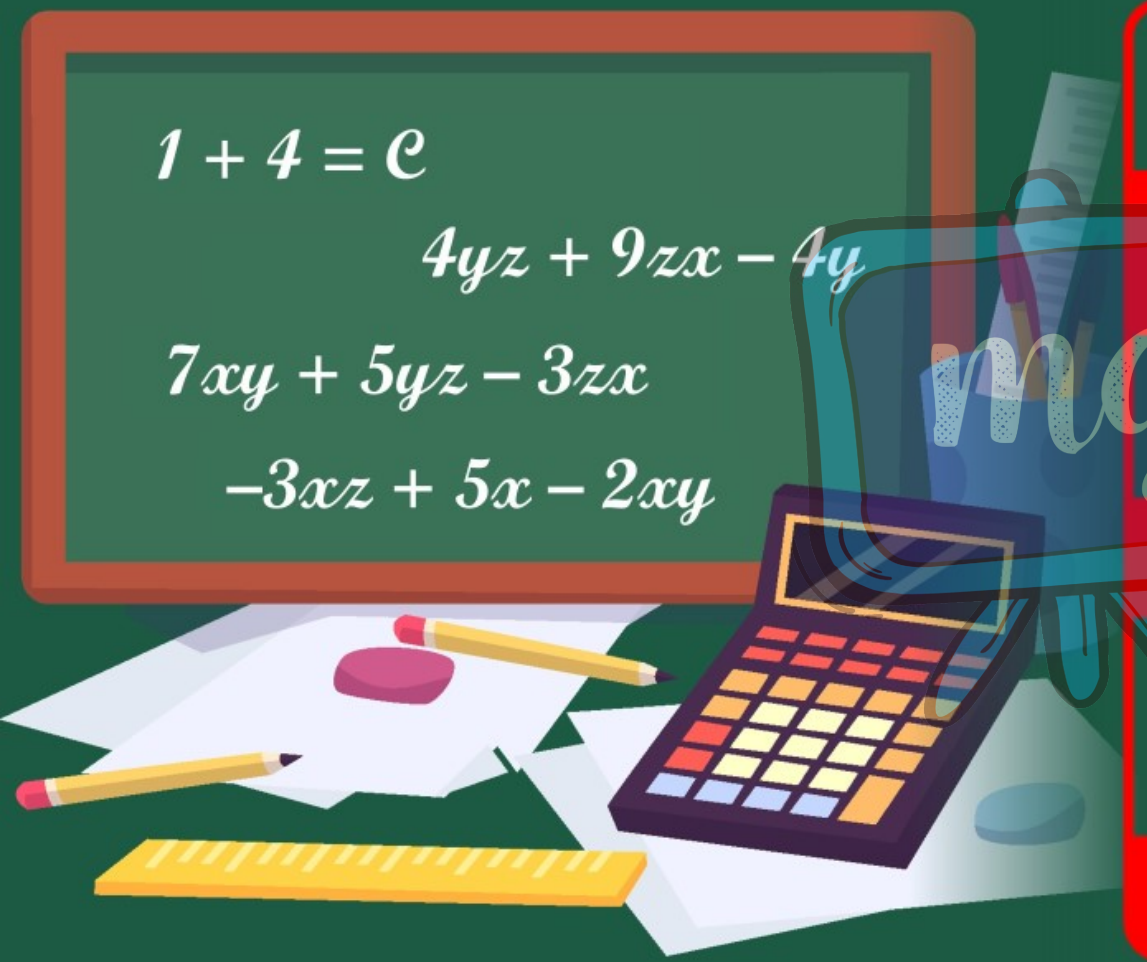
Under CSR Support by ipca | Foundation

missiongyan




# कक्षा - 8

## गणित

### अध्याय - 8

### बीजीय व्यंजक एवं सर्वसमिकाएँ

भाग - 4

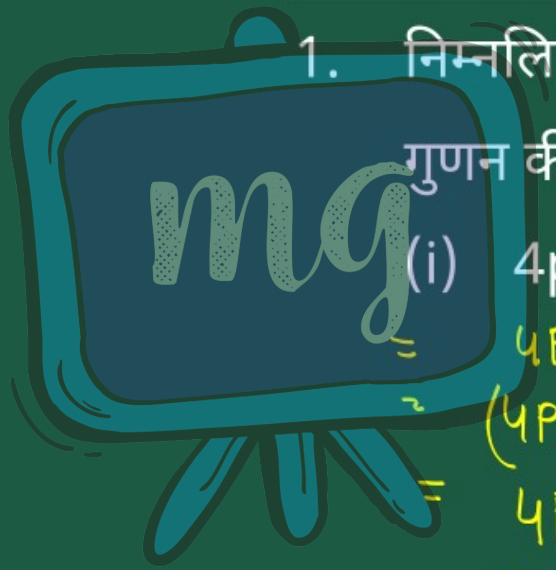
प्रश्नावली 8.3

राम राईका

Under CSR Support by ipca | Foundation

missiongyan LET'S LEARN TOGETHER

# प्रश्नावली 8.3



1. निम्नलिखित युग्मों में प्रत्येक के व्यंजकों का गुणन कीजिए :

