

# OLYMPIAD Mock Test

# 2

Name : \_\_\_\_\_

Number of Questions : 50

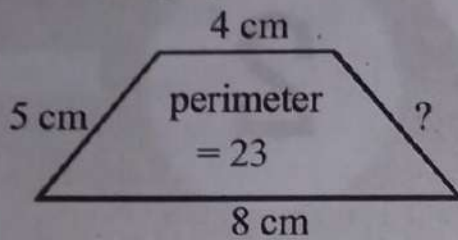
Max. Marks : 50

Time : 2 Hours

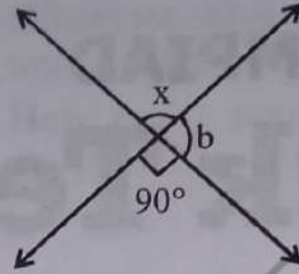
There is no negative marking in the test.

- If  $63.3605 = 6A + 3B + 3C + 6D + 5E$ , then the value of  $4A + 7B + 6C + D + 3E$  is  
(a) 47.6003      (b) 4.7603  
(c) 147.6003      (d) 47.603
- Consider the following statements,  
**Statement 1:** Whole numbers and fractional numbers both can be represented on the number line.  
**Statement 2:** Only whole numbers can be represented on the number line.  
Which one of the following options is correct about the above statement?  
(a) Statement 1 is true and 2 is false  
(b) Statement 1 is false and 2 is true  
(c) Both statements are false  
(d) Both statements are true
- Simplify the  $(34 + 20) \times 2$  and find the multiplicative inverse of the resulting simplification.  
(a)  $\frac{2}{108}$       (b)  $\frac{1}{108}$   
(c)  $\frac{3}{108}$       (d) All of these
- A number when divided by the sum of 555 and 445 given two times their difference as quotient and 30 as remainder. The number is  
(a) 220030      (b) 22030  
(c) 1220      (d) 1250

5. Find the missing length of the following figure.



- (a) 6 cm                      (b) 4 cm  
(c) 2 cm                      (d) 5 cm
6. If  $a = 3, b = 5, c = b - a$ , then which of the following expressions represent 10 ?  
(a)  $(a + c) \times b$             (b)  $(a + b) - c$   
(c)  $(b + c) + a$             (d)  $(a - b) + c$
7. Express 54 km/h in metre/second.  
(a) 7                              (b) 9  
(c) 15                             (d) 27
8. Add the following expression,  $6x - 3by + 4cz, 7by - 8ax - 5cz$  and  $9cz - 2by + 2ax$ ?  
(a)  $x - 2by + 8cz - 6ax$   
(b)  $6x + by + 8cz - 6ax$   
(c)  $6x + 2by + 8cz - 6ax$   
(d) All of these
9. In the given measure, measure of  $\angle b$  and  $\angle x$  are



- (a)  $\angle x = 90^\circ, \angle b = 60^\circ$   
(b)  $\angle x = 90^\circ, \angle b = 30^\circ$   
(c)  $\angle x = 90^\circ, \angle b = 90^\circ$   
(d)  $\angle x = 90^\circ, \angle b = 180^\circ$

10. The ratio of the number of sides of a square to the number of edges of a cube is

- (a) 1 : 2                              (b) 3 : 2  
(c) 4 : 1                             (d) 1 : 3

11. In a box, the ratio of red marbles to blue marbles is 7 : 4. Which of the following could be the total number of marbles in the box?

- (a) 18                                (b) 19  
(c) 21                                (d) 22

12. Three tankers contain 403 litres, 434 litres and 465 litres of diesel, respectively. The maximum capacity of a container that can measure the diesel of the three containers exact number of times is.

Mock Test-2

M-11

- (a) 31 litres                      (b) 27 litres  
(c) 42 litres                      (d) 62 litres

13. Sarita bought  $\frac{2}{5}$  metre of ribbon and Lalita  $\frac{3}{4}$  metre of ribbon. What was the total length of the ribbon they bought?

- (a)  $1\frac{3}{20}$  m                      (b)  $2\frac{1}{20}$  m  
(c)  $1\frac{1}{20}$  m                      (d)  $3\frac{5}{20}$  m

14. Consider the statement: Ratio of breadth and length of a hall is 2 : 5. Complete the following table that shows some possible breadths and lengths of the hall.

Breadth of the hall in metres	10	A	40
Length of the hall in metres	25	50	B

- (a)  $A = 20; B = 100$   
(b)  $A = 50; B = 120$   
(c)  $A = 20; B = 80$   
(d)  $A = 10; B = 50$

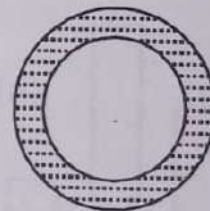
15. Read the following statements carefully and choose the correct option.

