Class VIII Session 2024-25
Subject - Mathematics
Sample Question Paper - 3

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

General Instructions:

1. This Question Paper has 4 Sections A-D.
2. Section A has 20 MCQs carrying 1 mark each.
3. Section B has 6 questions carrying 02 marks each.
4. Section C has 8 questions carrying 03 marks each.
5. Section D has 6 questions carrying 04 marks each.
6. All Questions are compulsory.
7. Draw neat figures wherever required. Take π =22/7 wherever required if not stated

Section A

1. A number of the form $\frac{p}{q}$ is said to be a rational number, if **[1]**

   a) p, q are integers and p $\neq$ 0

   b) p, q are integers

   c) p, q are integers and p $\neq$ 0, also q $\neq$ 0

   d) p, q are integers and q $\neq$ 0

2. Find $-\frac{2}{3} \times \frac{3}{5} + \frac{5}{2} - \frac{3}{5} \times \frac{1}{6}$ **[1]**

   a) 2

   b) 3

   c) -2

   d) -3

3. Solve: $\frac{3x-2}{4} - \frac{2x+3}{3} = \frac{2}{3} - x$ **[1]**

   a) 2

   b) 3

   c) 4

   d) 5

4. Solve: 3(t - 3) = 5(2t + 1) **[1]**

   a) 2

   b) -2

   c) 3

   d) -3

5. Find the number of sides of a regular polygon whose each exterior angle has a measure of 90^o. **[1]**

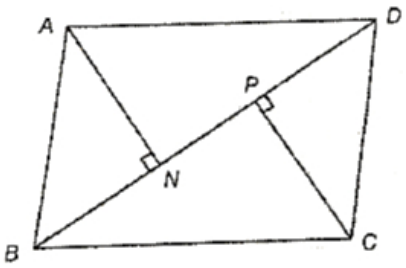
   a) 3

   b) 2

   c) 1

   d) 4

6. In the figure given below AN and CP are perpendiculars to the diagonal BD of a parallelogram. Then **[1]**



a) AN > CP

b) AN = CP

c) AN $\neq$ CP

d) AN < CP

7. A quadrilateral is a rhombus but not a square if **[1]**

a) its diagonals are not perpendicular

b) the length of diagonals are not equal

c) opposite angles are not equal

d) its diagonals do not bisect each other

8. The smallest number by which 32 should be multiplied so as to get a perfect square is **[1]**

a) 3

b) 8

c) 2

d) 4

9. The value of $\sqrt[3]{4096}$ is _____. **[1]**

a) 24

b) 16

c) 8

d) 32

10. Which of the following perfect cube is the cube of an even number? **[1]**

a) 2197

b) 343

c) 216

d) 1331

11. If 90% of x is 315 km, then the value of x is **[1]**

a) 350 m

b) 325 km

c) 350 km

d) 325 m

12. The value of $(3x^3 + 9x^2 + 27x) \div 3x$ is **[1]**

a) $x^2 + 3x + 9$

b) $3x^3 + 9x^2 + 9$

c) $3x^2 + 3x^2 + 27x$

d) $x^2 + 9 + 27x$

13. The number of faces in a square prism is _____. **[1]**

a) 8

b) 6

c) 4

d) 7

14. Number of faces, vertices and edges in the rectangular prism are respectively _____. **[1]**

a) 4, 6, 8

b) 6, 8, 12

c) 7, 5, 12

d) 6, 5, 7

15. The dimensions of a rectangular iron box are l $\times$ w $\times$ h. How many times will the surface area of the iron box increase, if all its dimensions are doubled? **[1]**

a) 3 times

b) 5 times

c) 8 times

d) 4 times

16. The value of $(p^x \times p^y) \div (p^x \div p^y)$ is **[1]**

a) p^{2y} b) $2p^x$

c) $2p^y$ d) p^{2x}

17. The standard form for 234000000 is **[1]**

a) 0.234×10^{-9} b) 2.34×10^8

c) 2.34×10^{-8} d) 0.234×10^9

18. A gang of labors promise to do a piece of work in 10 days, but 5 out of them become absent. If the rest of the gang do the work in 12 days, find the original number of men. **[1]**

a) 35 b) 25

c) 40 d) 30

19. A mixture of paint is prepared by mixing 1 part of red pigments with 8 parts of base. How many parts of base will be used in mixture by mixing 7 part of red pigment? **[1]**

a) 63 b) 49

c) 56 d) 70

20. Factorise: xy + y + xz + z **[1]**

a) (x - 1) b) (y + z)

