04-04-2021

MATH

Fundamental operations

Exercise 19 'C'

② **Fill in the blanks :**

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

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

iii) $x \times 2x^2 \times 3x^3 = \underline{6x^6}$

iv) $5 \times 5a^3 = \underline{25a^3}$

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

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

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

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

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

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

③ **Find the value of :**

i) $3x^3 \times 5x^4 = \underline{15x^7}$

ii) $5a^2 \times 7a^7 = \underline{35a^9}$

iii) $3abc \times 6ac^3 = \underline{18a^2bc^4}$

iv) $a^2b^2 \times 5a^3b^4 = \underline{5a^5b^6}$

v) $2x^2y^3 \times 5x^3y^4 = \underline{10x^5y^7}$

vi) $abc \times bcd = \underline{ab^2c^2d}$

④ **Multiply**

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

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

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

$= x^2 + 2x + 10x + 20$

$= x^2 + 12x + 20$

ii) $x+5$ and $x-3$ $= (x+5) \times (x-3)$

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

$= x^2 + (-3x) + 5x + (-15)$

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

$= x^2 + 2x - 15$

iii) $x-5$ and $x+3 = (x-5)\times(x+3)$

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

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

$= x^2 - 2x - 15$

iv) $x-5$ and $x-3 = (x-5) \times (x-3)$

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

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

$= x^2 - 8x + 15$

v) $2x+y$ and $x+3y = (2x+y) \times (x+3y)$

$= (2x \times x) + (2x \times 3y) + (y \times x) + (y \times 3y)$

$= 2x^2 + 6xy + xy + 3y^2$

$= 2x^2 + 7xy + 3y^2$

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

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

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

$= 3x^2 + 13xy - 30y^2$

vii) $x+9y$ and $x-5y$

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

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

$= x^2 + (-5xy) + 9xy + (-45y^2)$

$= x^2 + 4xy - 45y^2$

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

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

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

$= 4x^2 + (10xy + 10xy) + 25y^2$

$= 4x^2 + 20xy + 25y^2$.

Exercise- 19 'D'

② Simplify:

i) $2x^5 \div x^2 = \frac{2x^5}{x^2} = 2x^{(5-2)} = \boxed{2x^3}$

ii) $6a^8 \div 3a^3 = \frac{\overset{2}{6}a^8}{3a^3} = 2a^{(8-3)} = \boxed{2a^5}$

iii) $20xy \div -5xy = \frac{\overset{-4}{20}xy}{-5xy} = \boxed{-4}$

iv) $-24a^2b^2 \div 6ab = \frac{\overset{-4}{-24}a^2b^2c^2}{6ab} = -4a^{(2-1)}b^{(2-1)}c^2$

$= \boxed{-4abc^2}$

v) $-5x^2y \div xy^2 = \frac{-5x^2y}{xy^2} = \frac{-5x^{(2-1)}}{y^{(2-1)}} = \boxed{\frac{-5x}{y}}$

vi) $40p^3q^4r^5 \div 10p^3q = \frac{\overset{10}{40}p^3q^4r^5}{10p^3q} = 4q^{(4-1)}r^5$

$= \boxed{4q^3r^5}$

vii) $-64x^4y^3z \div 4x^3y^2z = \frac{\overset{-16}{-64}x^4y^3z}{4x^3y^2z} = -16x^{(4-3)}y^{(3-2)}z$

$= -16xyz$

viii) $35xy^5 \div 7x^2y^4 = \frac{35xy^5}{7x^2y^4} = \frac{5y^{(5-4)}}{x^{(2-1)}} = \frac{5y}{x}$

(3) Divide

i) $\frac{-3m}{4}$ by $2m = \frac{-3m}{4 \times 2m} = \frac{-3m}{8m} = \boxed{\frac{-3}{8}}$

ii) $-15p^6q^8$ by $-5p^6q^7 = \frac{-15p^6q^8}{-5p^6q^7} = 3q^{(8-7)} = \boxed{3q}$

iii) $-21m^5n^7$ by $14m^2n^2 = \frac{-21m^5n^7}{14m^2n^2} = \frac{-3m^{(5-2)}n^{(7-2)}}{2}$

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

iv) $36a^4x^5y^6$ by $4x^2a^3y^2 = \frac{36a^4x^5y^6}{4a^3x^2y^2} = 9a^{(4-3)}x^{(5-2)}y^{(6-2)}$

$= \boxed{9ax^3y^4}$

v) $20x^3a^6$ by $5xy = \frac{20x^3a^6}{5xy} = \frac{4x^{(3-1)}a^6}{y}$

$= \boxed{\frac{4x^2a^6}{y}}$

vi) $\frac{28a^2b^3}{c^2}$ by $4abc = \frac{28a^2b^3}{c^2 \times 4abc} = \frac{7a^{(2-1)}b^{(3-1)}}{c^3}$

vii) $\frac{2a^2}{9b^2}$ by $\frac{3b}{2a} = \frac{2a^2 \times 2a}{9b^2 \times 3b} = \frac{4a^3}{27b^3}$

viii) $\frac{-5.5x^2}{y}$ by $\frac{11x}{y} = \frac{-5.5x^2 \times xy}{y \times 11x}$

$= -0.5x^{(2-1)} = \boxed{-0.5x}$

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

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

$= \frac{8x^{(2-1)}y^{(2-1)}}{z^{(2-1)}} = \boxed{\frac{8xy}{z}}$

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