Class VIII Session 2023-24
Subject - Maths
Sample Question Paper - 9

Time Allowed: 3 hours **Maximum Marks: 80**

Section A

1. $\frac{-7}{5} + \left(\frac{2}{-11} + \frac{-13}{25}\right) = \left(\frac{-7}{5} + \frac{2}{-11}\right) + \frac{-13}{25}$ **[1]**

   This property is

   a) identity b) closure

   c) associative d) commutative

2. Sum of two rational numbers is a _____. **[1]**

   a) positive number b) negative number

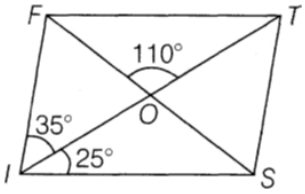
   c) irrational number d) rational number

3. If an angle of a parallelogram is two-third of its adjacent angle, the smallest angle of the parallelogram is **[1]**

   a) 108^o b) 54^o

   c) 81^o d) 72^o

4. In parallelogram FIST, the value of $\angle OST$ is **[1]**



   a) 80^o b) 72^o

   c) 75^o d) 70^o

5. Two coins are tossed simultaneously. What is the probability of getting one head and one tail? **[1]**

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

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

6. The product of two numbers is 1936. If one number is 4 times the other, the numbers are **[1]**

   a) 16, 121 b) 22, 88

   c) 44, 44 d) 20, 24

7. the value of $\sqrt{\frac{0.16}{0.4}}$ is **[1]**

   a) 0.2 b) 0.63

   c) None of these d) 0.02

8. The value of $\left(\sqrt{\frac{225}{729}} - \sqrt{\frac{25}{144}}\right) \div \sqrt{\frac{16}{81}}$ is **[1]**

a) $\frac{1}{16}$

b) $\frac{5}{48}$

c) $\frac{1}{48}$

d) $\frac{5}{16}$

9. The product 864 $\times$ n is a perfect cube. What is the smallest possible value of **n**? **[1]**

a) 3

b) 4

c) 1

d) 2

10. Find the prime factorisation of 1728. **[1]**

a) $2^3 \times 2^3 \times 3^3$

b) None of these

c) $2^3 \times 2^3 \times 5^3$

d) $2^3 \times 3^3 \times 3^3$

11. The price of a washing machine is Rs 15,000. The sales tax charged on it is at the rate of 15%. Find the amount that Arjun will have to pay if he buys it. **[1]**

a) None of these

b) Rs 14,550

c) Rs 15,250

d) Rs 17,250

12. Simplify the expression : $-3x(7x - 4) + 6x - (13 - 24x^2)$ **[1]**

a) $-24x^2 + 10 - 17$

b) $-24x^2 - 15x - 17$

c) $3x^2 + 18x + 13$

d) $3x^2 + 18x - 13$

13. What should be added to $\frac{1}{x}$, to make it equal to x? **[1]**

a) $\frac{x^2+1}{x}$

b) $\frac{x^2-x}{x^2}$

c) $\frac{x}{x^2-1}$

d) $\frac{x^2-1}{x}$

14. What is the surface area of a cylindrical iron bar, if the base radius is 5 in. and its height is 72 in.? **[1]**

a) 1417.80 $in.^2$

b) 2420 $in.^2$

c) 3417.80 $in.^2$

d) 2700 $in.^2$

15. Find the area of a triangle whose base is 4 cm and altitude is 6 cm. **[1]**

a) $14cm^2$

b) $12cm^2$

c) $10cm^3$

d) $16cm^2$

16. Expand 1025.63 using exponents. **[1]**

a) $1 \times 10^3 + 0 \times 10^1 + 5 \times 10^0 + 6 \times 10^{-1} + 3 \times 10^{-3}$

b) $1 \times 10^3 + 0 \times 10^2 + 2 \times 10^1 + 5 \times 10^0 + 6 \times 10^{-1} + 3 \times 10^{-2}$

c) $1 \times 10^3 + 0 \times 10^2 + 2 \times 10^1 + 5 \times 10^0 + 6 \times 10^{-1} + 3 \times 10^{-3}$

d) $1 \times 10^4 + 0 \times 10^3 + 2 \times 10^2 + 5 \times 10^1 + 6 \times 10^0 + 3 \times 10^{-1}$