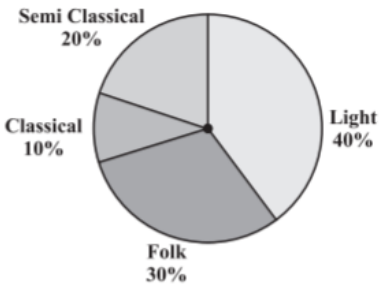
c) (x + 1) (y + z) d) (x + 1)

Section B

21. Verify the property $x \times (y \times z) = (x \times y) \times z$ of rational number by using $x = \frac{-2}{7}, y = \frac{-5}{6}$ and $z = \frac{1}{4}$ and What is the name of this property? **[2]**

22. Solve the equation and check your result: $3m = 5m - \frac{8}{5}$ **[2]**

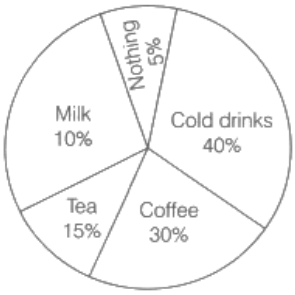
23. A survey was made to find the type of music that a certain group of young people liked in a city. The adjoining pie chart shows the findings of this survey. **[2]**



From this pie chart which type of music is liked by the maximum number of people?

OR

A survey was carried out to find the favourite beverage preferred by a certain group of young people. The following pie chart shows the findings of this survey.



From this pie chart, answer the following:

i. Which type of beverage is liked by the maximum number of people?

ii. If 45 people like tea, how many people were surveyed?

24. Find the square root of 729 by the Prime Factorisation Method. **[2]**

25. Draw Top view, Front view and Side view of a cylinder. **[2]**

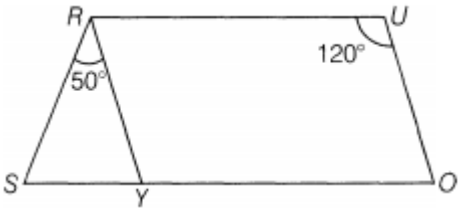
26. Express in standard form: **2years in seconds** **[2]**

OR

The diameter of the Sun is 1.4×10^9m and the diameter of the Earth is 1.2756×10^7m. Compare their diameters by division.

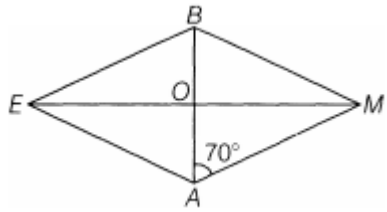
27. Solve: $3x - \frac{x-2}{3} = 4 - \frac{x-1}{4}$ **[3]**

28. In the given parallelogram YOUR, ∠RUO = 120^o and OY is extended to point S, such that ∠SRY = 50^o. Find ∠YSR. **[3]**



OR

In rhombus BEAM, find ∠AME and ∠AEM.



29. Find the least number which must be added to 525 so as to get a perfect square. Also find the square root of the perfect square so obtained. **[3]**

30. Find the cube root of 15625 by prime factorisation method. **[3]**

31. A man gives 40% of his money to his children and 20% of the remaining to a trust. If he is still left with ₹ 9600, what is the amount did he originally have? **[3]**

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

33. An aquarium is in the form of a cuboid whose external measures are $80cm \times 30cm \times 40cm$. The base, side faces and back face are to be covered with a coloured paper. Find the area of the paper needed. **[3]**

34. Factorise: m^4 - 256 **[3]**

OR

Work out the division: 96abc (3a – 12) (5b – 30) ÷ 144 (a – 4) (b – 6)

35. The number of students in a hostel, speaking different languages is given below. Display the data in a pie chart. **[4]**

Language	Hindi	English	Marathi	Tamil	Bengali	Total
Number of Students	40	12	9	7	4	72

36. If 60% people in a city like cricket, 30% like football and the remaining like other games, then what percent of the people like other games? If the total number of people are 50 lakh, find the exact number who like each type of game. **[4]**

OR

The population of a city was 20,000 in the year 1997. It increased at the rate of 5% p.a. Find the population at the end of the year 2000.

