Exercise 8.2

Q.1 Write each of the following products in exponential form:

(i) $a \times a \times a \times a \times \ldots$ × 15 times.

(ii) $8 \times b \times b \times b \times a \times a \times a \times a$

(iii) $5 \times a \times a \times a \times b \times b \times c \times c \times c$

(iv) $7 \times a \times a \times a \times \ldots$ 8 times $\times 6 \times 6 \times b \times \ldots$ 5 times.

(v) $4 \times a \times a \times \ldots$ 5 times $\times b \times b \times \ldots$ 12 times $\times c \times c \ldots$ 15 times

Solution (i) a^{15} (ii) $8b^3a^4$ (iii) $5a^3b^2c^3$

(iv) $7a^8b^5$ (v) $4a^5b^{12}c^{15}$

Q.2 Write each of the following in the product form:

(i) a^2b^5 (ii) $8x^3$ (iii) $7a^3b^4$ (iv) $15a^9b^8c^6$

(v) $30x^4y^4z^5$ (vi) $43p^{10}q^5r^{15}$ (vii) $17p^{12}q^{20}$

Solution: (i) $a^2b^5 = a \times a \times b \times b \times b \times b \times b$

(ii) $8x^3 = 8 \times x \times x \times x$

(iii) $7a^3b^4 = 7 \times a \times a \times a \times b \times b \times b \times b$

(iv) $15a^9b^8c^6 = 15 \times a \times a \times a \times \ldots$ 9 times $\times b \times b \times \ldots$ 8 times $\times c \times c \times c \times \ldots$ 6 times.

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(v) $30x^4y^4z^5 = 30 \times x \times x \times x \times x \times y \times y \times y \times y \times z \times z \times z \times z \times z$

(vi) $43p^{10}q^5r^{15} = 43 \times p \times p \times$ --- 10 times $\times q \times q \times q \times q \times q \times r \times r \times r \times$ ---- 15 times.

(vii) $17p^{12}q^{20} = 17 \times p \times p \times$ --- 12 times $\times q \times q \times q \times$ ---- 20 times

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Q.3 Write down each of the following in exponential form:

(i) $4a^3 \times 6ab^2 \times c^2$ (ii) $5xy \times 3x^2y \times 7y^2$

(iii) $a^3 \times 3ab^2 \times 2a^2b^2$

Solution:

(i) $4a^3 \times 6ab^2 \times c^2 = 4 \times a \times a \times a \times 6 \times a \times b \times b \times c \times c$

$= (4 \times 6) \times a \times a \times a \times a \times b \times b \times c \times c$

$= 24a^4b^2c^2$

(ii) $5xy \times 3x^2y \times 7y^2 = 5 \times x \times y \times 3 \times x \times x \times y \times 7 \times y \times y$

$= 5 \times 3 \times 7 \times x \times x \times x \times y \times y \times y \times y$

$= 105x^3y^4$

(iii) $a^3 \times 3ab^2 \times 2a^2b^2 = a \times a \times a \times 3 \times a \times b \times b \times 2 \times a \times a \times b$

$= 3 \times 2 \times a \times a \times a \times a \times a \times a \times b \times b \times b \times b$

$= 6a^6b^4$

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Q.4 The number of bacteria in a culture is x now. It becomes square of itself after one week. What will be its number after two weeks?

Solution: Number of bacteria in culture = x

After one week, number of bacteria becomes

$= x^2$

∴ Number of bacteria after 2 weeks $= (x^2)^2$

$= x^4$

Q.5 The area of rectangle is given by the product of its length and breadth. The length of a rectangle is two third of its breadth. Find the area if its breadth is x cm.

Solution: It is given that:

breadth of rectangle = x cm

∴ length of rectangle $= \frac{2}{3}x$ cm.

Since Area = length × breadth

$= \frac{2}{3} x \times x$

$= \frac{2}{3}x^2$ cm²

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Q6 If there are x rows of chairs and each row contain x^2 chairs. Determine the total number of chairs.

Solution: Number of rows $= x$

Number of chairs in each row $= x^2$

Therfore, Total chairs $= x \times x^2$

$= x^3$

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