ASSIGNMENT SA 2

Class –8 **CH -8, 9,11,12,13 and 14** **Sub: MATHS**

QUESTION 1

(i) Multiple Choice Questions: **[1 MARKS QUESTION]**

CHAP 8

1. By selling 50 items, a shopkeeper lost the amount equal to the selling price of 10 items. His loss percent is

   a. 30/7 % b. 40/3 % c. 25/3 % d. 50/3 %

2. After allowing a discount of 15 % on the marked price of a pen-drive, it is sold for Rs 680. The marked price of the article is

   a. Rs 700 b. Rs 600 c. Rs 800 d. Rs 750

3. Sachin purchases a bat for Rs 660 including sales tax. If the rate of sales tax is 10 %, then the selling price of the bat is

   a. Rs 580 b. Rs 590 c. Rs 600 d. Rs 610

4. The buying price of 5 kg guava, at the rate Rs 20 per kg with 5 % sales-tax on the purchase, is

   a. Rs 22 b. Rs 23 c. Rs 24 d. None

5. A sum is taken for 2 year at 16 % per annum, if interest is compounded after every three months, the number of times for which interest is charged in 2 year is

   a. 8 b. 4 c. 6 d. 9

CHAP 9

1. a (b + c) = a b + a c is

   a. commutative property b. closure property
   c.distributive property d. associative property

2. The product of a monomial and binomial is a

   a. binomial b. monomial c. trinomial d. None

3. In a polynomial, the exponents of the variables are always

a. integers
b. non-positive integers
c. non negative integers
d. None

4. Which of the following is a binomial?

a. 13XbXb
b. $6b^2 + 7a + 2c$
c. $45 (b^2 + a)$
d. 13a X 3b X 5c

5 . Sum of 17abc, 13abc and 5abc is

a. 35ab
b. 30abc
c. 35abc
d None

Chap 11

1. If the height of a cylinder becomes ¼ of the original height and the radius is doubled, then which of the following will be true?

a. Volume of the cylinder will be doubled.
b. Volume of the cylinder will remain unchanged
c. Volume of the cylinder will be halved
d. Volume of the cylinder will be ¼ of the original

2. Volume of a cube is 216 cm^3, its surface area is

a. 108 cm^2
b. 216 cm^2
c. 512 cm^2
d. 128 cm^2

3. A cube of side 4 cm is cut into 1 cm cubes. What is the ratio of the surface areas of the original cubes and cut-out cubes?

a. 1:2
b. 1:3
c. 1:4
d. 1:6

4 Find the area of a rhombus whose diagonals are of lengths 10cm and 8.2cm

a. 27
b. 41
c. 81
d. 18

CHAP 12

1. In 3^n, n is known as
   a. base
   b. constant
   c. exponent
   d. variable
2. 5^{-2} can be written as
   a. 1/5
   b. $1/5^2$
   c. 5^2
   d. -2/5
3. The value of $\frac{1}{9^{-2}}$ is

a. 27
b. 81
c. -81
d. 18

4. The multiplicative inverse of 10^{-1000} is

a. 10^{-100} b. -10^{1000} c. 10^{1000} d. -10^{100}

5. The reciprocal of $\left(\frac{3}{7}\right)^{-1}$ is

a. $\frac{7}{3}$ b. $-\frac{3}{7}$ c. $-\frac{7}{3}$ d. $\frac{3}{7}$

CHAP 13

1. Both u and v directly with each other .When u is 10, v is 15, which of the following is not a possible pair of corresponding value of u and v ?

a. 15 and 20 b. 2 and 3 c. 25 and 37.5 d. 16 and 24

2. The number of teeth and the age of a person vary
   a. Directly to each other
   b. Inversely to each other
   c. Neither directly nor Inversely to each other
   d. Some time directly and some time inversely

3. If 12m uniform rod weight 42kg, then the weight of 5m rod of the same type will be

a. 16.5 kg b. 15.2 kg c. 17.5 kg d. 18.2 kg

4. If two quantities p and q vary inversely with each other, then

a. $\frac{p}{q}$ remains constant b. p + q remains constant

c. p X q remains constant d. p – q remains constant

5. 18 workers can do a work in 180 days. If two more workers join this work will be completed in

a. 140 days b. 150 days c. 158 days d. 162 days

CHAP: 14

1. The greatest common factor of 6a and 12b is

a. 6 b. 2 c. 3 d. 1

2. Coefficient of y in the term $\frac{-y}{3}$ is

a. -1 b. -3 c. -1/3 d. 1/3

3. The common factor of 3ab and 2cd is

a. 1 b. -1 c. a d. c

4. The product of a monomial and a binomial is a

a. monomial b. binomial c. trinomial d. None

5. Which of the following is a binomial?

a. 7 x a x a b. $6a^2 + 7b + 2c$ c. 4a x 3b x 2c d. $6 (a^2 + b)$

(ii) Fill the blank: **[1 MARKS QUESTION]**

CHAP 8

1. _____ is a reduction on the marked price of the article.

Answer: Discount

2. Discount = _____ - _____

Answer: Marked price, selling price

3. 3500 is greater than 500 by _____ %

Answer: 600

4. Ten times a number is _____ % increase in the number.

Answer: 900

5. If the discount of Rs 5y is available on the marked price of Rs 3x, then the discount per cent is _____

Answer: $(\frac{5y}{3x}$ X 100) %

CHAP 9

1. Coefficient of y in the term -13/3 y is _____

Answer: -13/3

2. The value of $(a + b)^2 – (a - b)^2$ is_____

Answer: 4ab

3. The product of two polynomials is a _____

Answer: polynomial

4. Square of (3a + 5b) is _____

Answer: $9a^2 + 30ab + 25b^2$

5 . The product of two terms with like signs is a _____ term.