17. A company makes 5 blue cars for every 3 white cars it makes. If the company makes 15 white cars in one day, how many blue cars will it make? **[1]**

a) 25

b) 17

c) 9

d) 13

18. Factorise: $169a^2 - 144b^2$ **[1]**

a) (13a + 12b)

b) (13a - 12b)

c) None of these

d) (13a + 12b) (13a - 12b)

Section B

19. **Assertion (A):** The edge of the cube whose total surface area is 26.46 sq.m, is 2.1m. **[1]**

Reason (R): The total surface area of cube having side a is $6a^2$.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

20. **Assertion (A):** The reciprocal of $(\frac{-1}{3})^{-2}$ is 3^{-2}. **[1]**

Reason (R): A fractional exponent of the form $\frac{1}{n}$ means to take n^{th} root.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

Section C

21. Solve: 0.25 (4x - 5) = 0.75x + 8 **[2]**

22. Shoes of the following brands are sold in November 2007 at a shoe store. Construct a pie chart for the given data. **[2]**

Brand	Number of pairs of shoes sold
A	130
B	120
C	90
D	40
E	20

23. Simplify 3x (4x – 5) + 3 and find its values for **[2]**

i. x = 3

ii. x = $\frac{1}{2}$

24. Express the product of 3.2×10^6 and 4.1×10^{-1} in the standard form. **[2]**

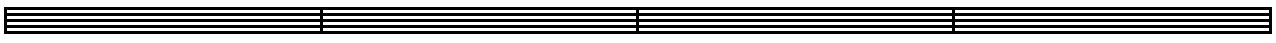
25. In a camp, there is enough flour for 300 persons for 42 days. How long will the flour last, if 20 more persons join the camp? **[2]**

26. Factorise the expression and divide it as directed: $(x^4 - 16) \div x^3 + 2x^2 + 4x + 8$. **[2]**

27. Let a, b, c be the three rational numbers where a = $\frac{2}{3}$, b = $\frac{4}{5}$ and c = $\frac{-5}{6}$ then verify that a $\times$ (b $\times$ c) = (a $\times$ b) $\times$ c (Associative property of multiplication) **[3]**

28. Solve: 5x - 2 (2x - 7) = 2(3x - 1) + $\frac{7}{2}$ **[3]**

29. The rectangle represents the blocks played by children. Based on this answer the following questions: **[3]**



What is the probability that a block drawn at random will be

a. blue?

b. yellow?

c. red?

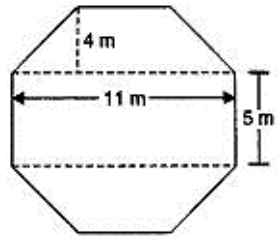
30. Find a Pythagorean triplet in which one member is 12. **[3]**

31. Is 53240 a perfect cube? If not, then by which smallest natural number should 53240 be divided so that the quotient is a perfect cube? **[3]**

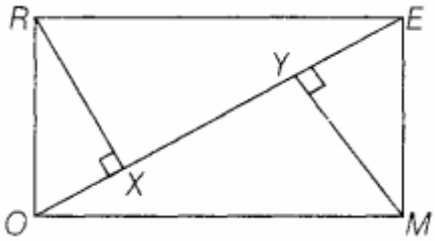
32. An article was purchased for ₹1239 including GST of 18%. Find the price of the article before GST was added. **[3]**

33. Subtract: 3a(a + b + c) - 2b(a - b + c) from 4c(-a + b + c). **[3]**

34. Top surface of a raised platform is in the shape of a regular octagon as shown in the figure. Find the area of the octagonal surface. **[3]**



35. A rectangle MORE is shown below. **[4]**



Answer the following questions by giving an appropriate reason.

i. Is RE = OM

ii. Is ∠MYO = ∠RXE?

iii. Is ∠MOY = ∠REX?

iv. Is △MYO ≅ △RXE?

v. Is MY = RX?

36. Given, principal = ₹40000, rate of interest = 8% per annum compounded annually. Find **[4]**

i. Interest if period is one year.

ii. Principal for IInd year.

iii. Interest for IInd year.