(i) : On the average, John uses 12.5 litres of petrol a day, then in 2 weeks he uses 180 litres of petrol.

(ii): A motorist travelled 204 km in 4 hours, then his average speed is 51 km/hr.

- (a) (i) is true only  
(b) (ii) is true only  
(c) Both (i) and (ii) are true  
(d) Neither (i) nor (ii) is true

16. Find the area of shaded portion if radii of inner and outer circle are 210 mm and 224 mm respectively.



- (a) 19096 sq. mm  
(b) 47040 sq. mm  
(c) 13860 sq. mm  
(d) 21624 sq. mm

17. Given below a procedure to make a bar graph.

Choose the correct order of steps by choosing the correct option.

Step (A) Draw and label the scale on the vertical and horizontal axis.

Step (B) Draw bars of equal widths from the zero of the horizontal scale and leave the same amount of space between bars.

Step (C) Use the data from the table to choose an appropriate scale.

Step (D) List the each item and locate the points on the graph.

- (a) ABCD      (b) CBAD  
(c) CADB      (d) CABD

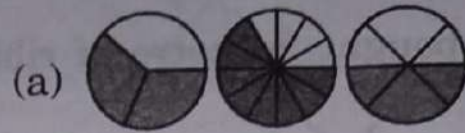
18. Subtract  $\frac{2}{5}$  from  $\frac{5}{7}$ .

- (a)  $\frac{11}{35}$       (b)  $\frac{3}{7}$   
(c)  $\frac{7}{5}$       (d)  $\frac{35}{11}$

19. An item when sold for ₹1169 earned 40% profit on the cost price. What is the cost price?

- (a) ₹835      (b) ₹701.40  
(c) ₹800      (d) ₹840

20. Which of the following figures represent equivalent fractions?



21. What is the missing term in the following product?

$$(2a^3 - 3)(5a^3 - 2) = 10a^6 + \underline{\hspace{2cm}} + 6$$

- (a)  $16a^3$       (b)  $-16a^3$   
(c)  $19a^3$       (d)  $-19a^3$

22. Choose the correct option whether the statements are true or false.

(i) 0 is a solution of the equation  $x + 1 = 0$

(ii) The equation  $x + 1 = 0$  and  $2x + 2 = 0$  have the same solution.

(iii) If  $m$  is a whole number, then  $2m$  denotes a multiple of 2.

Mock Test-2

- (a) FFT (b) FTT  
 (c) TFT (d) TTF
23. If a bus travels 160 km in 4 hours and a train travels 320 km in 5 hours at uniform speeds, then the ratio of the distances travelled by them in one hour is

- (a) 1 : 2 (b) 4 : 5  
 (c) 5 : 8 (d) 8 : 5

24. Naina was given  $1\frac{1}{2}$  piece of cake

and Najma was given  $1\frac{1}{3}$  piece of cake. Find the total amount of cake given to both of them.

- (a)  $2\frac{5}{6}$  piece (b)  $3\frac{1}{4}$  piece  
 (c)  $7\frac{1}{3}$  piece (d)  $2\frac{2}{7}$  piece

**DIRECTION (Q. 25) :** Match Column-I with Column-II and select the correct answer using the codes given below the columns.

25. **Column-I** **Column-II**

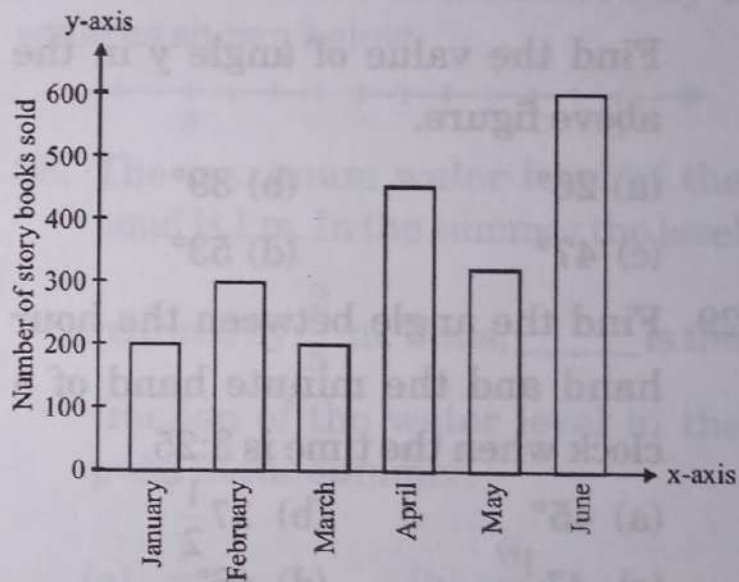
- (A)  $\frac{2}{5}$ % as a decimal (p) 4.5 form