Answer: positive polynomial

CHAP 11

1. Volume of a cylinder with the radius r and height h is _____
   Ans: $\pi r^2 h$
2. Opposite faces of a cuboid are _____ in area.

Ans: equal

3. Area of circle = _____
   Ans: : πr^2
4. A metal sheet 27 cm long, 8cm board and 1 cm thick is melted into a cube. The side of a cube is _____
   Ans: 6cm
5. Area of a rhombus = $\frac{1}{2}$ x product of _____
   Ans: diagonals

CHAP 12

1. The multiplicative inverse of 10^{10} is _____
   Ans: 10^{-10}
2. a^{13} X a^{-10} = _____
   Ans: a^3
3. The value of $(\frac{1}{2^3})^2$ is equal = _____
   Ans: $\frac{1}{64}$
4. 100^{0} = _____
   Ans: 1
5. The standard form of 12345000000 is _____
   Ans : $1.2345 \text{ X } 10^{10}$

CHAP 13

1. Let x varies directly as y^2, for y =3, x =2. If y =5 then x is _____
   Ans: $5\frac{5}{9}$
2. X and y are said to vary directly with each other, if for some positive number k, _____ = k.
   Ans: $\frac{x}{y}$
3. If x y = 10, then x and y vary _____ with each other.
   Ans: Inversely
4. When the speed remain constant, the distance travelled is _____ proportion to the time
   Ans: directly
5. The perimeter of a circle and its diameter vary _____ with each other
   Ans: directly

CHAP 14

1. The product of two polynomials is a _____.

Ans: polynomial

2. The common factor method of factorization for a polynomial is based on _____ law.

Ans: distributive

3. (x + a) (x + b) = x^2 + (a + b) x +_____.

Ans: a x b

4. The value of $(a + b)^2 + (a - b)^2$ is _____.

Ans: $2a^2 + 2b^2$

5. Number of factors of $(a + b)^2$ is _____

Ans: 2

(iii) Tell whether the statement is true or false: [1 MARKS QUESTION]

CHAP 8

1. To calculate the growth of bacteria, if the rate of growth is known. The formula for calculation of amount in compound interest can be used. TRUE
2. C P = M P – Discount FALSE
3. . The sale price is regular price minus the discount. TRUE
4. The cost price of 10 tables is equal to the sale price of 5 tables. Then, profit percent is 100% FALSE
5. If for the principal P, rate R % and time T, the simple interest is SI and compound interest is CI. Then, CI > SI. TRUE

CHAP 9

1. The value of $(a + b)^2 + (a - b)^2$ is 4ab. FALSE
2. The coefficient of x^2 yz in the term $-19x^2yz$ is -19. TRUE
3. An equation is true for all values of its variables. FALSE
4. The value of p for $21^2 – 19^2 = 10p$ is 8. TRUE
5. abc + bca + cab is a monomial TRUE

CHAP 11

1. The area of any two faces of a cube is equal.

Ans: True

2. The area of any two faces of a cuboid is equal.

Ans: False

3. The area of a trapezium becomes 4 times if its height gets doubled.

Ans: False

4. Two cuboids with equal volumes will always have equal surface areas.

Ans: False

5. Volumes of a solid are the measurement of the space occupied by it.

Ans: True

CHAP 12

1. The multiplicative inverse of $(-3)^{-2}$ is 3^{-2}

Ans: False

2. The reciprocal of $(\frac{3}{2})^3$ is not equal to $(\frac{3}{2})^{-3}$

Ans: False

3. $3829.26 = 3X\ 10^3 + 8\ X\ 10^2 + 2\ X\ 10^1 + 9\ X\ 10^0 + 2\ X\ 10^{-1} + 6\ X\ 10^{-2}$

Ans: True

4. $(\frac{-9}{2})^0 = 0$

Ans: False

5. The value of $\frac{1}{7-3}$ is equal to 216

Ans: False

CHAP 13

1. If d varies directly as t^2 , then we can write $dt^2 = k$, where k is some constant
   Ans: False
2. The population of a country and the area of land per person are in direct proportion.
   Ans: False
3. The distance travelled by CNG bus and the amount of CNG used are inversely proportion.
   Ans: False
4. If 5 persons can finish a job in days, then 1 person will finish it in 2 days.
   Ans: False
5. If x varies inversely as y and when x = 6, y =8, then for x = 8 then for x =8 the value of y is 10.
   Ans: False

CHAP 14

1. The difference of squares of two consecutive numbers is their sum.
   Ans: True
2. An equation is true for all the values of its variables.
   Ans: False
3. An identity is true for all values of its variables
   Ans: True
4. The value of $(a + 1)(a - 1)(a^2 + 1)$ is $(a^2 + 1)$ is $(a^4 + 1)$.
   Ans: False
5. The sum of areas of two squares with sides 5a and 5b is $25 (a + b) (a - b)$.
   Ans: False

(iv) Solve: Each carry one mark:[1 MARKS QUESTION]

CHAP 8 and 9

1. If 7/3 % of a number is 147, then find the number.

2. After increasing 15 % of the price of an article. Its price is Rs 1725. Find the increased amount.
3. Find the discount ,When M.P = Rs 625 and S P = Rs 562.50
4. Convert 7:3 in to percentage.
5. What per-cent of 500 is 35?
6. Add: 7xy and -5xy
7. Subtract: 4abc from 12abc
8. Find product: -4p, 7pq
9. Find product: (a^2) X $(2a^3)$
10. Add: ab – bc, bc – ca and ca – ab

CHAP 11

1. If the area of a face of cube is 20 cm^2, then find the total surface area of the cube.
2. The volume of a cube is 343cm^2, find its surface area.
3 The areas of two circles are in the ratio 49: 64. Find the ratio of their circumferences.
4. Find the volume of a cuboid 18m long 14 broad and 7m high.
5 The area of a rhombus is 240 cm^2 and one of the diagonals is 16 cm. Find the other diagonal.