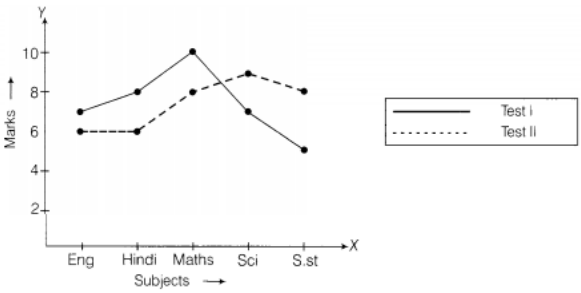
iv. Amount if period is two year.

37. The radius and height of cylinder are in the ratio of 3:2 and its volume is 19,404 cm^3. Find the radius and height. **[4]**

38. A photograph of a bacteria enlarged 50000 times attains a length of 5 cm as shown in the diagram. What is the actual length of the bacteria? If the photograph is enlarged 20000 times only, what be its enlarged length? **[4]**

39. Factorize $36x^2 – 12x + 1 – 25y^2$. **[4]**

40. The graph given below shows the marks obtained out of 10 by Sonia in two different tests. Study the graph and answer the questions that follow. **[4]**



a. What information is represented by the axes?

b. In which subject did she score the highest in Test I?

c. In which subject did she score the least in Test II?

d. In which subject did she score the same marks in both the Tests?

e. What are the marks scored by her in English in Test II?

f. In which test was the performance better?

g. In which subject and which test did she score full marks?

Solution

Section A

1.

(c) associative

Explanation: Since, a + {b + c) = (a + b) + c is associative property.

2.

(d) rational number

Explanation: Sum of two rational numbers is a rational number.

For, exampe, $\frac{2}{3} + \frac{4}{3} = \frac{6}{3}$

3.

(d) 72^o

Explanation: Let one angle of a parallelogram be x^o Let the other angle of parallelogram be $\frac{2x^\circ}{3}$

Since sum of adjacent angles of a parallelogram is 180^o

So, $x + \frac{2x^\circ}{3} = 180$

$\Rightarrow \frac{5x}{3} = 180^o$

$\Rightarrow x = 36^o \times 3^o = 108^o$

The smallest angle of the parallelogram

$= \frac{2}{3}x = \frac{2}{3} \times 108 = 72^o$

4.

(c) 75^o

Explanation: Given, $\angle FIS = 60^o$

Now, $\angle FTS = \angle FIS = 60^o$ [$\because$ opposite angles of a parallelogram are equal]

Now, FT || IS and TI is a transversal, therefore

$\angle FTO = \angle SIO = 25^o$ [alternate angles]

$\therefore \angle STO = \angle FTS - \angle FTO = 60^o - 25^o = 35^o$

Also, $\angle FOT + \angle SOT = 180^o$ [linear pair]

$\Rightarrow 110^o + \angle SOT = 180^o$

$\Rightarrow \angle SOT = 180^o - 110^o = 70^o$

In $\triangle TOS$, $\angle TSO + \angle OTS + \angle TOS = 180^o$ [angle sum property of triangle]

$\therefore \angle OST = 180^o - (70^o + 35^o) = 75^o$

5. **(a)** $\frac{1}{2}$

Explanation: Total number of outcomes = $2 \times 2 = 4$

Number of favourable outcomes = 2 [i.e. (H, T), (T, H)]

$\therefore$ Probability of getting one head and one tail = $\frac{2}{4} = \frac{1}{2}$

6.

(b) 22, 88

Explanation: Let one number = a

$\therefore$ Second number = 4a

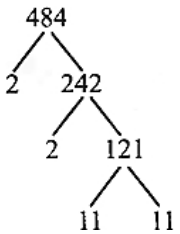
$\Rightarrow 4a \times a = 1936$

$\Rightarrow a^2 = \frac{1936}{4} = 484$

$\Rightarrow a^2 = 484$

$\Rightarrow a^2 = (2 \times 2) \times (11 \times 11)$

$\Rightarrow a = 2 \times 11 = 22$



and 4a = 4 × 22 = 88

∴ Numbers are 22 and 88.

7.

(b) 0.63

Explanation: $\sqrt{\frac{\overline{0.16}}{0.4}} = \sqrt{\frac{\overline{0.16}}{0.40}} = \sqrt{\frac{\overline{16}}{40}}$

$= \sqrt{\frac{4}{10}} = \sqrt{0.4} = 0.63$

	0.63
6	$\overline{0.4000}$
	−36
123	400
	−369
	34

8.