37. What must be added to sum of $x^2 - 4x + 7$ and $2x^2 + 5x - 9$ is to get 0. **[4]**

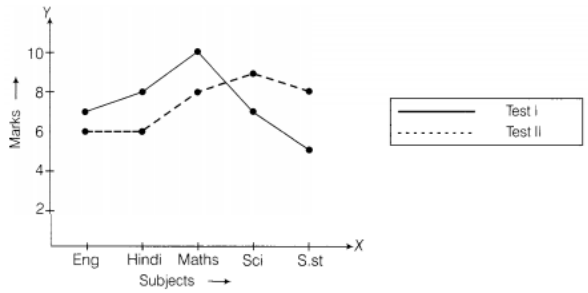
38. In a building there are 24 cylindrical pillars each having a radius of 28cm and height of 4m. Find the cost of painting the curved surface area of all the pillars at the rate of Rs.8 per m^2. **[4]**

OR

The dimensions of a cuboid are in the ratio of 2:3:4 and its total surface area is $208m^2$. Find its dimensions.

39. Factorize $2x^2 + 5x + 3$. **[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.

(d) p, q are integers and q $\neq$ 0

Explanation: A number of the form $\frac{p}{q}$ is said to be a rational number, if p and q are integers and q $\neq$ 0

2. **(a)** 2

Explanation: $\frac{-2}{3} \times \frac{3}{5} + \frac{5}{2}$-$\frac{3}{5} \times \frac{1}{6}$

= $\frac{3}{5}$ [$\frac{-2}{3}$-$\frac{1}{6}$] + $\frac{5}{2}$

= $\frac{3}{5}$ [$\frac{-2\times2-1\times1}{6}$] + $\frac{5}{2}$

= $\frac{3}{5}$[$\frac{-4-1}{6}$] + $\frac{5}{2}$

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

= $\frac{-1}{2}$ + $\frac{5}{2}$

= $\frac{-1+5}{2}$

= $\frac{4}{2}$

= 2

3. **(a)** 2

Explanation: $\frac{3x-2}{4} - \frac{2x+3}{3} = \frac{2}{3} - x$

L.C.M on both sides

or, $\frac{(9x-6-8x-12)}{12}$ = $\frac{(2-3x)}{3}$

or, $\frac{(x-8)}{12}$ = $\frac{(2-3x)}{3}$

by cross-multiply

or, 3x - 54 = 24 - 36x

or, -54 - 24 = -36x - 3x

or, -78 = -39x

or, $\frac{-79}{-39}$ = x

or, 2 = x

4.

(b) -2

Explanation: 3(t - 3) = 5(2t + 1

3t - 9 = 10t + 5

10t - 3t = -9 - 5

7t = -14

t = 14 $\div$ 7

t = -2

5.

(d) 4

Explanation: Number of sides

n = $\frac{360^0}{90^0}$

= 4

6.

(b) AN = CP

Explanation: Area of $\triangle$ABD = Area of $\triangle$BCD (diagonal of a || gm divides it into two triangles of equal area)

$\Rightarrow$ $\frac{1}{2}$(BD $\times$ AN) = $\frac{1}{2}$(PC $\times$ BD)

$\Rightarrow$ AN = CP

7.

(b) the length of diagonals are not equal

Explanation: Diagonals of a Rhobus not necessarily equal

8.

(c) 2

Explanation: $32 \times 2 = 64 = 8^2$.

9.