CHAP 12

I. Evaluate:

(i) 3^{-2} (ii) $(-4)^{-2}$ (iii) $\left(\frac{1}{2}\right)^{-5}$

Ans. (i) $3^{-2} = \frac{1}{3^2}$

$\left[\because \ a^{-m} = \frac{1}{a^m}\right]$

$= \frac{1}{9}$

(ii) $(-4)^{-2} = \frac{1}{(-4)^2}$

$\left[\because \ a^{-m} = \frac{1}{a^m}\right]$

=

(iii) $\left(\frac{1}{\frac{1}{2}}\right)^{-5} = \left(\frac{2}{1}\right)^{5}$

$\left[\because \ a^{-m} = \frac{1}{a^m}\right]$

= $(2)^5$ =32

2. Simplifyandexpresstheresultinpowernotationwithpositiveexponent:

(i) $(-4)^5 \div (-4)^8$

(ii) $\left(\frac{1}{2^3}\right)^2$

(iii) $(-3)^4 \times \left(\frac{5}{3}\right)^4$

(iv) $\left(3^{-7} \div 3^{-10}\right) \times 3^{-5}$

(v) $2^{-3} \times (-7)^{-3}$

Ans. (i) $(-4)^5 \div (-4)^8 = (-4)^{5-8}$ $\left[\because \ a^m \div a^n = a^{m-n}\right]$

= $(-4)^{-3} = \frac{1}{(-4)^3}$ $\left[\because \ a^{-m} = \frac{1}{a^m}\right]$

(ii) $\left(\frac{1}{2^3}\right)^2 = \frac{1^2}{\left(2^3\right)^2}$

$\left[\because \quad \left(\frac{a}{b}\right)^m = \frac{a^m}{a^n}\right]$

$(-3)^4 \times \left(\frac{5}{3}\right)^4 = (-3)^4 \times \frac{5^4}{3^4}$

= $\left[\because \quad (a^m)^n = a^{m \times n}\right]$

(iii) $\frac{1}{2^{3\times 2}} = \frac{1}{2^6}$ $(-3)^4 \times \left(\frac{5}{3}\right)^4 = (-3)^4 \times \frac{5^4}{3^4}$ $\left[\because \quad \left(\frac{a}{b}\right)^m = \frac{a^m}{a^n}\right]$

=

$\left\{(-1)^4 \times 3^4\right\} \times \frac{5^4}{3^4}$

$\left[\because \quad (ab)^m = a^m b^m\right]$

$= 3^{4-4} \times 5^4 \quad \left[\because \quad a^m \div a^n = a^{m-n}\right]$

= $3^0 \times 5^4 = 5^4 \left[\because \quad a^0 = 1\right]$

(iv) $\left(3^{-7} \div 3^{-10}\right) \times 3^{-5} = 3^{-7-(-10)} \times 3^{-5}$ $\left[\because \quad a^m \div a^n = a^{m-n}\right]$

$= 3^{-7+10} \times 3^{-5} = 3^3 \times 3^{-5} =$

=

$3^{-2} = \frac{1}{3^2}$ $\left[\because \quad a^{-m} = \frac{1}{a^m}\right]$

(v) $2^{-3} \times (-7)^{-3} = \frac{1}{2^3} \times \frac{1}{(-7)^3}$ $\left[\because \quad a^{-m} = \frac{1}{a^m}\right]$

= $\frac{1}{\{2 \times (-7)\}^3} = \frac{1}{(-14)^3}$ $\left[\because \quad (ab)^m = a^m b^m\right]$

3. Findthevalueof:

(i) $\left(3^0+4^{-1}\right)\times 2^2$

(ii) $\left(2^{-1}\times 4^{-1}\right)\div 2^{-2}$

(iii) $\left(\frac{1}{2}\right)^{-2}+\left(\frac{1}{3}\right)^{-2}+\left(\frac{1}{4}\right)^{-2}$

(iv) $\left(3^{-1}+4^{-1}+5^{-1}\right)^0$

(v) $\left\{\left(\frac{-2}{3}\right)^{-2}\right\}^2$

Ans.

(i) $\left(3^0+4^{-1}\right)\times 2^2 = \left(1+\frac{1}{4}\right)\times 2^2 \quad \left[\because\ a^{-m}=\frac{1}{a^m}\right]$

$= \left(\frac{4+1}{4}\right)\times 2^2 = \frac{5}{4}\times 2^2 = \frac{5}{2^2}\times 2^2 = 5\times 2^{2-2} \left[\because\ a^m\div a^n = a^{m-n}\right]$

$= 5\times 2^0 = 5\times 1 = 5 \left[\because\ a^0=1\right]$

(ii) $\left(2^{-1}\times 4^{-1}\right)\div 2^{-2} = \left(\frac{1}{2^1}\times\frac{1}{4^1}\right)\div 2^{-2} \left[\because\ a^{-m}=\frac{1}{a^m}\right]$

$= \left(\frac{1}{2}\times\frac{1}{2^2}\right)\div 2^{-2} = \frac{1}{2^3}\div 2^{-2} \left[\because\ a^m\times a^n = a^{m+n}\right]$