(d) $\frac{5}{16}$

Explanation: $\left[\sqrt{\frac{\overline{225}}{729}}\right] - \left[\sqrt{\frac{\overline{25}}{144}}\right] \div \sqrt{\frac{\overline{16}}{81}}$

$= \left\{\left[\sqrt{\frac{\overline{225}}{729}}\right] - \left[\sqrt{\frac{\overline{25}}{144}}\right]\right\} \div \frac{4}{9} = \left[\frac{15}{27} - \frac{5}{12}\right] \div \frac{4}{9}$

$= \left[\frac{5}{9} - \frac{5}{12}\right] \div \frac{4}{9} = \left[\frac{20-15}{36}\right] \div \frac{4}{9}$

$= \frac{5}{36} \div \frac{4}{9} = \frac{5}{36} \times \frac{9}{4} = \frac{5}{16}$

9.

(d) 2

Explanation: 864 × n is a perfect cube.

864 = 2 × 2 × 2 × 2 × 2 × 3 × 3 × 3

= n = 2

2	864
2	432
2	216
2	108
2	54
3	27
3	9
	3

10. **(a)** $2^3 \times 2^3 \times 3^3$

Explanation: 1728 = 2 ×2 × 2×2 × 2 ×2 × 3 ×3 × 3

$= 2^3 \times 2^3 \times 3^3$

11.

(d) Rs 17,250

Explanation: Price of the Washing Machine = Rs.15,000

Sale tax $= ₹\frac{15000 \times 15}{100}$

= Rs 2,250

Amount Arjun will have to pay = Rs (15,000 + 2,250)

= Rs.17,250

12.

(d) $3x^2 + 18x - 13$

Explanation: -3x(7x-4) + 6x - (13 - $24x^2$)

= - $21x^2$ + 12x + 6x - 13 + $24x^2$

= $3x^2$ + 18x - 13

13.

(d) $\frac{x^2-1}{x}$

Explanation: Let y should be added to $\frac{1}{x}$ to make it equal to x

$\Rightarrow \frac{1}{x}$ + y = x

y = $x - \frac{1}{x}$

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

14.

(b) 2420 $in.^2$

Explanation: radius of cylindrical bar = 5 in. and height = 72 in.

The surface area of the cylindrical bar = $2\pi r(r + h)$

$S = 2 \times \frac{22}{7} \times 5(5 + 72)$

$S = \frac{22}{7}(77)$

$S = \frac{22}{7} \times 77$

$S = \frac{16940}{7}$ = 2420 $in.^2$

the surface area of cylindrical bar = 2420 $in.^2$

15.

(b) $12cm^2$

Explanation: Given that, Base of the triangle = 4 cm

The altitude of the triangle = 6cm

Area of a triangle = $\frac{1}{2}\times$ base $\times$ altitude

So,Area of the given triangle = $(\frac{1}{2}) \times 4 \times 6 = 12cm^2$

16.

(b) $1 \times 10^3 + 0 \times 10^2 + 2 \times 10^1 + 5 \times 10^0 + 6 \times 10^{-1} + 3 \times 10^{-2}$

Explanation: Rule of expanding for thousands, hundreds, tens, units and tenth, hundredth then multiply each digit with the exponential for of its place value & add them together.

17. **(a)** 25

Explanation: Let company makes x blue cars for 15 white cars

Blue Cars	5	x
White Cars	3	15

$\Rightarrow \frac{5}{3} = \frac{x}{15}$

$\Rightarrow \frac{5\times15}{3}$ = x

x = 25

18.

(d) (13a + 12b) (13a - 12b)

Explanation: $169a^2$ - $144b^2$

$(13a)^2$ - $(12b)^2$

(13a + 12b) (13a - 12b)

Section B

19. **(a)** Both A and R are true and R is the correct explanation of A.

Explanation: Reason explain the assertion point.

20.

(d) A is false but R is true.

Explanation: Its answer is 3^2.