(b) 16

Explanation: $(4096)^{(1/\sqrt{3})^{(\sqrt{2})^2}}$

$= (4096)^{(1/\sqrt{3})^{(2)^{\frac{1}{2}\times 2}}}$

$= (4096)^{(1/\sqrt{3})^2}$

$= (4096)^{1/3}$

2	4096
2	2048
2	1024
2	512
2	256
2	128
2	64
2	32
2	16
2	8
2	4
	2

$\Rightarrow \sqrt[3]{4056} = 2 \times 2 \times 2 \times 2 = 16$

10.

(c) 216

Explanation: 216 is the cube of an even number because cube of an even number is always even.

11.

(c) 350 km

Explanation: We have, 90% of x = 315 km

$\Rightarrow \quad \frac{90}{100} \times x = 315$

$\Rightarrow \quad x = \frac{315\times 100}{90} = \frac{315\times 10}{9} = 350$

x = 350 km

12. **(a)** $x^2 + 3x + 9$

Explanation: We have,

$\left(3x^3 + 9x^2 + 27x\right) \div 3x = \frac{3x^3+9x^2+27x}{3x} = \frac{3x^3}{3x} + \frac{9x^2}{3x} + \frac{27x}{3x} = x^2 + 3x + 9$

13.

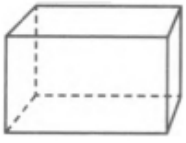
(b) 6

Explanation: 6

14.

(b) 6, 8, 12

Explanation: Rectangular prism



Faces = 6,

Vertices = 8,
Edges = 12

15.

(d) 4 times

Explanation: length = l , breadth = w and height = h

Surface area of rectangular iron box = 2(l × b + b × h + h ×l)

S = 2(l × w + w × h + h + l)

S = 2(lw + wh + hl)

when dimensions are doubled,

New Length = 2l, breadth = 2w, height = 2h

The new surface area of the iron box = 2(l × b + b × h + h × l)

S = 2(2l × 2w + 2w × 2h + 2h × 2l)

S = 2(4lw + 4wh + hl)

S = 8(lw + wh + hl)

No. of times surface area will increase = new surface area/surface area of iron box

$= \frac{8(lw+wh+hl)}{2(lw+wh+hl)} = \frac{8}{2} = 4$

surface area will increase 4 times.

16. **(a)** p^{2y}

Explanation: We have, $(p^x \times p^y) \div (p^x \div p^y)$

$= (p^{x+y}) \div (p^{x-y}) = p^{x+y-(x-y)} = p^{x+y-x+y} = p^{2y}$

17.

(b) 2.34×10^8

Explanation: Given, $234000000 = 234 \times 10^6 = 2.34 \times 10^{6+2} = 2.34 \times 10^8$

Hence, standard form of 234000000 is 2.34×10^8

18.

(d) 30

Explanation: More men, less time (Indirect)

Let original number of men = x

No of Men	No of days
x	10
x - 5	12

$\frac{x}{x-5} = \frac{12}{10}$

$\Rightarrow 10x = 12x = 60$

$\Rightarrow 2x = 60 \Rightarrow x = 30$

19.

(c) 56

Explanation: This is a question of direct proportion, as with the increase in the part of red pigment the part of base will increase.

In direct proportion, the constant value is given by $\frac{x}{y}$

$\frac{1}{8} = \frac{7}{a}$ (where a is the parts of the base to be used in the mixture)

a = 56

20.

(c) (x + 1) (y + z)

Explanation: xy + y + xz + z

y(x + 1) + z (x + 1)

(x+1) (y + z)

Section B

21. Given, $x = \frac{-2}{7}, y = \frac{-5}{6}$ and $z = \frac{1}{4}$

Now, LHS = x × (y × z) = $\frac{-2}{7} \times (\frac{-5}{6} \times \frac{1}{4}) = \frac{-2}{7} \times \frac{-5}{24} = \frac{5}{84}$

RHS = (x × y) × z = $(\frac{-2}{7} \times \frac{-5}{6}) \times \frac{1}{4} = \frac{5}{21} \times \frac{1}{4} = \frac{5}{84}$

LHS = RHS

Hence, x × (y × z) = (x × y) × z

This property is associative property of multiplication.