=

= $\frac{1}{2} \left[\because\ a^{-m}=\frac{1}{a^m}\right]$

$\left(\frac{1}{2}\right)^{-2}+\left(\frac{1}{3}\right)^{-2}+\left(\frac{1}{4}\right)^{-2}$

(iii)

$$= \left(2^{-1}\right)^{-2} + \left(3^{-1}\right)^{-2} + \left(4^{-1}\right)^{-2}$$

$$\left[\because \ a^{-m} = \frac{1}{a^m}\right]$$

$$= 2^{-1\times(-2)} + 3^{-1\times(-2)} + 4^{-1\times(-2)} \qquad \left[\because \ \left(a^m\right)^n = a^{m\times n}\right]$$

$= 2^2 + 3^2 + 4^2 = 4+9+16=29$

(iv) $\left(3^{-1} + 4^{-1} + 5^{-1}\right)^0 = \left(\frac{1}{3} + \frac{1}{4} + \frac{1}{5}\right)^0 \qquad \left[\because \ a^{-m} = \frac{1}{a^m}\right]$

$$= \left(\frac{20+15+12}{60}\right)^0 = \left(\frac{47}{60}\right)^0 = 1$$

$$\left[\because \ a^0 = 1\right]$$

(v) $$\left\{\left(\frac{-2}{3}\right)^{-2}\right\}^2 = \left(\frac{-2}{3}\right)^{-2\times 2} \qquad \left[\because \ \left(a^m\right)^n = a^{m\times n}\right]$$

$$= \left(\frac{-2}{3}\right)^{-4} = \left(\frac{-3}{2}\right)^4 \qquad \left[\because \ a^{-m} = \frac{1}{a^m}\right]$$

$$= \frac{81}{16}$$

CHAP 13

. 1. If the cost of 10 pencils is Rs 90. Find the cost of 19 pencils?

2. Amachineinasoftdrinkfactoryfills840bottlesinsixhours.Howmanybottleswill itfillinfivehours?

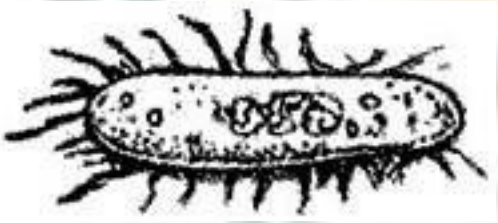
Ans. Let the number of bottles filled in five hoursbe x.

Hereratioofhoursandbottlesareindirectproportion

bottles

Hence machine will fill 700 bottles in five hours.

3. Aphotographofabacteriaenlarged50,000timesattainsalengthof5cmasshownin thediagram.Whatisthe*actual*lengthofthebacteria?Ifthephotographisenlarged 20,000timesonly,whatwouldbeitsenlargedlength?



Ans. Let Actual length of bacteria be 'a'

It is enlarged 50,000 times so 50000 x a = 5 cm

Actual length of bacteria

$= \frac{5}{50000} = \frac{1}{10000}$ cm $= 10^{-4}$ cm

Let enlarged length of bacteria be x

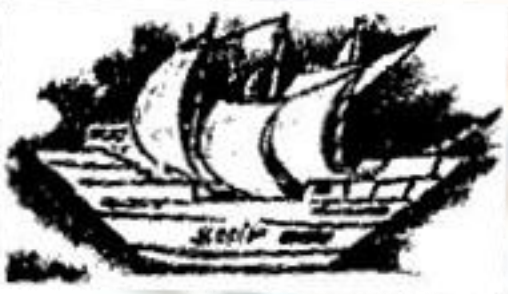
Length	5	x
Enlarged length	50,000	20,000

Here length and enlarged length of bacteria are in direct proportion.

= 2 cm

Hence the enlarged length of bacteria is 2 cm.

4. Inamodelofaship,themastis9cmhigh,whilethemastoftheactualshipis12m high.Ifthelengthoftheshipis28m,howlongisthemodelship?



Ans. Let the length of model ship be x.

Length of actual ship (in m)	12	28
Length of model ship (in cm)	9	x

Here length of mast and actual length of ship are in direct proportion.

= 21 cm

Hence length of the model ship is 21 cm.

CHAp 14

1. Findthecommonfactorsofthegiventerms.

(i) $12x, 36$

(ii) $2y, 22xy$

(iii) $14pq, 28p^2q^2$

(iv) $2x, 3x^2, 4$

(v) $6abc, 24ab^2, 12a^2b$

2. Factorize the followingexpressions.

(i) $7x-42$

(ii) $6p-12q$

(iii) $7a^2+14a$

(iv) $-16z+20z^3$

(v) $20l^2m+30alm$

3. Factorize:

(i) $x^2+xy+8x+8y$

(ii) $15xy - 6x + 5y - 2$

(iii) $ax + bx - ay - by$

(iv) $15pq + 15 + 9q + 25p$

(v) $z - 7 + 7xy - xyz$

QUESTION 2

Solve: Each carry two marks:

CHAP 8 and 9

1. 72%of25studentsaregoodinmathematics.Howmanyarenotgoodinmathematics?

Ans. Total number of students = 25

Numberofgoodstudentsinmathematics=72%of25= $\frac{72}{100} \times 25$ =18

Number of students not good in mathematics = 25 – 18 = 7

Hencepercentageofstudentsnotgoodinmathematics= $\frac{7}{25} \times 100$ =28%

2. Afootballteamwon10matchesoutofthetotalnumberofmatchestheyplayed.If theirwinpercentagewas40,thenhowmanymatchesdidtheyplayinall?