Section C

21. Given, 0.25 (4x - 5) = 0.75x + 8

$\Rightarrow$ x - 1.25 = 0.75x + 8

$\Rightarrow$ x - 0.75x = 1.25 + 8 [transposing 0.75x to LHS and 1.25 to RHS]

$\Rightarrow$ 0.25x = 9.25

$\Rightarrow \quad \frac{0.25x}{0.25} = \frac{9.25}{0.25}$ [dividing both sides by 0.25]

$\therefore$ x = 37

22. Total number of pairs of shoes sold = (130 + 120 + 90 + 40 + 20) = 400

$\therefore$ Central angle of pie chart representing the brands:

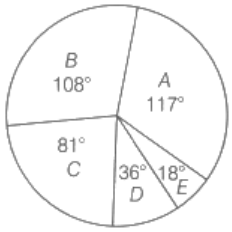
i. $A = \frac{130}{400} \times 360^\circ = 117^\circ$ (as total central angle =360^o)

ii. $B = \frac{120}{400} \times 360^\circ = 108^\circ$

iii. $C = \frac{90}{40} \times 360^\circ = 81^\circ$

iv. $D = \frac{40}{400} \times 360^\circ = 36^\circ$

v. $E = \frac{20}{400} \times 360^\circ = 18^\circ$



23. We have 3x (4x - 5) + 3

simplification: 3x (4x - 5) + 3 = 3x (4x) - 3x(5) + 3 = 12x^2 - 15x + 3

i. x = 3

Putting x = 3 in above equation, we get 12 (3)^2 - 15(3) + 3

= 12 (9) - 45 + 3

= 108 - 42 = 66

ii. x = $\frac{1}{2}$

Putting x = $\frac{1}{2}$ in above equation, we get

$12\left(\frac{1}{2}\right)^2 - 15\left(\frac{1}{2}\right) + 3$

= 12 $\times \frac{1}{4} - \frac{15}{2}$ + 3

= 3 - $\frac{15}{2}$ + 3

= 6 - $\frac{15}{2}$

$= \frac{12-15}{2}$

$= \frac{-3}{2}$

24. Product of 3.2 $\times$ 10^6 and 4.1 $\times$ 10^{-1} = (3.2 $\times$ 10^6) (4.1 $\times$ 10^{-1})

= (3.2 $\times$ 4.1) $\times$ 10^6 $\times$10^{-1}

= 13.12 $\times$ 10^5 =1.312 $\times$10^5 $\times$ 10^1 [$\because$ a^m $\times$ a^n = a^{m+n}]

= 1.312 $\times$ 10^6

25. $\because$ For 300 persons flour is enough for 42 days.

$\therefore$ For 1 person flour will be enough for = 300 $\times$ 42 = 12600 days

Now, 20 more persons join the camp.

So, total persons = 300 + 20 = 320

$\therefore$ For 320 persons flour enough = $\frac{12600}{320} = \frac{315}{8} = 39\frac{3}{8}$ days

26. We have, (x^4 - 16) $\div$ x^3 + 2x^2 + 4x + 8

(x^4 - 16) $\div$ x^3 + 2x^2 + 4x + 8 = $\frac{x^4 - 16}{x^3 + 2x^2 + 4x + 8}$

= $\frac{(x^2)^2 - 4^2}{x^2(x+2) + 4(x+2)}$ [$\because$ a^2 - b^2 = (a + b)(a - b)]

= $\frac{(x^2+4)(x^2-4)}{(x^2+4)(x+2)} = \frac{x^2 - 2^2}{x+2}$

$= \frac{(x+2)(x-2)}{x+2}$ again [$\because a^2 - b^2 = (a + b)(a - b)$]

$= x - 2$

27. Taking L.H.S = $a \times (b \times c)$

$= \frac{2}{3} \times \left[\frac{4}{5} \times \left(\frac{-5}{6}\right)\right]$

$= \frac{2}{3} \times \left(\frac{-20}{30}\right)$

$= \frac{2}{3} \times \left(\frac{-2}{3}\right)$

$= \frac{2\times(-2)}{3\times3}$

$= \frac{-4}{9}$

Taking R.H.S. = $(a \times b) \times c$

$= (\frac{2}{3} \times \frac{4}{5}) \times \frac{-5}{6}$

$= \frac{8}{15} \times \left(\frac{-5}{6}\right)$

$= \frac{-40}{90}$

$= \frac{-4}{9}$

So, $\frac{2}{3} \times \left[\frac{4}{5} \times \left(\frac{-5}{6}\right)\right] = \left[\frac{2}{3} \times \frac{4}{5}\right] \times \left(\frac{-5}{6}\right)$

28. $5x - 2(2x - 7) = 2(3x - 1) + \frac{7}{2}$

$5x - 4x + 14 = 6x - 2 + \frac{7}{2}$

$x + 14 = 6x + \frac{3}{2}$

$6x - x = 14 - \frac{3}{2}$

$5x = \frac{25}{2}$

$x = \frac{25}{2} \times \frac{1}{5} = \frac{5}{2}$

Therefore, the required solution is $x = \frac{5}{2}$.