- (B) 25% of 75 is (q) 0.03  
 (C) Average of first eight natural numbers (r) 18.75

- (D)  $\frac{135}{45}$ % as decimal (s) 0.004 form is

- (a) A → s; B → r, C → p; D → q  
 (b) A → r; B → p, C → q; D → s  
 (c) A → s; B → r, C → q; D → p  
 (d) A → q; B → s, C → p; D → r

26. The Bar graph shows the sale of maths books in a bookshop for the first six months.



In which month was the sale of maths books 75% of the sale of books in June?

M-14

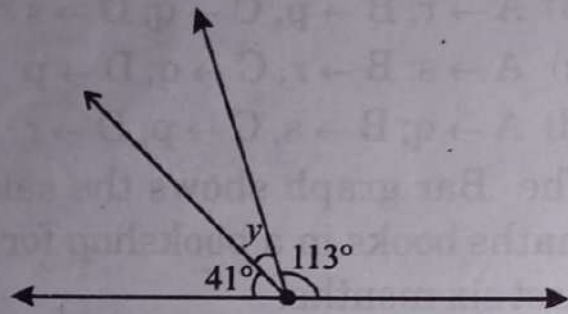
- (a) March (b) April  
(c) May (d) February

27. What number should replace the question mark?



- (a) 10878 (b) 10899  
(c) 10879 (d) 12879

28.



Find the value of angle  $y$  in the above figure.

- (a)  $26^\circ$  (b)  $39^\circ$   
(c)  $47^\circ$  (d)  $53^\circ$

29. Find the angle between the hour hand and the minute hand of a clock when the time is 3:25.

- (a)  $45^\circ$  (b)  $37\frac{1}{2}^\circ$   
(c)  $47\frac{1}{2}^\circ$  (d)  $46^\circ$

30. The sum of two numbers is 19 and one of the numbers is one more

than twice the other. Represent this statement in the form of an equation using variable  $x$ .

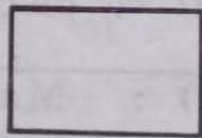
- (a)  $x(2x + 1) = 19$   
(b)  $x + (2x + 1) = 19$   
(c)  $x + (2x - 1) = 19$   
(d)  $x \div (2x - 1) = 19$

31. Write a pair of fractions whose sum

is  $\frac{7}{11}$  and difference is  $\frac{2}{11}$ .

- (a)  $\frac{3}{11}$  and  $\frac{4}{11}$  (b)  $\frac{9}{22}$  and  $\frac{5}{22}$   
(c)  $\frac{2}{11}$  and  $\frac{5}{11}$  (d)  $\frac{5}{22}$  and  $\frac{7}{22}$

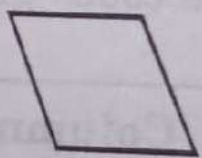
32. In the given figures which of the following is a regular polygon?



(i)



(ii)



(iii)



(iv)

- (a) (i) (b) (ii)  
(c) (iii) (d) (iv)

Mock Test-2

33. Multiply,

$$(a^2 + ab + b^2)(a^2 - ab - b^2)$$

(a)  $a^4 - a^2b^2 - 2ab^3 - b^4$

(b)  $6a^2b - 3ab + 10a - 25$

(c)  $5a - 3a^2 + 6$

(d) All of these

34. In a garden, the ratio of the number of children to the number of women is 9 : 2. If there are 84 more children than women then find the number of children in the garden.

(a) 108

(b) 120

(c) 156

(d) 182

35. Which of the following words will read the same when placed in front of the horizontal mirror?

(a) HIDE

(b) CAKE

(c) SOON

(d) SOUR

36. Gorang purchased 2 kg 280 g apples, 3 kg 375g bananas, 225 g grapes and 5 kg 385 g oranges. Find the total weight of fruits purchased by Gorang in kg.

(a) 11.575 kg

(b) 11.265 kg

(c) 13.265 kg

(d) 15.265 kg

37. If a bicycle wheel has 48 spokes, then the angle between a pair of two consecutive spokes is

(a)  $\left(5\frac{1}{2}\right)^\circ$

(b)  $\left(7\frac{1}{2}\right)^\circ$

(c)  $\left(\frac{2}{11}\right)^\circ$

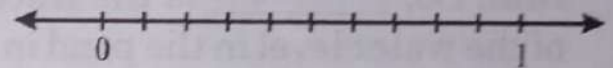
(d)  $\left(\frac{2}{15}\right)^\circ$

**DIRECTIONS (Qs. 38 to 40):** Read the passage given below and answer the question that follows:

**Passage**

Read the information given below carefully and answer the questions that follows.