(i) 4p, q + r

$= 4P \times (q+r)$

$= (4P \times q) + (4P \times r)$

$= 4Pq + 4Pr$

Under CSR Support by ipca | Foundation

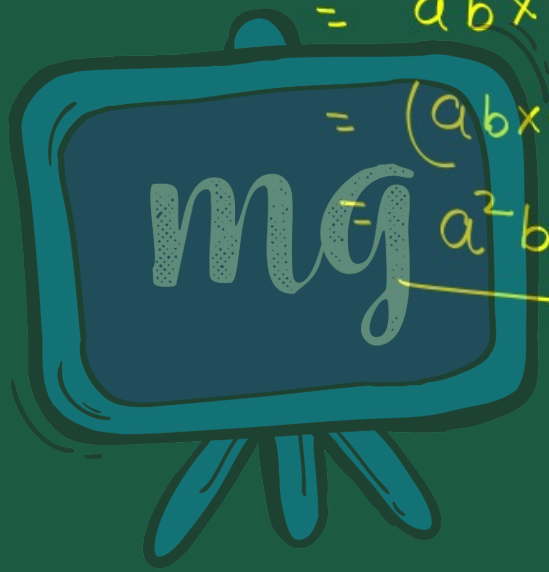
missiongyan LET'S LEARN TOGETHER

(ii) ab, a – b

$= ab \times (a-b)$

$= (ab \times a) - (ab \times b)$

$= a^2b - ab^2$



Under CSR Support by ipca | Foundation

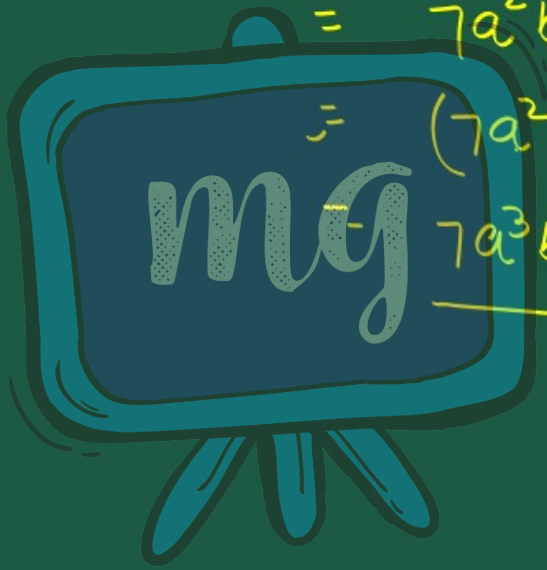
missiongyan LET'S LEARN TOGETHER

(iii) $a + b, 7a^2b^2$

$= 7a^2b^2 \times (a+b)$

$= (7a^2b^2 \times a) + (7a^2b^2 \times b)$

$= 7a^3b^2 + 7a^2b^3$



Under CSR Support by ipca | Foundation

missiongyan LET'S LEARN TOGETHER

(iv) $a^2 - 9, 4a$

$= 4a \times (a^2 - 9)$

$= (4a \times a^2) - 4a \times 9$

$= 4a^3 - 36a$

Under CSR Support by ipca | Foundation

missiongyan LET'S LEARN TOGETHER

(v) pq + qr + rp, 0

$= 0 \times (pq + qr + rp)$

$= 0 \times pq + 0 \times qr + 0 \times rp$

$= 0 + 0 + 0$

$= 0$



Under CSR Support by ipca | Foundation

missiongyan LET'S LEARN TOGETHER

## 2. सारणी पूरा कीजिए :

| | प्रथम व्यंजक | द्वितीय व्यंजक | गुणनफल |
|---|---|---|---|
| (i) | a | b + c + d | ab+ac+ad |

$$a \times (b+c+d)$$
$$= (a \times b) + (a \times c) + (a \times d)$$
$$= ab+ac+ad$$

