(2) Fill in the blanks:

i) $4x \times 6x \times 2 = 48x^2$

ii) $3ab \times 6ax = 18a^2bx$

iii) $x \times 2x^2 \times 3x^3 = 6x^6$

iv) $5 \times 5a^3 = 25a^3$

v) $6 \times 6x^2 \times 6x^2y^2 = 216x^4y^2$

vi) $-8x \times -3x = 24x^2$

vii) $-5x - 3x \times 5x^2 = 75x^3$

viii) $8x - 4xy^2 \times 3x \times 3y^2 = -96x^4y^4$

ix) $-4x \times 5xy \times 3z = -60x^2yz$

x) $5x \times 2x^2y \times -7y^3 \times 2x^3y^2 = -140x^6y^6$

(3) Find the value of:

i) A) $3x \times 3x \times 5x^4 = 15x^7$

ii) A) $35a^9$

iii) A) $18a^2bc^4$

iv) $5a^5b^8$

v) A) $10x^5y^7$

vi) A) ab^2c^2d

(7) Multiply:

i) $x+2$ and $x+10$

Ans $(x+2) \times (x+10)$

$\Rightarrow x(x+10) + 2(x+10)$

$\Rightarrow x^2 + 10x + 2x + 20$

$\Rightarrow x^2 + 10x + 2x + 20$

$\Rightarrow x^2 + 12x + 20$

ii) $x+5$ and $x-3$

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

$\Rightarrow x^2-3x+5x-15$

$\Rightarrow \boxed{x^2+2x-15}$

iii) $x-5$ and $x+3$

Ans $(x-5)\times(x+3)$

$\Rightarrow x(x+3)-5(x+3)$

$\Rightarrow x^2+3x-5x-15$

$\Rightarrow x^2-2x-15$

iv) $x-5 \times x-3$

Ans $x(x-3)-5(x-3)$

$x^2-3x-5x+15$

$\Rightarrow x^2-8x+15$

v) $2x+y \times x+3y$

Ans $\Rightarrow x\times(2x+y)+3y\times(2x+y)$

$\Rightarrow 2x^2+xy+6xy+3y^2$

$\Rightarrow \boxed{2x^2+7xy+3y^2}$

vi) $(3x-5y)$ and $(x+6y)$

Ans $= x\times(3x-5y)+6y(3x-5y)$

$= 3x^2-5xy+18xy-30y^2$

$= \boxed{3x^2+13xy-30y^2}$

vii) $(x+9y) \times (x-5y)$

Ans $\Rightarrow x(x-5y) + 9y(x-5y)$

$\Rightarrow x^2 - 5xy + 9yx - 45y^2$

$\Rightarrow x^2 + 4xy - 45y^2$

viii) $2x+5y$ and $2x+5y$

Ans $(2x+5y) \times (2x+5y)$

$\Rightarrow 2x(2x+5y) + 5y(2x+5y)$

$\Rightarrow 4x^2 + 10xy + 10xy + 25y^2$

$\Rightarrow 4x^2 + 20xy + 25y^2$

(2) Simplify:

i) $2x^5 \div x^2$

Ans $\frac{2x^5}{x^2} = \frac{2x^5}{x^2} = 2x^{5-2} = 2x^3$

ii) $6a^8 \div 3a^3$

Ans $\frac{6a^8}{3a^3} = \frac{2 \cancel{6} a^8}{\cancel{3} a^3} = 2a^{8-3} = 2a^5$

iii) $20xy \div -5xy$

Ans $\frac{20xy}{-5xy} = \frac{-4 \cancel{20xy}}{\cancel{-5xy}} = -4$

iv) $-24a^2b^2c^2 \div 6ab$

Ans $\frac{-24a^2b^2c^2}{6ab} = \frac{-4}{\cancel{-24} \times a \times a \times b \times b \times c \times c}{\cancel{6} \times a \times b}$

$= -4abc^2$

v) $-5x^2y \div xy^2$

Ans $= \frac{-5x^2y}{xy^2} = \frac{-5 \times x \times x \times y}{x \times y \times y} = \frac{-5x^2}{xy}$

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

vi) $40p^3q^4r^5 \div 10p^3q$

Ans $\Rightarrow \frac{40p^3q^4r^5}{10p^3q} = \frac{4 \cancel{0} \times \cancel{p} \times \cancel{p} \times \cancel{p} \times \cancel{q} \times \cancel{q} \times \cancel{q} \times \cancel{q} \times r \times r \times r \times r \times r}{\cancel{10} \times \cancel{p} \times \cancel{p} \times \cancel{p} \times \cancel{q}}$

$\Rightarrow 4q^3r^5$

vii) $-64x^4y^3z \div 4x^3y^2z$

Ans $\Rightarrow \frac{-64x^4y^3z}{4x^3y^2z} \Rightarrow \frac{-64 \times x \times x \times x \times x \times y \times y \times y \times z}{4 \times x \times x \times x \times y \times y \times z}$