29. a. $Probability = \frac{Number\ of\ favourable\ outcomes}{Total\ number\ of\ possible\ outcomes}$.

Number of favorable chance to get blue = 3

Total no. of outcomes = 16

Probability$= \frac{3}{16} = 3/16$

b. $Probability = \frac{Number\ of\ favourable\ outcomes}{Total\ number\ of\ possible\ outcomes}$.

Number of favorable chance to get yellow = 1

Probability $= \frac{1}{16} = 1/16$

c. $Probability = \frac{Number\ of\ favourable\ outcomes}{Total\ number\ of\ possible\ outcomes}$.

Number of favorable chance to get red = 8

Probability $= \frac{8}{16} = \frac{1}{2}$

30. If we take $m^2 - 1 = 12$

Then, $m^2 = 12 + 1 = 13$

Then the value of m will not be an integer.

So, we try to take $m^2 + 1 = 12$. Again $m^2 = 11$ will not give an integer value for m.

So, let us take $2m = 12$

then $m = 6$

Thus, $m^2 - 1 = 36 - 1 = 35$ and $m^2 + 1 = 36 + 1 = 37$

Therefore, the required triplet is 12, 35, 37.

31. $53240 = \underline{2} \times \underline{2} \times \underline{2} \times \underline{11} \times \underline{11} \times \underline{11} \times 5$

The prime factor 5 does not appear in a group of three. So, 53240 is not a perfect cube. In the factorisation 5 appears only one time. If we divide the number by 5, then the prime factorisation of the quotient will not contain 5.

So, $53240 \div 5 = \underline{2} \times \underline{2} \times \underline{2} \times \underline{11} \times \underline{11} \times \underline{11}$

Hence the smallest number by which 53240 should be divided to make it a perfect cube is 5.

The perfect cube in that case is = 10648.

32. Given,

GST = 18%

Cost with GST included = ₹ 1239

Let cost without GST = x

So, Cost before GST + GST = Cost with GST

x + $(\frac{18}{100} \times x)$ = 1239

x + $(\frac{9x}{50})$ = 1239

x = 1050

Thus, price before GST = 1050 rupees

33. 4c(-a + b + c) - [3a(a + b + c) - 2b(a - b + c)]

= -4ac + 4bc + $4c^2$ - [$3a^2$ + 3ab + 3ac - 2ab + $2b^2$ - 2bc]

= -4ac + 4bc + $4c^2$ - [$3a^2$ + $2b^2$ + 3ab - 2bc + 3ac - 2ab]

= -4ac + 4bc + $4c^2$ - [$3a^2$ + $2b^2$ + ab + 3ac - 2bc]

= -4ac + 4bc + $4c^2$ - $3a^2$ - $2b^2$ - ab - 3ac + 2bc

= -$3a^2$ - $2b^2$ + $4c^2$ - ab + 4bc + 2bc - 4ac - 3ac

= -$3a^2$ - $2b^2$ + $4c^2$ - ab + 6bc - 7ac

34. Area of the octagonal surface

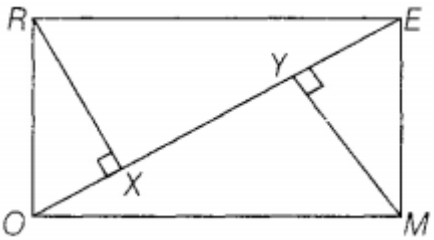
= Area of rectangular portion + 2(Area of trapezoidal portion)

$= 11 \times 5 + 2 \times \left[\frac{(5+11)\times 4}{2}\right] m^2$

= 55 + 64 m^2

= 119 m^2.

35. A rectangle MORE is shown below:



i. Yes, RE = OM

Given, MORE is a rectangle. Therefore, the opposite sides are equal.

ii. Yes, ∠MYO = ∠RXE

Here, MY and RX are perpendicular to OE.