Under CSR Support by ipca | Foundation

missiongyan LET'S LEARN TOGETHER

| | प्रथम व्यंजक | द्वितीय व्यंजक | गुणनफल |
|---|---|---|---|
| (ii) | $x + y - 5$ | $5xy$ | $5x^2y + 5xy^2 - 25xy$ |

$(x+y-5) \times 5xy$

$= (x \times 5xy) + (y \times 5xy) - (5 \times 5xy)$

$= 5x^2y + 5xy^2 - 25xy$

Under CSR Support by ipca | Foundation

missiongyan LET'S LEARN TOGETHER

| | प्रथम व्यंजक | द्वितीय व्यंजक | गुणनफल |
|---|---|---|---|
| (iii) | P | $6p^2 - 7p + 5$ | $6P^3 - 7P^2 + 5P$ |

$P \times (6P^2 - 7P + 5)$

$= (P \times 6P^2) - (P \times 7P) + (P \times 5)$

$= 6P^3 - 7P^2 + 5P$

Under CSR Support by ipca | Foundation

missiongyan LET'S LEARN TOGETHER

| | प्रथम व्यंजक | द्वितीय व्यंजक | गुणनफल |
|---|---|---|---|
| (iv) | $4p^2q^2$ | $p^2 - q^2$ | $4p^4q^2 - 4p^2q^4$ |

$4p^2q^2 \times (p^2 - q^2)$

$= (4p^2q^2 \times p^2) - (4p^2q^2 \times q^2)$

$= 4p^4q^2 - 4p^2q^4$

Under CSR Support by ipca | Foundation

missiongyan LET'S LEARN TOGETHER

| | प्रथम व्यंजक | द्वितीय व्यंजक | गुणनफल |
|---|---|---|---|
| (v) | a + b + c | abc | $a^2bc+ab^2c+abc^2$ |

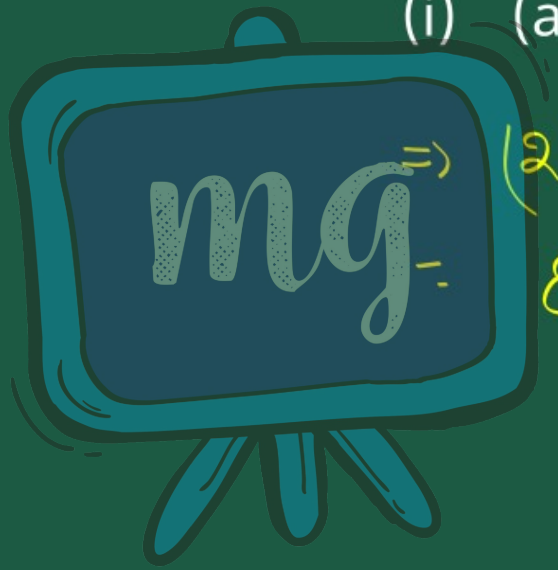
$$(a+b+c)\times abc$$
$$= (a\times abc)+(b\times abc)+(c\times abc)$$
$$= a^2bc+ab^2c+abc^2$$