In the national park there is a pond whose water level is monitored by a scale as shown below



38. The maximum water level of the pond is 1 m. In the summer the level

reduced by  $\frac{2}{5}$  m. Thus, \_\_\_\_\_ is the

fraction of the water level in the pond in the summer.

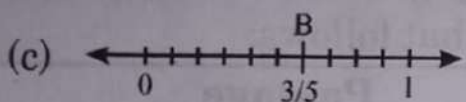
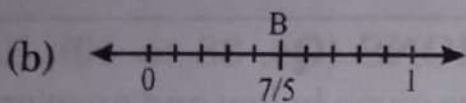
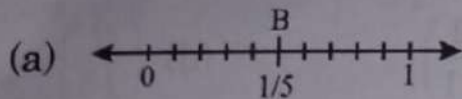
(a)  $\frac{1}{5}$

(b)  $\frac{3}{5}$

(c)  $\frac{7}{5}$

(d)  $\frac{5}{2}$

39. Which of the following represents the correct representation of the fraction obtained above?



- (d) None of these

40. The level of water in the pond went

up by  $\frac{1}{5}$  m from the point B due to rain. So, \_\_\_\_\_ is the fraction of the water level in the pond in the rainy season.

(a)  $\frac{5}{4}$                       (b)  $\frac{4}{5}$

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

41. What number comes next in the sequence below?

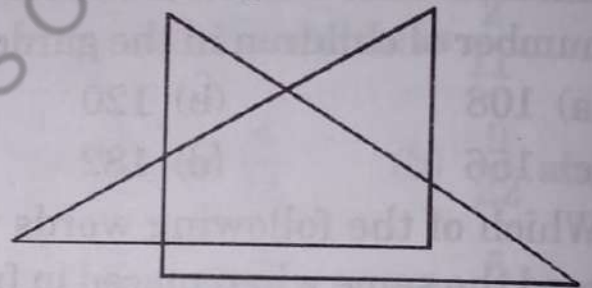
3624, 4363, 3644, 4563, 3664, ?

- (a) 4763                      (b) 3763  
(c) 3624                      (d) 6763

42. One day, Ravi left home and cycled 10 km southwards, turned right and cycled 5 km and turned right and cycled 10 km and turned left and cycled 10 km. How many kilometres will he have to cycle to reach his home straight?

- (a) 10 km                      (b) 15 km  
(c) 20 km                      (d) 25 km

43. How many triangles can be seen in this drawing?



- (a) 3                              (b) 5  
(c) 6                              (d) 7

44. In a quadrilateral ABCD,  $\angle A + \angle C = 180^\circ$  then  $\angle B + \angle D =$

- (a)  $360^\circ$                       (b)  $100^\circ$   
(c)  $180^\circ$                       (d)  $80^\circ$

45. 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



Mock Test-2

46. Floor of a room measures 4.5 metres  $\times$  3 metres. Find the minimum number of complete square marble slabs to equal size required to cover the entire floor.

- (a) 5 (b) 6  
(c) 7 (d) 8

47. The sum of two integers is 47. If one of the integers is  $-24$ , find the other.

- (a)  $-46$  (b) 65  
(c) 71 (d)  $-71$

48. The marks (out of 10) obtained by 28 students in a Mathematics test are listed as below:

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

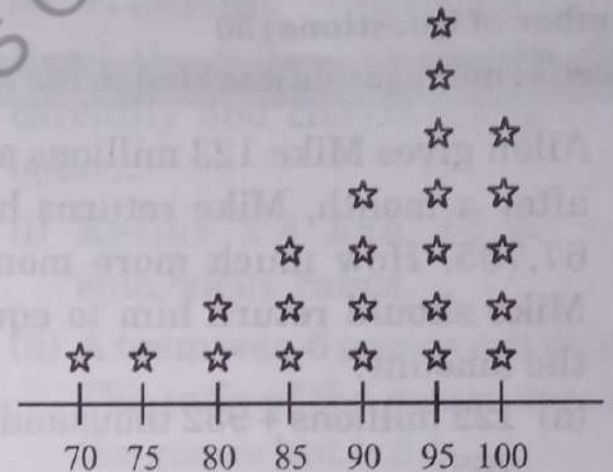
The number of students who obtained marks more than or equal to 5 is

- (a) 13 (b) 15  
(c) 16 (d) 17

49. Cost of fencing around a square field is ₹12000. If the cost of fencing per metre is ₹30, find the area of the square field.

