 × 3 = 12 km

∴ B = 3 km, C = 12 km

37. (a) ∵ Drop in temperature in 30 days = 15°

∴ Drop in temperature in 1 day

$= \frac{15}{30}$ degree

∴ Drop in temperature in 10 day

$= \frac{15}{30} \times 10$ degrees = 5 degrees

Hence, the temperature will drop 5 degrees in the next ten days.

38. (c) Let first number be 'a'.

Second number = a + 2d + 5

Third number = a + 2d + 5 − 3d + 20

= a − d + 25

Sum: a + a + 2d + 5 + a − d + 25

= 10d + 9

$\Rightarrow$ 3a + d + 30 = 10d + 9

$\Rightarrow$ 3a + 30 = 9d + 9

$\Rightarrow$ a + 10 = 3d + 3

$\Rightarrow$ a = 3d − 7

39. (a) Second number = First number + 2d + 5 = 3d − 7 + 2d + 5

= 5d − 2

Third number = Second number − (3d − 20) = 5d − 2 − 3d + 20

= 2d + 18

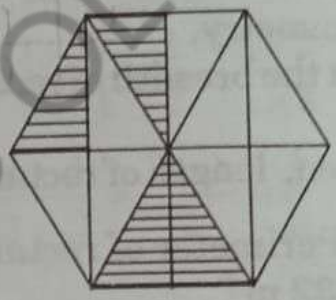
∴ Sum = 3d − 7 + 2d + 18

= 5d + 11

40. (a) Second number = First number + 2d + 5

41. (c) We can divide the given figure into 12 equal parts

Shaded portion = $\frac{4}{12} = \frac{1}{3}$



42. (b) x% of y + y% of

$= x = \frac{xy}{100} + \frac{yx}{100}$

$= \frac{2xy}{100} = \frac{2}{100}xy$

= 2% of xy

43. (d) In 60 min. hour hand moves by 360/12

In 20 min. hour hand moves by

$\frac{360}{12 \times 60} \times 20 = 10°$

44. (d) If x is the quotient then the remainder is 125x + 82.

When this number is divided by 25, we get

$\frac{125}{25}x + \frac{82}{25} = 5x + 3 + \frac{7}{25}$

Hence the remainder will be 7.

Hints & Explanations

45. **(c)** Both (i) and (ii)

46. **(a)** Time $= \frac{\text{Distance}}{\text{speed}} = \frac{240\text{ km}}{80\text{ km/h}}$

$= 3$ hours

47. **(c)** $5 : 120 :: 40 : x$

$x = \frac{120 \times 40}{5} = 960$

48. **(a)** 400

49. **(b)** Patel

50. **(d)** Rao, Roy