Under CSR Support by ipca | Foundation

missiongyan® LET'S LEARN TOGETHER

3. गुणनफल ज्ञात कीजिए :

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



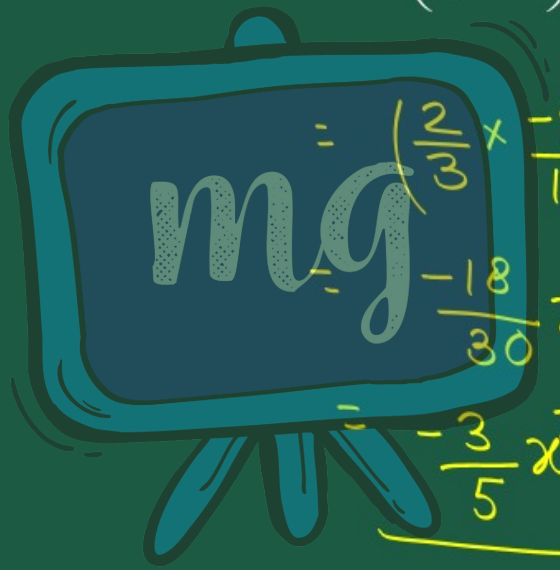
$\Rightarrow (2 \times 4) \times a^2 \times a^{22} \times a^{26}$

$= 8a^{50}$

Under CSR Support by ipca | Foundation

missiongyan LET'S LEARN TOGETHER

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



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

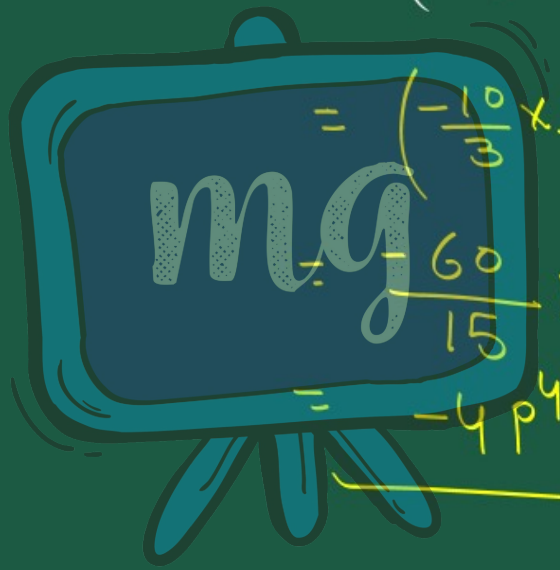
$= \frac{-18}{30} x^3 y^3$

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

Under CSR Support by ipca | Foundation

missiongyan LET'S LEARN TOGETHER

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




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

$= -\frac{60}{15} p^4 q^4$

$= -4p^4q^4$

Under CSR Support by ipca | Foundation

missiongyan LET'S LEARN TOGETHER

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



Under CSR Support by ipca | Foundation

missiongyan LET'S LEARN TOGETHER

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

$\rightarrow (3x \times 4x) - (3x \times 5) + 3$

$= 12x^2 - 15x + 3$

(i) $x = 3$ रखने पर $\rightarrow 12 \times (3)^2 - 15 \times 3 + 3$

$= 12 \times 9 - 45 + 3$

$= 108 - 45 + 3$

$= 111 - 45 = 66$

(ii) $x = \frac{1}{2}$

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

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

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

$= \frac{6 - 15}{2} + 3$

$= \frac{12 - 15}{2} = -\frac{3}{2}$

4.