Since, ∠RXO = 90° ⇒ ∠RXE = 90° and ∠MYE = 90° ⇒ ∠MYO = 90°

iii. Yes, ∠MOY = ∠REX

∵ RE || OM and EO is a transversal.

∴ ∠MOE = ∠OER [alternate interior angles]

⇒ ∠MOY = ∠REX

iv. Yes, ΔMYO ≅ ΔRXE

In ΔMYO and ΔRXE

MO = RE [proved in (i)]

∠MOY = ∠REX [proved in (iii)]

∠MYO = ∠RXE [proved in (ii)]

∴ ΔMYO ≅ ΔRXE [by AAS]

v. Yes, MY = RX

Since, these are corresponding parts of congruent triangles.

36. We have given that principal (P)= ₹40000

Rate of interest (R) = 8% per annum

i. Compound interest for one year,

We know that, $A = P\left(1 + \frac{R}{100}\right)^n$

,= $40000\left(1 + \frac{8}{100}\right)^1 [\because n = 1yr]$

= $40000 \times \frac{108}{100}$

∴ Amount, A = 400 × 108

= ₹43200

∴ Compound interest, Cl = A - P

= ₹43200 - ₹40000

= ₹3200

ii. Amount of 1st year = Principal of IInd year

= ₹43200

iii. Now, for IInd year,

Principal = ₹43200

Rate of interest, R= 8% per annum

Time, n = 1 yr

Amount for llnd year = 43200

$= \left(1+\frac{8}{100}\right)^1$

$= 43200 \times \frac{108}{100}$

= ₹46656

Compound interest, Cl = A - P

= ₹46656 - ₹43200

= ₹3456

iv. Now, if period i.e. time (n) = 2 yr,

Principal = ₹ 40000

and rate (R) = 8% per annum

$\because \quad A = P\left(1+\frac{R}{100}\right)^n$

$\Rightarrow \quad A = 40000\left(1+\frac{8}{100}\right)^2$

$= 40000 \times \frac{108}{100} \times \frac{108}{100}$

= ₹46656

Therefore the total Amount, A = ₹46656

37. Let the radius be 3x and height be 2x.

Volume of cylinder $= \pi r^2 h$

19404 = $\frac{22}{7}$(3x)(3x)(2x)

19404 = $\frac{(66x)(6x^2)}{7}$

19404×7 = 396x^3

x^3 = 343

$x = \sqrt[3]{343}$

x = 7cm

Therefore,

Radius = 3x = 3(7) = 21cm

Height = 2x = 2(7) = 14cm

38. Actual length of the bacteria

$\frac{5}{50000} cm$

$= \frac{1}{10000} cm.$

= 10^{-4} cm

More the number of times a photograph of a bacteria is enlarged, more the length attained. So, the number of times a photograph of a bacteria is enlarged and the length attained are directly proportional to each other.

So, $\frac{x_1}{x_2} = \frac{x_2}{y_2}$

$\therefore \frac{50000}{5} = \frac{20000}{y_2}$

∴ 50000 y_2 = 5 × 20000

$\therefore y_2 = \frac{5 \times 20000}{50000}$

∴ y_2 = 2

Hence, its enlarged length would be 2 cm.

39. $36x^2 – 12x + 1 – 25y^2 = (6x)^2 - 2 \times 6x \times 1 + 1^2 – (5y)^2$

$= (6x – 1)^2 – (5y)^2$ Use $a^2 – b^2 = (a + b)(a - b)$

$= \{(6x –1) – 5y\}\{(6x – 1) + 5y\}$

$= (6x – 1 – 5y)(6x – 1 + 5y)$

$\therefore 36x^2 – 12x + 1 – 25y^2 = (6x – 5y – 1)(6x +5y – 1)$

40. After observing the graph carefully, it is clear that

a. The x-axis represents subjects and the y-axis represents the marks obtained by Sonia.

b. In Maths, she scored the highest in Test I.

c. In English and Hindi, she scored the least in Test II.

d. In Hindi and Maths, she scored the same marks in both tests.

e. She scored 6 marks in English in Test II.

f. Same performance in both tests by Sonia.

g. Test I in Maths, she scored full marks i.e. 10 marks.