22. 3m = 5m - $\frac{8}{5}$

∴ 3m = 5m - $\frac{8}{5}$ ... [Transposing 5m to L.H.S]

∴ -2m = $-\frac{8}{5}$

∴ m = $\frac{-8}{5 \times (-2)} = \frac{4}{5}$ ... [Dividing both sides by –2]

this is the required solution.

Verification,

L.H.S $= 3 \times \frac{4}{5} = \frac{12}{5}$

R.H.S. $= 5\left(\frac{4}{5}\right) - \frac{12}{5} = 4 - \frac{8}{5} = \frac{20-8}{5} = \frac{12}{5}$

Therefore, L.H.S = R.H.S

23. From the graph it is clear that light music is liked by the maximum number of people.

OR

i. The percentage of people preferring cold drinks is maximum. So, cold drinks is liked by the maximum number of people.

ii. From the pie chart, number of people who like tea = 45

⇒ 15% of total number of people surveyed = 45

⇒ $\frac{15}{100}$ × Total number of people surveyed = 45

∴ Total number of people surveyed = $\frac{45 \times 100}{15}$ = 300

24. The prime factorisation of 729 is

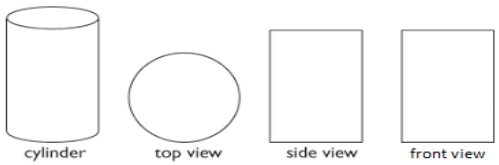
729 = 3 × 3 × 3 × 3 × 3 × 3

By pairing the prime factors, we get

729 = 3 × 3 × 3 × 3 × 3 × 3

3	729
3	243
3	81
3	27
3	9
	3

So, $\sqrt{729}$ = 3 × 3 × 3 = 27

25. 

26. Given, 2 yr = 2 × 365days [∵ 1 yr = 365days approx]

= 2 × 365 × 24h [∵ 1 day = 24 h]

= 2 × 365 × 24 × 60min [∵ 1 h = 60min]

= 2 × 365 × 24 × 60 × 60s [∵ 1 min = 60s]

= 63072000 s Standard form of 63072000 = 63072 × 10 × 10 × 10 = 63072 × 10^3 [∵ $a^m \times a^n = (a)^{m+n}$]

= 6.3072 × 10^3 × 10^4 = 6.3072 × 10^7s

OR

Diameter of the Sun = 1.4 × 10^9m

Diameter of the Earth = 1.2756 × 10^7m

For comparison, we have to change both diameter in same powers of 10 i.e. 1.2756 × 10^7 = 0.012756 × 10^9

Hence, if we divide the diameter of the Sun by diameter of Earth, we get, $\frac{1.4 \times 10^9}{0.012756 \times 10^9} = 110$

So, the diameter of the Sun is 110 times the diameter of Earth.

27. Given, $3x - \frac{x-2}{3} = 4 - \frac{x-1}{4}$

$\Rightarrow \quad \frac{9x-(x-2)}{3} = \frac{16-(x-1)}{4}$

$\Rightarrow$ 4(9x - x + 2) = 3(16 -x + 1) [by cross-multiplication]

$\Rightarrow$ 4(8x + 2) = 3(- x + 17)

$\Rightarrow$ 32x + 8 = - 3x + 51

$\Rightarrow$ 32x + 3x = 51 - 8 [transposing -3x to LHS and 8 to RHS]

$\Rightarrow$ 35x = 43

$\Rightarrow \frac{35x}{35} = \frac{43}{35}$

$\therefore \quad x = \frac{43}{35}$

28. Given, $\angle$RUO = 120° and $\angle$SRY = 50°

$\angle$RYO = $\angle$RUO = 120° [$\because$ opposite angles of a parallelogram]

Now, $\angle$SYR = 180° - $\angle$RYO [linear pair]

= 180°-120°= 60°

In $\triangle$SRY,

By the angle sum property of a triangle, $\angle$SRY + $\angle$RYS + $\angle$YSR = 180°

$\Rightarrow$ 50°+ 60° + $\angle$YSR = 180°

$\angle$YSR = 180° - (50° + 60°) = 70°

OR

Given, $\angle BAM$ = 70°

We know that, in rhombus, diagonals bisect each other at right angles.