- (a) 10000 sq. m.  
(b) 15000 sq. m.  
(c) 20000 sq. m.  
(d) 25000 sq. m.

50. The line plot below shows how students scored on last week's maths test.



KEY: ☆ = 1 student

How many students scored 95 or higher on the test?

- (a) 5 students (b) 7 students  
(c) 12 students (d) 16 students

## MOCK TEST-2

### ANSWERS KEY

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

1. (c)  $63.3605 = 6 \times 10 + 3 \times 1 + 3 \times$

$$\frac{1}{10} + 6 \times \frac{1}{100} + 0 \times \frac{1}{1000} + 5 \times \frac{1}{10000}$$

On comparing with the given expression we get

$$A = 10, B = 1, C = \frac{1}{10}, D = \frac{1}{100},$$

$$E = \frac{1}{10,000}$$

$\therefore$  Required expression

$$= 40 + 7 + 0.6 + 100 + 0.0003 \\ = 147.6003$$

2. (a) Fractions can also be represented on the number line.

3. (b)  $(34 + 20) \times 2 = 54 \times 2 = 108$ .  
Multiplicative inverse of 108

$$= \frac{1}{108}$$

4. (a) Divisor =  $555 + 445 = 1000$   
Quotient =  $2 \times (555 - 445) = 220$   
Remainder = 30

$$\therefore \text{Dividend} = \text{Divisor} \times \text{Quotient} \\ + \text{Remainder} \\ = 1000 \times 220 + 30 = 220030.$$

5. (a) Missing length =  $23 - (4 + 5 + 8) \\ = 23 - 17 = 6 \text{ cm}$

6. (c) Given  $a = 3, b = 5,$   
 $c = b - a = 5 - 3 = 2$

Putting these values, we will evaluate all the expressions

(a)  $(a + c) \times b = (3 + 2) \times 5 \\ = 5 \times 5 = 25 \neq 10$

(b)  $(a + b) - c = (3 + 5) - 2 \\ = 8 - 2 = 6 \neq 10$

$$(c) (b + c) + a = (5 + 2) + 3 \\ = 7 + 3 = 10$$

$$(d) (a - b) + c = (3 - 5) + 2 \\ = -2 + 2 = 0 \neq 10$$

$$7. (c) 54 \text{ km/h} = 54 \times \frac{5}{18} \text{ m/s} = 15 \text{ m/s.}$$

$$8. (c) (6x - 3by + 4cz) + (7by - 8ax - 5cz) + (9cz - 2by + 2ax) \\ = 6x - 3by + 4cz + 7by - 8ax - 5cz + 9cz - 2by + 2ax \\ = 6x + 2by + 8cz - 6ax$$

$$9. (c) \angle x = 90^\circ \text{ is vertically opposite to } 90^\circ. \\ \angle b = 90^\circ \text{ forms linear pair with } \angle x. \\ \text{So, } \angle x = 90^\circ, \angle b = 90^\circ$$

$$10. (d) \text{Number of sides of a square} = 4 \\ \text{Number of edges of a cube} = 12 \\ \text{Ratio} = 4 : 12 = 1 : 3$$

$$11. (d) \text{Let red marbles} = 7x \\ \text{Blue marbles} = 4x \\ \text{Total marbles} = 7x + 4x = 11x \\ x \text{ can be } 1, 2, 3, \dots \\ \text{So, total number of marble can be } 11, 22, 33, \dots$$

$$12. (a) \text{HCF}(403, 434, 465) = 31 \\ \therefore \text{The maximum capacity of a container that can measure the diesel of three containers exact number of times.} \\ = \text{HCF}(403, 434, 465) \\ = 31$$

$$13. (a) \text{Ribbon bought by Sarita} = \frac{2}{5} \text{ m}$$

$$\text{Ribbon bought by Lalita} = \frac{3}{4} \text{ m}$$

$$\therefore \text{Total length of the ribbon they bought}$$

$$= \frac{2}{5} \text{ m} + \frac{3}{4} \text{ m} = \left( \frac{2}{5} + \frac{3}{4} \right) \text{ m}$$

$$= \left( \frac{2 \times 4}{5 \times 4} + \frac{3 \times 5}{4 \times 5} \right) \text{ m}$$

$$[\text{L.C.M}(5, 4) = 20]$$

$$= \left( \frac{8}{20} + \frac{15}{20} \right) \text{ m} = \frac{8 + 15}{20} \text{ m} = \frac{23}{20} \text{ m}$$