Ans. Lettotalnumberofmatchesbe x. According

toquestion,

40% of total matches = 10

$\Rightarrow$ 40% of x =10

= 25

Hence total number of matches is 25.

3. Amangot10%increaseinhissalary.IfhisnewsalaryisRs.1,54,000,findhisoriginal salary.

Ans. Let original salary be Rs.100.

ThereforeNewsalaryi.e.,10%increase

= 100 + 10 = Rs.110

∵ NewsalaryisRs.110,whenoriginalsalary=Rs.100 ∴

NewsalaryisRs.1,whenoriginalsalary= $\frac{100}{110}$

∴ New salary is Rs.1, 54,000, when originalsalary= $\frac{100}{110}\times 154000$ =Rs.1,40,000

Hence original salary is Rs. 1, 40,000.

4. OnSunday845peoplewenttotheZoo.OnMondayonly169peoplewent.Whatisthe percentdecreaseinthepeoplevisitingtheZooonMonday?

Ans. On Sunday, people went to the Zoo = 845 On

Monday, people went to the Zoo = 169

Number of decrease in the people = 845 – 169 = 676

Decreasepercent= $\frac{676}{845}\times 100$ =80%

Hence decrease in the people visiting the Zoo is 80%.

5. Add thefollowing:

(i) $ab-bc, bc-ca, ca-ab$

(ii) $a-b+ab, b-c+bc, c-a+ac$

(iii) $2p^2q^2 - 3pq + 4, 5 + 7pq - 3p^2q^2$

(iv) $l^2 + m^2, m^2 + n^2, n^2 + l^2 + 2lm + 2mn + 2nl$

Ans.(i) $ab - bc, bc - ca, ca - ab$

$$\begin{array}{l} ab - bc \\ \quad + bc - ca \\ -ab \quad\quad + ca \\ \boxed{0 + 0 + 0} \end{array}$$

(ii) $a - b + ab, b - c + bc, c - a + ac$

$$\begin{array}{l} a - b - ab \\ \quad + b \quad\quad - c + bc \\ -a \quad\quad\quad + c \quad\quad + ac \\ \boxed{0 + 0 + ab + 0 + bc + ac} \end{array}$$

Hence the sum if 0.

Hence the sum is $ab + bc + ac.$

(iii) $2p^2q^2 - 3pq + 4, 5 + 7pq - 3p^2q^2$

$$\begin{array}{l} 2p^2q^2 - 3pq + 4 \\ -3p^2q^2 + 7pq + 5 \\ \\ \boxed{-p^2q^2 + 4pq + 9} \end{array}$$

(iv) $l^2 + m^2, m^2 + n^2, n^2 + l^2, 2lm + 2mn + 2nl$

$$\begin{array}{l} \quad l^2 + m^2 \\ + \quad\quad m^2 + n^2 \\ +l^2 \quad\quad\quad + n^2 \\ + \quad\quad\quad\quad\quad 2lm + 2mn + 2nl \\ \boxed{2l^2 + 2m^2 + 2n^2 + 2lm + 2mn + 2nl} \end{array}$$

Hence the sum is

$2\left(l^2+m^2+n^2+lm+mn+nl\right)$.

6. Obtainthevolumeofrectangularboxeswiththefollowinglength,breadthand heightrespectively:

(i) $5a, 3a^2 7a^4$

(ii) $2p, 4q, 8r$

(iii) $xy, 2x^2y, 2xy^2$

(iv) $a, 2b, 3c$

Ans. (i) Volume of rectangular box

$= length \times breadth \times height$

$= 5a \times 3a^2 \times 7a^4 = (5 \times 3 \times 7)(a \times a^2 \times a^4)$

$= 105a^7$ cubicunits

(ii) Volume of rectangularbox

$= length \times breadth \times height$

$= 2p \times 4q \times 8r = (2 \times 4 \times 8)(p \times q \times r)$

$= 64pqr$ cubicunits

(iii) Volume of rectangularbox

$= length \times breadth \times height$

$= xy \times 2x^2y \times 2xy^2$

$=(1\times2\times2)(x\times x^2\times x\times y\times y\times y^2)$

= $4x^4y^4$ cubicunits

(iv) Volume of rectangularbox

$= length\times breadth\times height$

= $a\times2b\times3c=(1\times2\times3)(a\times b\times c)$

= $6abc$ cubicunits

7.Find theproduct:

(i) $(a^2)\times(2a^{22})\times(4a^{26})$

(ii) $\left(\frac{2}{3}xy\right)\times\left(\frac{-9}{10}x^2y^2\right)$

(iii) $\left(\frac{-10}{3}pq^3\right)\times\left(\frac{6}{5}p^3q\right)$

(iv) $x\times x^2\times x^3\times x^4$ Ans.

(i) $(a^2)\times(2a^{22})\times(4a^{26})$

$=(2\times4)(a^2\times a^{22}\times a^{26})$

= $8\times a^{2+22+26}=8a^{50}$

(ii) $\left(\frac{2}{3}xy\right)\times\left(\frac{-9}{10}x^2y^2\right)$

= $\left(\frac{2}{3}\times\frac{-9}{10}\right)(x\times x^2\times y\times y^2)$

= $\frac{-3}{5}x^3y^3$

(iii) $\left(\frac{-10}{3}pq^3\right)\left(\frac{6}{5}p^3q\right)$

= $\left(\frac{-10}{3}\times\frac{6}{5}\right)\left(p\times p^3\times q^3\times q\right)$

= $-4p^4q^4$

(iv) $x\times x^2\times x^3\times x^4 = x^{1+2+3+4} =$ x^{10}

8. Multiply thebinomials:

(i) (2x+5) and (4x-3)

(ii) $(y-8)$ and $(3y-4)$

(iii) $(2.5l-0.5m)$ and $(2.5l+0.5m)$

(iv) $(a+3b)$ and $(x+5)$

(v) $\left(2pq+3q^2\right)$ and $\left(3pq-2q^2\right)$

(vi) $\left(\frac{3}{4}a^2+3b^2\right)$ and $4\left(a^2-\frac{2}{3}b^2\right)$

Ans.