$\therefore \angle BOM = \angle BOE = \angle AOM = \angle AOE = 90^\circ$

Now, in ΔAOM;

$\angle \mathrm{AOM} + \angle \mathrm{AMO} + \angle \mathrm{OAM} = 180^\circ$ [angle sum property of triangle]

90° + $\angle$AMO + 70°= 180°

$\Rightarrow$ $\angle$AMO = 180°- 90° = 70°

$\Rightarrow$ $\angle$AMO = 20°

Also, AM = BM = BE = EA

In ΔAME, we have,

AM = EA

$\therefore$ $\angle$AME = $\angle$AEM = 20° [$\because$ equal sides make equal angles]

29.

```
      22
   ┌──────
 2 │ 5 25
   │ -4
   ├──────
42 │ 1 25
   │  -84
   ├──────
   │   41
```

This shows that $22^2 < 525$.

Next perfect square is $23^2 = 529$.

Hence, the number to be added is $23^2 - 525 = 529 - 525 = 4$

Therefore, the perfect square so obtained is 525 + 4 = 529.

Hence, $\sqrt{529}$=23.

30.

5	15625
5	3125
5	625
5	125
5	25
5	5
	1

Prime factorisation of 15625 is

5 × 5 × 5 × 5 × 5 × 5 [grouping the factors in triplets]

$= 5^3 \times 5^3 = (5 \times 5)^3 = 25^3$

Therefore, $\sqrt[3]{15625} = 5 \times 5 = 25$.

31. Let the original amount of money with him = ₹ 100

Money given to children = 40% of original money

$= \frac{40}{100} \times 100 = ₹40$

Remaining money = ₹ 100 - ₹ 40 = ₹ 60

Money given to trust = 20% of the remaining money

$= \frac{20}{100} \times 60 = ₹12$

Left over money = ₹ 60 - 12 = ₹ 48

But, given left over money = ₹ 9600

When left over money is Rs. 48, original money = ₹ 100

If leftover money is Rs.9600, the original money $= \frac{9600 \times 100}{48} = ₹20,000$.

32. 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

33. The length of the aquarium = l = 80 cm

Width of the aquarium = b = 30 cm

Height of the aquarium = h = 40 cm

Area of the base = $l \times b = 80 \times 30$ = 2400 cm^2

Area of the side face = $b \times h = 30 \times 40$ = 1200 cm^2

Area of the back face = $l \times h = 80 \times 40$ = 3200 cm^2

Required area = Area of the base + area of the back face + (2 × area of a side face)

= 2400 + 3200 + (2 × 1200) = 8000 cm^2

34. We know that, $m^4 = (m^2)^2$

and $256 = (16)^2$

Therefore, $m^4 - 256 = (m^2)^2 - (16)^2$

$= (m^2 + 16)(m^2 - 16)$[using identity $a^2 - b^2 = (a + b)(a - b)$]

$= (m^2 + 16)(m^2 - 4^2)$

$= (m^2 + 16)(m + 4)(m - 4)$[again, using identity $a^2 - b^2 = (a + b)(a - b)$]

OR

96abc (3a – 12) (5b – 30) ÷ 144 (a – 4) (b – 6)

$= \frac{96abc(3a-12)(5b-30)}{144(a-b)(b-6)}$

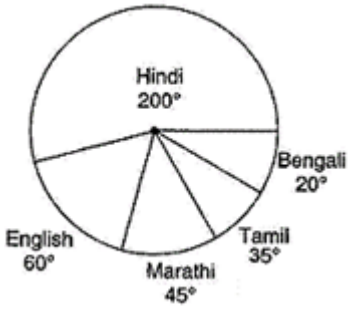
$= \frac{96abc \times 3(a-4) \times 5(b-6)}{144(a-4)(b-6)}$

= 10abc

35.