$\Rightarrow \frac{-16xy}{z} = \frac{-16xy}{z}$

viii) $35xy^5 \div 7x^2y^4$

Ans $\Rightarrow \frac{35xy^5}{7x^2y^4} = \frac{5 \cancel{35} \times \cancel{x} \times x \times \cancel{y} \times y \times y \times y \times y \times y}{\cancel{7} \times \cancel{x} \times x \times \cancel{y} \times y \times y \times y}$

$\Rightarrow 5y \Rightarrow \frac{5y}{x}$

Exercise - 19(D)

(3) Divide:

i) $-\frac{3m}{4}$ by $2m$

Ans $\frac{-3m}{4} \div \frac{2m}{1} = \frac{-3m}{4} \times \frac{1}{2m} = \frac{3m}{8m} = \frac{3}{8}$

$\Rightarrow \frac{-3}{8}$

ii) $6a^8 \div 3a^3$

Ans $\frac{6a^8}{3a^3} = \frac{2 \times a \times a \times a \times a \times a \times a \times a \times a}{3 \times a \times a \times a} = 2a^5$

ii) $-15p^6q^8$ by $-5p^6q^7$

Ans $\frac{-15p^6q^8}{-5p^6q^7} = \frac{+3 \times -15 \times p \times p \times p \times p \times p \times p \times q \times q \times q \times q \times q \times q \times q \times q}{-5 \times p \times p \times p \times p \times p \times p \times q \times q \times q \times q \times q \times q}$

$\Rightarrow 3q$

iii) $-21m^5n^7$ by $14m^2n^2$

Ans $\frac{-21m^5n^7}{14m^2n^2} \Rightarrow \frac{-3 \times -21 \times m \times m \times m \times m \times m \times n \times n \times n \times n \times n \times n \times n}{14 \times m \times m \times n \times n}$

$\Rightarrow \frac{-3}{2} m^3n^5$

iv) $36a^4x^5y^6$ by $4x^2a^3y^2$

Ans $\frac{36a^4x^5y^6}{4x^2a^3y^2} = \frac{9}{\cancel{4}_1} \times \frac{\cancel{36} \times \cancel{a} \times \cancel{a} \times \cancel{a} \times \cancel{a} \times \cancel{x} \times \cancel{x} \times \cancel{x} \times \cancel{x} \times \cancel{x} \times \cancel{x} \times \cancel{y} \times \cancel{y} \times \cancel{y} \times \cancel{y} \times \cancel{y} \times \cancel{y}}{\cancel{4} \times \cancel{x} \times \cancel{x} \times \cancel{x} \times \cancel{a} \times \cancel{a} \times \cancel{a} \times \cancel{y} \times \cancel{y}}$

$\Rightarrow 9ax^3y^4$

v) $20x^3a^c$ by $5xy$

Ans $\frac{\overset{4}{\cancel{20}}x^3a^c}{\cancel{5}_1xy} = \frac{4x^3a^c}{xy} = \frac{4x^2a^c}{y}$

vi) $\frac{28a^2b^3}{c^2}$ by $\frac{4abc}{1}$

Ans $\frac{28a^2b^3}{c^2} \div \frac{4abc}{1} = \frac{28a^2b^3}{c^2} \times \frac{1}{4abc}$

$\Rightarrow \frac{28a^2b^3}{4abc^3} = \frac{\overset{7}{\cancel{28}}a^2b^3}{\cancel{4}_1abc^3} = \frac{7a^2b^3}{abc^3}$

$\Rightarrow \frac{7ab^2}{c^3}$

vii) $\frac{2a^2}{9b^2} \div \frac{3b}{2a}$

Ans $\Rightarrow \frac{2a^3}{9b^2} \times \frac{2a}{3b} \Rightarrow \frac{4a^3}{27ab^3}$ (or) $\frac{4a^3}{27b^3}$

$\Rightarrow \frac{\cancel{4}a^3}{\cancel{3}ab^3} = \frac{4a^3}{27b^3}$

viii) $\frac{-5 \cdot 5x^2}{y}$ by $\frac{11x}{y}$

Ans $\frac{-5 \cdot 5x^2}{y} \times \frac{y}{11x} = \frac{-5 \cdot 5x^2}{11x}$

$\Rightarrow \frac{-55x^2}{11x} \Rightarrow \frac{-55 \times x^2}{+0 \times 11x}$

2

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

ix) $\frac{64x^2y^2}{z^2}$ by $\frac{8xy}{z}$

Ans $\Rightarrow \frac{64x^2y^2}{z^2} \times \frac{z}{8xy} \Rightarrow \frac{64x^2y^2z}{8xyz^2} = \frac{8x^2y^2z}{xyz^2}$

$8xyz^{-1} \Rightarrow 8xyz^{-1}$

$\Rightarrow \frac{8xy}{z} \Rightarrow 8xyz^{-1}$