(i) $(2x+5)\times(4x-3)$

$=2x(4x-3)+5(4x-3)$

$=2x\times4x-2x\times3+5\times4x-5\times3$

$=8x^2-6x+20x-15$

$=8x^2+14x-15$

(ii) $(y-8)\times(3y-4)=y(3y-4)-8(3y-4)$

$=y\times3y-y\times4-8\times3y-8\times-4$

$=3y^2-4y-24y+32$

$=3y^2-28y+32$

(iii) $(2.5l-0.5m)\times(2.5l+0.5m)$

$=2.5l\times(2.5l+0.5m)-0.5m\times(2.5l+0.5m)$

= 2.5l x 2.5l + 2.5l x 0.5m - 0.5m x 2.5l - 0.5m x0.5m

$=6.25l^2+1.25lm-1.25lm-0.25m^2$

$=6.25l^2-0.25m^2$

(iv) $(a+3b)\times(x+5)=a(x+5)+3b(x+5)$

$=a\times x+a\times5+3b\times x+3b\times5$

$=ax+5a+3bx+15b$

(v) $(2pq+3q^2)(3pq-2q^2)$

$= 2pq \times (3pq - 2q^2) + 3q^2(3pq - 2q^2)$

$= 2pq \times 3pq - 2pq \times 2q^2 + 3q^2 \times 3pq - 3q^2 \times 2q^2$

$= 6p^2q^2 - 4pq^3 + 9pq^3 - 6q^4$

$= 6p^2q^2 + 5pq^3 - 6q^4$

(vi) $\left(\frac{3}{4}a^2 + 3b^2\right) \times 4\left(a^2 - \frac{2}{3}b^2\right)$

$= \left(\frac{3}{4}a^2 + 3b^2\right) \times \left(4a^2 - \frac{8}{3}b^2\right)$

$= \frac{3}{4}a^2 \times \left(4a^2 - \frac{8}{3}b^2\right) + 3b^2 \times \left(4a^2 - \frac{8}{3}b^2\right)$

$= \frac{3}{4}a^2 \times 4a^2 - \frac{3}{4}a^2 \times \frac{8}{3}b^2 + 3b^2 \times 4a^2 - 3b^2 \times \frac{8}{3}b^2$

$= 3a^4 - 2a^2b^2 + 12a^2b^2 - 8b^4$

$= 3a^4 + 10a^2b^2 - 8b^4$

Solve: Each carry three marks

1. Kamala borrowed Rs.26, 400 from a Bank to buy a scooter at a rate of 15% p.a. compoundedyearly.Whatamountwillshepayattheendof2yearsand4monthsto clear theloan? (Hint:FindAfor2yearswithinterestiscompoundedyearlyandthenfindSIonthe2nd yearamountfor $\frac{4}{12}$ years).

Ans. Here,Principal(P)=Rs.26,400,Time(n)=2years4months,Rateofinterest(R)=15% p.a.

Amount for 2 years (A) = $P\left(1 + \frac{R}{100}\right)^n$

$= 26400\left(1+\frac{15}{100}\right)^2 = 26400\left(1+\frac{3}{20}\right)^2$

$= 26400\left(\frac{23}{20}\right)^2 = 26400\times\frac{23}{20}\times\frac{23}{20}$

= Rs. 34,914

Interest for 4months= $\frac{4}{12}=\frac{1}{3}$ yearsattherateof15%= $\frac{34914\times15\times1}{100}$

= Rs. 1745.70

∴ Total amount = Rs. 34,914 + Rs. 1,745.70

= Rs. 36,659.70

2. Fabina borrows Rs.12,500 per annum for 3 years at simple interest and Radha borrowsthesameamountforthesametimeperiodat10%perannum,compounded annually.Whopaysmoreinterestandbyhowmuch?

Ans. Here, Principal (P) = Rs.12, 500, Time (T) = 3 years,

Rate of interest (R) = 12 % p.a.

Simple Interest for Fabina = $\frac{P\times R\times T}{100}$

$= \frac{12500\times12\times3}{100}$ = Rs.4,500

AmountforRadha,P=Rs.12,500,R=10%and n =3years

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

$= 12500\left(1+\frac{10}{100}\right)^3 = 12500\left(1+\frac{1}{10}\right)^3$

$= 12500\left(\frac{11}{10}\right)^3 = 12500\times\frac{11}{10}\times\frac{11}{10}\times\frac{11}{10}$

= Rs. 16,637.50

∴ C.I. for Radha = A – P

= Rs. 16,637.50 – Rs. 12,500 = Rs. 4,137.50

Thus, Fabina pays more interest

= Rs. 4,500 – Rs. 4,137.50 = Rs. 362.50

3..IborrowsRs.12, 000fromJam shedat6%perannumsimpleinterestfor2years.HadI borrowedthissumat6%perannumcompoundinterest,whatextraamountwouldI have topay?