(a) $3x\,(4x - 5) + 3$ को सरल कीजिए और

(i) $x = 3$

(ii) $x = \frac{1}{2}$ के लिए इसका मान ज्ञात कीजिए।

Under CSR Support by ipca | Foundation

missiongyan LET'S LEARN TOGETHER

$a(a^2+a+1+5)$

$= (a\times a^2)+(a\times a)+(a\times 1)+(a\times 5)$

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

(b) a $(a^2 + a + 1) + 5$ को सरल कीजिए।

(i) a = 0

(ii) a = 1

(iii) a = – 1 के लिए इसका मान ज्ञात कीजिए।

(i) $a=0$ $0^3+0^2+0+5\times 0$

$= 0+0+0+0 = 0$

(ii) $a=1$ $1^3+1^2+1+5\times 1$

$= 1+1+1+5 = 8$

(iii) $a=-1$ $(-1)^3+(-1)^2+(-1)+5\times(-1)$

$= -1+1-1-5$

$= -6$

$[-1\times -1\times -1$

$+1\times 1$

$= -1$

Under CSR Support by ipca | Foundation

missiongyan LET'S LEARN TOGETHER

5. (a) p (p – q), q (q – r) एवं r (r – p) को जोड़िए।

योग

$p^2 - pq$

$+ \quad q^2 - qr$

$+ \quad r^2 - rp$

$= p^2 - pq + q^2 - qr + r^2 - rp$

$= p^2 + q^2 + r^2 - pq - qr - rp$

सरल करने पर

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

$q(q-r) = (q \times q) - (q \times r) = q^2 - qr$

$r(r-p) = r \times r - r \times p = r^2 - rp$

Under CSR Support by ipca | Foundation

missiongyan LET'S LEARN TOGETHER

(b) $2x\,(z - x - y)$ एवं $2y\,(z - y - x)$ को जोड़िए।

सरल करने पर

$\rightarrow 2x(z-x-y)$

$= (2x \times z) - (2x \times x) - (2x \times y)$

$= 2xz - 2x^2 - 2xy$

$\rightarrow 2y(z-y-x) = (2y \times z) - (2y \times y) - (2y \times x)$

$= 2yz - 2y^2 - 2xy$

योग

$2xz - 2x^2 - 2xy$

$+ \quad -2xy \quad 2yz - 2y^2$

$2xz - 2x^2 - 4xy + 2yz - 2y^2$

$= -2x^2 - 2y^2 - 4xy + 2yz + 2xz$

Under CSR Support by ipca | Foundation

missiongyan LET'S LEARN TOGETHER

(c) $4l\,(10n - 3m + 2l)$ में से $3l\,(l - 4m + 5n)$ को घटाइए।

सरल करने पर

$\rightarrow 4l(10n - 3m + 2l)$

$= (4l \times 10n) - (4l \times 3m) + (4l \times 2l)$

$= 40ln - 12lm + 8l^2$

$\rightarrow 3l(l - 4m + 5n) = (3l \times l) - (3l \times 4m) + (3l \times 5n)$

$= 3l^2 - 12lm + 15ln$

व्यवकलन

$$\begin{array}{rrr} 40ln & -\cancel{12lm} & +8l^2 \\ 15ln & -\cancel{12lm} & 3l^2 \\ - & + & - \\ \hline 25ln & & +5l^2 \end{array}$$

$= 5l^2 + 25ln$

Under CSR Support by ipca | Foundation

missiongyan LET'S LEARN TOGETHER

(d) 4c (–a + b + c) में से

3a (a + b + c) – 2b(a – b + c) को

घटाइए।

$3a(a+b+c) - 2b(a-b+c)$

$\Rightarrow (3a \times a) + (3a \times b) + (3a \times c)$

$-(2b \times a) + (2b \times b) - (2b \times c)$

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

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

सरल करने पर

$\Rightarrow 4c(-a+b+c)$

$= (4c \times -a) + (4c \times b) + (4c \times c)$

$= -4ac + 4bc + 4c^2$

$-4ac + 4bc + 4c^2$

$3ac - 2bc \quad 3a^2 + 2b^2 + ab$

$- \quad + \quad - \quad - \quad -$

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