$$= 1 \frac{3}{20} \text{ m}$$

$$14. (a) \text{The ratio of breadth and length of hall} = 2 : 5$$

$$= 2 \times 10 : 5 \times 10$$

$$= 20 : 50$$

$$\text{Then, } A = 20,$$

$$\text{Also, ratio of breadth and length}$$

$$= 2 : 5$$

$$= 2 \times 20 : 5 \times 20$$

$$= 40 : 100$$

$$\text{Then, } B = 10,$$

$$\text{Hence, the required values are } A = 20, B = 100.$$

$$15. (b) (i) : \text{John uses } 12.5 \text{ litres of petrol in a day.}$$

$$\text{John uses } (12.5 \times 14) \text{ litres of petrol in 2 weeks (or 14 days)}$$

$$= 175 \text{ litres}$$

$$(ii) : \text{Total distance travelled}$$

$$= 204 \text{ km}$$

$$\text{time} = 4 \text{ hours}$$

$$\text{Average speed} = \frac{204}{4}$$

$$= 51 \text{ km/hr.}$$

$$16. (a) \text{Area of shaded portion}$$

$$= \pi(R^2 - r^2)$$

$$= \pi(224^2 - 210^2)$$

$$= \frac{22}{7} (224 + 210) (224 - 210)$$

$$= \frac{22}{7} \times 434 \times 14 = 19096 \text{ sq. mm}$$

17. (c) The correct order of steps is CADB

$$18. (a) \frac{2}{5} = \frac{2 \times 7}{5 \times 7} = \frac{14}{35}$$

$$|\text{L.C.M.}(5, 7) = 35$$

$$\frac{5}{7} = \frac{5 \times 5}{7 \times 5} = \frac{25}{35}$$

$$\therefore \frac{5}{7} - \frac{2}{5} = \frac{25}{35} - \frac{14}{35} = \frac{25 - 14}{35} = \frac{11}{35}$$

19. (a) S.P = ₹1169, Profit = 40%

$$\text{C.P} = \frac{\text{S.P} \times 100}{(100 + \text{P}\%)} = \frac{1169 \times 100}{(100 + 40)}$$

$$= \frac{1169 \times 100}{140} = ₹835$$

20. (c) Figure 1 shows =  $\frac{1}{3}$

$$\text{Figure 2 shows} = \frac{4}{12} = \frac{1}{3}$$

$$\text{Figure 3 shows} = \frac{2}{6} = \frac{1}{3}$$

$$\begin{aligned} 21. (d) & (2a^3 - 3)(5a^3 - 2) \\ &= 2a^3(5a^3 - 2) - 3(5a^3 - 2) \\ &= 10a^6 - 4a^3 - 15a^3 + 6 \\ &= 10a^6 - 19a^3 + 6 \\ &= 10a^6 + (-19a^3) + 6 \end{aligned}$$

$$22. (b) x + 1 = 0$$

$$x = -1$$

So, -1 is the solution of the equation.

23. (c) Distance travelled in one hour by an object is called speed.

$$\text{Speed} = \frac{\text{Distance}}{\text{time}}$$

For bus,

$$\text{Speed} = \frac{160}{4} = 40 \text{ km/hr}$$

For train,

$$\text{Speed} = \frac{320}{5} = 64 \text{ km/hr}$$

$$\text{Ratio} = 40 : 64 = 5 : 8$$

24. (a) Cake given to Naina =  $1\frac{1}{2}$  piece

$$= \frac{(1 \times 2) + 1}{2} \text{ piece}$$

$$= \frac{2 + 1}{2} \text{ piece} = \frac{3}{2} \text{ piece}$$

Cake given to Najma =  $1\frac{1}{3}$  piece

$$= \frac{(1 \times 3) + 1}{3} \text{ piece}$$

$$= \frac{3 + 1}{3} \text{ piece} = \frac{4}{3} \text{ piece}$$

$\therefore$  Total amount of cake given to

$$\text{both of them} = \frac{3}{2} \text{ piece} + \frac{4}{3} \text{ piece}$$

$$= \left( \frac{3}{2} + \frac{4}{3} \right) \text{ piece}$$

$$= \left( \frac{3 \times 3}{2 \times 3} + \frac{4 \times 2}{3 \times 2} \right) \text{ piece}$$

$$|\text{L.C.M.}(2, 3) = 6$$

$$= \left( \frac{9}{6} + \frac{8}{6} \right) \text{ piece} = \frac{9+8}{6} \text{ piece}$$