Ans. Here,Principal(P)=Rs.12,000,Time(T)=2years,Rateofinterest(R)=6%p.a. Simple Interest=

$= \frac{12000 \times 6 \times 2}{100}$ = Rs.1,440 $\frac{P \times R \times T}{100}$

Had he borrowed this sum at 6% p.a., then

Compound Interest = $P\left(1+\frac{R}{100}\right)^{n} - P$

$= 12000\left(1+\frac{6}{100}\right)^{2} - 12000$

$= 12000\left(1+\frac{3}{50}\right)^{2} - 12000$

$= 12000\left(\frac{53}{50}\right)^{2} - 12000$

$= 12000 \times \frac{53}{50} \times \frac{53}{50} - 12000$

= Rs. 13,483.20 – Rs. 12,000

= Rs. 1,483.20

Difference in both interests

= Rs. 1,483.20 – Rs. 1,440.00 = Rs. 43.20

Thus, the extra amount to be paid is Rs.43.20

4. Vasudevan investedRs.60, 000ataninterestrateof12%perannumcompoundedhalf yearly.Whatamountwouldheget:

(i) After 6months?

(ii) after 1year?

Ans. (i) Here, Principal (P) = Rs. 60,000,Time (n) = 6 months = 1 year(compounded half yearly) Rateofinterest(R)=12%=6%(compoundedhalfyearly)

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

= $60000\left(1+\frac{6}{100}\right)^{1}$

= $60000\left(1+\frac{3}{50}\right)^{1}$

= $60000\left(\frac{53}{50}\right)^{1}$

= $60000\times\frac{53}{50}$

= Rs.63,600

After 6 months Vasudevan would get amount Rs. 63,600.

(ii) Here, Principal (P) = Rs. 60,000,

Time (n) = 1 year = 2 year(compounded half yearly)

Rate of interest (R) = 12% = 6% (compounded half yearly)

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

= $60000\left(1+\frac{6}{100}\right)^{2}$

$60000\left(1+\frac{3}{50}\right)^{2}$

=

= $60000\left(\frac{53}{50}\right)^2$

= $60000\times\frac{53}{50}\times\frac{53}{50}$

= Rs. 67,416

After 1 year Vasudevan would get amount Rs. 67,416.

5.Find theproduct:

(i) $(5-2x)(3+x)$

(ii) $(x+7y)(7x-y)$

(iii) $(a^2+b)(a+b^2)$

(iv) $(p^2-q^2)(2p+q)$ Ans.(i)

$(5-2x)(3+x)$

$=5\times(3+x)-2x(3+x)$

$=5\times3+5\times x-2x\times3-2x\times x$

$=15+5x-6x-2x^2=15-x-2x^2$

(ii) $(x+7y)(7x-y)$

$=x(7x-y)+7y\times(7x-y)$

$=x\times7x-x\times y+7y\times7x-7y\times y$

$=7x^2-xy+49xy-7y^2$

$= 7x^2 + 48xy - 7y^2$

(iii) $\left(a^2+b\right)\left(a+b^2\right)$

$= a^2 \times \left(a+b^2\right) + b \times \left(a+b^2\right)$

$= a^2 \times a + a^2 \times b^2 + b \times a + b \times b^2$

$= a^3 + a^2b^2 + ab + b^3$

(iv) $\left(p^2-q^2\right)(2p+q)$

$= p^2 \times (2p+q) - q^2(2p+q)$

$= p^2 \times 2p + p^2 \times q - q^2 \times 2p - q^2 \times q$

$= 2p^3 + p^2q - 2pq^2 - q^3$

6. Simplify:

(i) $\left(x^2-5\right)(x+5)+25$

(ii) $\left(a^2+5\right)\left(b^2+3\right)+5$

(iii) $\left(t+s^2\right)\left(t^2-s\right)$

(iv) $(a+b)(c-d)+(a-b)(c+d)+2(ac+bd)$

(v) $(x+y)(2x+y)+(x+2y)(x-y)$

(vi) $(x+y)(x^2-xy+y^2)$

(vii) $(1.5x-4y)(1.5x+4y+3)-4.5x+12y$

(viii) $(a+b+c)(a+b-c)$

$$(x^2-5)(x+5)+25$$

$$=x^2(x+5)-5(x+5)+25$$

Ans.(i)