Language	Number of students	In Fraction	Central angle
Hindi	40	$\frac{40}{72} = \frac{5}{9}$	$\frac{5}{9} \times$ 360° = 200
English	12	$\frac{12}{72} = \frac{1}{6}$	$\frac{1}{6} \times$ 360° = 60
Marathi	9	$\frac{9}{72} = \frac{1}{8}$	$\frac{1}{8} \times$ 360° = 45
Tamil	7	$\frac{7}{22}$	$\frac{7}{22} \times$ 360° = 35
Bengali	4	$\frac{4}{72} = \frac{1}{18}$	$\frac{1}{18} \times$ 360° = 20
Total	72	1	360°

The pie chart accordingly:



36. Number of people who like cricket = 60%

Number of people who like football = 30%

Number of people who like other games

= 100% – (60% + 30%)

= 100% – 90%

= 10%

Total number of people = 50 lakhs = 50,00,000

Now number of people who like cricket

= 60% of 50,00,000

$= \frac{60}{100} \times 5000000$

= 30,00,000 or, 30 lakh

Number of people who like football

= 30% of 50,00,000

$= \frac{30}{100} \times 5000000$

= 15,00,000 or, 15 lakh

Number of people who like the other games

= 10% of 50,00,000

$= \frac{10}{100} \times 5000000$

= 5,00,000 or, 5 lakh

OR

There is a 5% increase in population every year, so every new year has a new population. Thus, we can say it is increasing in compounded form.

The population at the beginning of 1998 = 20000 (we treat this as the principal for the 1st year)

Increase at 5% = $\frac{5}{100} \times 20000 = 1000$

Population in 1999 = 20000 + 1000 = 21000

Increase at 5% = $\frac{5}{100} \times 21000 = 1050$

Population in 2000 = 21000 + 1050 = 22050

Increase at 5% = $\frac{5}{100} \times 22050 = 1102.5$

At the end of 2000 the population = 22050 + 1102.5 = 23152.5

So, the estimated population = 23153.

Alternative Method:

or, Population at the end of 2000 = 20000 $(1 + \frac{5}{100})^3$

$= 20000 \times \frac{21}{20} \times \frac{21}{20} \times \frac{21}{20}$

= 23152.5

So, the estimated population = 23153.

37. The number = 0 – [(x^2 – 4x + 7) + ($2x^2$ + 5x – 9)]

= 0 – [x^2 – 4x + 7 + $2x^2$ + 5x – 9]

= 0 – [$3x^2$ + x – 2]

= –$3x^2$ – x + 2

38. Since the units should be same so let's convert cm into metre as the cost is also in metres.

Radius = 28cm = 0.28m (1cm = 1/100m)

Curved surface area of pillar $= 2\pi(radius)(height)$

$= 2 \times \frac{22}{7} \times 0.28 \times 4$

$= 44 \times \frac{16}{100}$

= 7.04m^2

Curved surface area of 24 pillars $= 7.04 \times 24$

= 168.96m^2

Cost of curved surface area of one m^2 = Rs.8

Cost of curved surface area of 168.96m2 pillar $= Rs.8 \times 168.96$

= Rs. 1351.68

Therefore, the costs of painting 24 cylindrical pillars are Rs.1351.68.

OR

Let the dimensions be 2x, 3x and 4x in metres.

Total surface area = 208 m^2

2[(2x)(3x) + (3x)(4x) + (4x)(2x)] = 208

2[6x^2 + 12x^2 + 8x^2] = 208

2[26x^2] = 208

52x^2 = 208

x^2 = $\frac{208}{52}$

x^2 = 4m

x =√4m

x =2m

Length =2x =2(2m) = 4m

Breadth =3x = 3(2m) = 6m

Height =4x =4(2m) = 8m

39. The given expression is 2x^2 + 5x + 3

Here, coefficient of x^2 = 2, coefficient of x = 5 and constant term = 3

We shall now split up the coefficient of the middle term i.e. 5 into two parts such that their sum is 5 and product equal to the product of coefficient of x^2 and constant term i.e. 2 × 3 = 6. Clearly 2 + 3 = 5 and 2 × 3 = 6. So, we replace the middle term 5x by 2x + 3x

Thus we have

2x^2 + 5x + 3 = 2x^2 + 2x + 3x + 3

= (2x^2 + 2x) + (3x + 3)

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

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

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.