$$= \frac{17}{6} \text{ piece}$$

$$= 2\frac{5}{6} \text{ piece}$$

25. (a) A:  $\frac{2}{5}\% = \frac{2}{500} = \frac{0.4}{100} = 0.004$

B:  $25\% \text{ of } 75 = \frac{25}{100} \times 75 = 18.75$

C: Average of first eight natural numbers

$$= \frac{1+2+3+4+5+6+7+8}{8}$$

$$= \frac{36}{8} = 4.5$$

D:  $\frac{135}{45}\% = \frac{135}{4500} = 0.03$

26. (b) Sale in June = 600

$$75\% \text{ of } 600 = 600 \times \frac{3}{4} = 450$$

Sale of April = 450 (From the graph)

27. (c) Add the number to the reverse of its digits.

For example:  $163 + 361 = 524$

Also  $1898 + 8981 = 10879$

28. (a) In the above figure

$$41^\circ + y + 113^\circ = 180^\circ$$

$$y + 154^\circ = 180^\circ, y = 180^\circ - 154^\circ,$$

$$y = 26^\circ$$

29. (c)  $\therefore 3 : 25 = 3 \text{ hours } 25 \text{ minutes}$

$$= 3 \text{ hours } \frac{25}{60} \text{ hours}$$

$$= 3 \text{ hours } \frac{5}{12} \text{ hours}$$

$$= \frac{41}{12} \text{ hours}$$

Angle traced by the hours hand in 12 hours =  $360^\circ$

Angle traced by hours hand in

$$3 \text{ hours } 25 \text{ minutes} \left( \frac{41}{12} \text{ hours} \right)$$

$$= \frac{360}{12} \times \frac{41}{12}$$

$$= \frac{205^\circ}{2}$$

Angle traced by minute hand in 60 minutes =  $360^\circ$

Angle traced by minute hand in

$$25 \text{ minutes} = \frac{360^\circ}{60} \times 25$$

$$= 150^\circ$$

Now, the angle between the hour hand and minute hand

$$= 150^\circ - \frac{205}{2} = \frac{300 - 205}{2}$$

$$= \frac{95^\circ}{2} = 47\frac{1}{2}$$

30. (b) Let one number be  $x$

then other number =  $2x + 1$

According to given condition,

$$x + (2x + 1) = 19$$

31. (b) Sum:  $\frac{9}{22} + \frac{5}{22} = \frac{9+5}{22} = \frac{14}{22}$

$$= \frac{7}{11}$$

Difference:

$$\frac{9}{22} - \frac{5}{22} = \frac{9-5}{22} = \frac{4}{22} = \frac{2}{11}$$

32. (b) Square is a regular polygon.

$$\begin{aligned}
 33. (a) & (a^2 + ab + b^2)(a^2 - ab - b^2) \\
 &= a^2(a^2 - ab - b^2) + ab(a^2 - ab - b^2) \\
 &\quad + b^2(a^2 - ab - b^2) \\
 &= a^4 - a^3b - a^2b^2 + a^3b - a^2b^2 - ab^3 \\
 &\quad + a^2b^2 - ab^3 - b^4 \\
 &= a^4 - a^2b^2 - ab^3 - ab^3 - b^4 \\
 &= a^4 - a^2b^2 - 2ab^3 - b^4
 \end{aligned}$$

34. (a) Let the number of women in the garden is  $x$ .

The number of children =  $x + 84$   
According to the question.


$$\frac{9}{2} = \frac{x + 84}{x} \Rightarrow 9x = 2(x + 84)$$

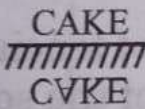
$$\Rightarrow 9x = 2x + 168$$

$$\Rightarrow 9x - 2x = 168$$

$$\Rightarrow x = \frac{168}{7} = 24.$$

Hence the total number of children in the garden =  $84 + 24 = 108$ .

35. (a)  Mirror  
HIDE

(b)  Mirror  
CVKE

(c)  Mirror  
200И

(d)  Mirror  
20ИR

36. (b) Weight of apples = 2 kg 280 g  
= 2280 g (Since 1 kg = 1000 g)  
Weight of bananas = 3 kg 375 g  
= 3375 g  
Weight of grapes = 225 g  
Weight of oranges = 5 kg 385 g  
= 5385 g

Total weight = 2280 g + 3375 g  
+ 225 g + 5385 g = 11265 g

Thus, total weight = 11265 kg

$$= \frac{11265}{1000} \text{ kg}$$

$$= 11.265 \text{ kg}$$

37. (b) Number of spokes = 48

Angle between two consecutive

$$\text{spokes} = \frac{360^\circ}{48} = \left(7\frac{1}{2}\right)^\circ$$

38. (b) Required level =  $1 - \frac{2}{5} = \frac{3}{5}$ .