$= x^2\times x+x^2\times 5-5\times x-5\times 5+25$

$= x^3+5x^2-5x-25+25$

$= x^3+5x^2-5x$

(ii) $(a^2+5)(b^3+3)+5$

$$=a^2(b^3+3)+5(b^3+3)+5$$

$= a^2\times b^3+a^2\times 3+5\times b^3+5\times 3+5$

$= a^2b^3+3a^2+5b^3+15+5$

$= a^2b^3+3a^2+5b^3+20$

(iii) $(t+s^2)(t^2-s)=t(t^2-s)+s^2(t^2-s)$

$= t\times t^2-t\times s+s^2\times t^2-s^2\times s$

$= t^3-st+s^2t^2-s^3$

(iv) $(a+b)(c-d)+(a-b)(c+d)+2(ac+bd)$

$= a(c-d)+b(c-d)+a(c+d)-b(c+d)+2ac+2bd$

$= ac-ad+bc-bd+ac+ad-bc-bd+2ac+2bd$

$= ac+ac-ad+ad+bc-bc-bd-bd+2ac+2bd$

$= 2ac-2bd+2ac+2bd$

$= 4ac$

(v) $(x+y)(2x+y)+(x+2y)(x-y)$

$= x(2x+y)+y(2x+y)+x(x-y)+2y(x-y)$

$= 2x^2+xy+2xy+y^2+x^2-xy+2xy-2y^2$

$= 2x^2+x^2+xy+2xy-xy+2xy+y^2-2y^2$

$= 3x^2+4xy-y^2$

(vi) $(x+y)(x^2-xy+y^2)$

$= x(x^2-xy+y^2)+y(x^2-xy+y^2)$

$= x^3-x^2y+xy^2+x^2y-xy^2+y^3$

$= x^3-x^2y+x^2y+xy^2-xy^2+y^3$

$= x^3+y^3$

(vii) $(1.5x-4y)(1.5x+4y+3)-4.5x+12y$

$$= 1.5x(1.5x+4y+3)-4y(1.5x+4y+3)-4.5x+12y$$

$$= 2.25x^2+6.0xy+4.5x-6.0xy-16y^2-12y-4.5x+12y$$

$$= 2.25x^2+6.0xy-6.0xy+4.5x-4.5x-16y^2-12y+12y$$

$$= 2.25x^2-16y^2$$

(viii) $(a+b+c)(a+b-c)$

$$= a(a+b-c)+b(a+b-c)+c(a+b-c)$$

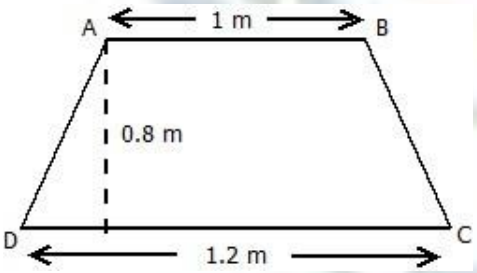
$$= a^2+ab-ac+ab+b^2-bc+ac+bc-c^2$$

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

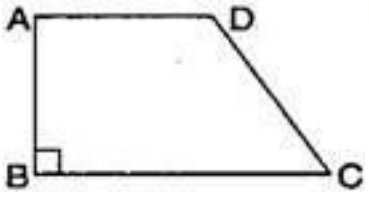
$$= a^2+b^2-c^2+2ab$$

CHAP 11

1. Theshapeofthetopsurfaceofatableisatrapezium.Finditsareaifitsparallelsides are1mand1.2mandperpendiculardistancebetweenthemis0.8m.

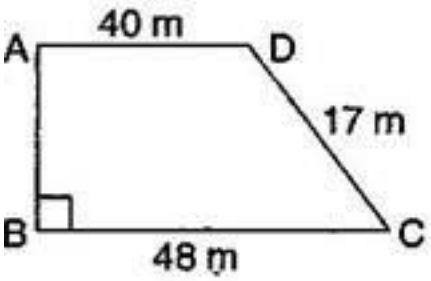


2. **Theareaofatrapeziumis34 cm^2 andthelengthofoneoftheparallelsidesis10cm anditsheightis4cm.**



Find the length of the other parallel side.

3. LengthofthefenceofatrapeziumshapedfieldABCDis120m.IfBC=48m,CD=17m andAD=40m,findtheareaofthisfield.SideABisperpendiculartotheparallelsides AD andBC.



CHAP 12

1. Evaluate:

(i) $\frac{8^{-1}\times 5^{3}}{2^{-4}}$ (ii) $\left(5^{-1}\times 2^{-1}\right)\times 6^{-1}$

2. **Findthevalueof** m **forwhich** $5^{m}\div 5^{-3}=5^{5}$.

3. Evaluate:

(i) $\left\{\left(\frac{1}{3}\right)^{-1}-\left(\frac{1}{4}\right)^{-1}\right\}^{-1}$ (ii) $\left(\frac{5}{8}\right)^{-7}\times\left(\frac{8}{5}\right)^{-4}$

CHAP 13

1. Whichofthefollowingareininverseproportion:

(i) Thenumberofworkersonajobandthetimetocompletethejob.

(ii) Thetimetakenforajourneyandthedistancetravelledinauniformspeed.

(iii) Areaofcultivatedlandandthecropharvested.

(iv) Thetimetakenforafixedjourneyandthespeedofthevehicle.

(v) Thepopulationofacountryandtheareaoflandperperson.

2. Afarmerhasenoughfoodtofeed20animalsinhiscattlefor6days.Howlongwould thefoodlastiftherewere10moreanimalsinhiscattle?

3. Acontractorestimatesthat3personscouldrewireJasminder'shousein4days.If,he uses4personsinsteadofthree,howlongshouldtheytaketocompletethejob?

CHAP 14

1. Factorize the followingexpressions:

(i) $a^2+8a+16$

(ii) $p^2-10p+25$

(iii) $25m^2+30m+9$

(iv) $49y^2+84yz+36z^2$

(v) $4x^2-8x+4$

(vi) $121b^2-88bc+16c^2$

2. Factorize:

(i) $4p^2-9q^2$

(ii) $63a^2-112b^2$

(iii) $49x^2-36$

(iv) $16x^5-144x^2$

3. Factorize:

(i) a^4-b^4 (ii) p^4-81

(iii) $x^4-(y+z)^4$ (iv) $x^4-(x-z)^4$

4. Factorize the followingexpressions:

(i) p^2+6p+8

(ii) $q^2-10q+21$

(iii) $p^2 + 6p - 16$

PAPER FORMATE

SECTION - A

(i)Choose correct option **[1 x 10 = 10]**

(ii) Fill the blank **[1 x 10 = 10]**

(iii) Tell whether the statement is true or false: **[1 X 10 = 10]**

(IV) Solve: Each carry one marks **[1X 10 = 10]**

SECTION - B

Solve: Each carry two marks (Any four) **[2 X 8= 16]**

SECTION -C

Solve: Each carry three marks (Any one) **[3 X 8 = 24]**