39. (c)  $\frac{3}{5} = 0.6$

40. (b)  $\frac{3}{5} + \frac{1}{5} = \frac{4}{5}$  is the required fraction.

41. (a) Reverse the previous number and add 1 to the first and second digit alternately.

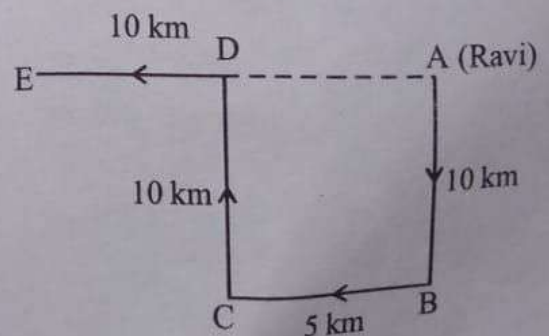
42. (b) Here, Ravi starts from home at A, moves 10 km southwards up to B, turns right and moves 5 km up to C, turns right again and moves 10 km up to D and finally turns left and moves 10 km up to E.

Thus, his distance from initial position A = AE

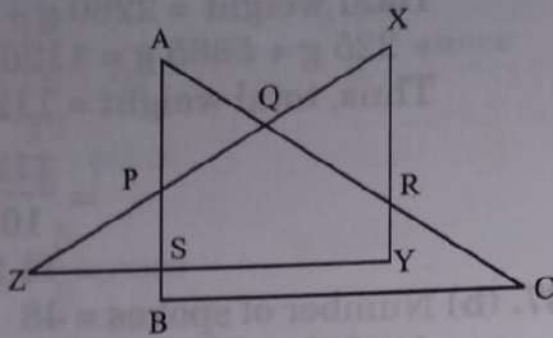
$$= AD + DE$$

$$= BC + DE = (5 + 10) \text{ km}$$

$$= 15 \text{ km.}$$



43. (b)



The five triangles are,  
APQ, QXR, PZS, ABC and XYZ.

44. (c) We have

$$\begin{aligned}\angle A + \angle B + \angle C + \angle D &= 360^\circ \\ (\angle A + \angle C) + (\angle B + \angle D) &= 360^\circ \\ 180^\circ + (\angle B + \angle D) &= 360^\circ \\ \angle B + \angle D &= 180^\circ.\end{aligned}$$

$$\begin{aligned}45. (d) \quad 35x &= 5 \times 7 \times x, \\ 55x &= 5 \times 11 \times x, \\ 77x &= 7 \times 11 \times x\end{aligned}$$

$$\therefore \text{H.C.F} = 24 = x$$

$$\therefore \text{Numbers are } 35 \times 24, 55 \times 24, 77 \times 24$$

$$\text{i.e. } 840, 1320, 1848$$

46. (b) To find the minimum number of square slabs to cover the floor, we have to find the greatest size of each such slab. For this purpose, we have to find the HCF of 450 and 300.

$$(\text{Since } 4.5 \text{ m} = 450 \text{ cm and } 3 \text{ m} = 300 \text{ cm})$$

$$\text{Now HCF of } 450 \text{ and } 300 = 150$$

So the required size of the slab must be  $150 \text{ cm} \times 150 \text{ cm}$ .

## Hints &amp; Explanations

Hence, the number of slabs required

$$= \frac{\text{Area of the floor}}{\text{Area of one slab}}$$

$$= \frac{450 \times 300}{150 \times 150} = 6$$

47. (c) As the sum is 47, the other integer is obtained by subtracting  $-24$  from 47. So, the required integer

$$= 47 - (-24) = 47 + 24 = 71$$

48. (d) The number of students who obtained marks more than or equal to 5 is 17

49. (a) Cost of fencing per metre = ₹30  
Total cost of fencing = ₹12000  
So, the length of fencing (perimeter)

$$= \frac{\text{Total cost}}{\text{Cost per metre}}$$

$$= \frac{1200}{30} = 400 \text{ m}$$

Now, length of fencing = Perimeter of the square field =  $4 \times \text{side of the field}$

$$\text{Therefore, } 4 \times \text{side of the field} = 400 \text{ m}$$

or, side of the field

$$= \frac{400}{4} \text{ m} = 100 \text{ m}$$

So, area of the field

$$= 100 \text{ m} \times 100 \text{ m} = 10000 \text{ sq. m.}$$

50. (c)  $7 + 5 = 12$  students