Write the following in product form and write the terms in words.

(1) 10^7
(2) $(-4)^6$
(3) 9^3
(4) m^8
(5) $(1.4)^2$
(6) $\left(\frac{2}{5}\right)^4$
(7) $\left(-\frac{3}{4}\right)^5$
(8) $(-1)^3$
(9) $\left(2\frac{1}{3}\right)^2$
(10) a^3

ANSWER:

(1) 10^7

The product form of 10^7 = 10 multiplied 7 times = $10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10$

Word form of 10^7 = 10 to the power 7.

(2) $(-4)^6$

The product form of $(-4)^6$ = (-4) multiplied 6 times = $(-4) \times (-4) \times (-4) \times (-4) \times (-4) \times (-4)$

Word form of $(-4)^6$ = (-4) to the power 6.

(3) 9^3

The product form of 9^3 = 9 multiplied 3 times = $9 \times 9 \times 9$

Word form of 9^3 = 9 to the power 3.

(4) m^8

The product form of m^8 = m multiplied 8 times = $m \times m \times m \times m \times m \times m \times m \times m$

Word form of m^8 = m to the power 8.

(5) $(1.4)^2$

The product form of $(1.4)^2$ = 1.4 multiplied 2 times = 1.4×1.4

Word form of $(1.4)^2$ = 1.4 to the power 2.

(6) $\left(\frac{2}{5}\right)^4$

The product form of $\left(\frac{2}{5}\right)^4 = \frac{2}{5}$ multiplied 4 times$= \frac{2}{5} \times \frac{2}{5} \times \frac{2}{5} \times \frac{2}{5}$

Word form of $\left(\frac{2}{5}\right)^4 = \frac{2}{5}$ to the power 4.

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

The product form of $\left(-\frac{3}{4}\right)^5 = \left(-\frac{3}{4}\right)$ multiplied 5 times

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

Word form of $\left(-\frac{3}{5}\right)^5 = \left(-\frac{3}{4}\right)$ to the power 5.

(8) $(-1)^3$

The product form of $(-1)^3 = (-1)$ multiplied 3 times $= (-1) \times (-1) \times (-1)$

Word form of $(-1)^3 = (-1)$ to the power 3.

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

The product form of $\left(2\frac{1}{3}\right)^2 = \left(2\frac{1}{3}\right)$ multiplied 2 times $= \left(2\frac{1}{3}\right) \times \left(2\frac{1}{3}\right)$

Word form of $\left(2\frac{1}{3}\right)^2 = \left(2\frac{1}{3}\right)$ to the power 2.

(10) a^3

The product form of a^3 = a multiplied 3 times = $a \times a \times a$

Word form of a^3 = a to the power 3.

Write the following in index form:

(1) $\frac{7}{9} \times \frac{7}{9} \times \frac{7}{9} \times \frac{7}{9} \times \frac{7}{9}$

(2) $8 \times 8 \times 8$

(3) $m \times m \times m \times m$

(4)

$\left(-\frac{5}{7}\right) \times \left(-\frac{5}{7}\right) \times$ ..... 6 times

(5) $\frac{2}{3} \times \frac{2}{3} \times$ ..... 9 times

(6) $a \times a \times a \times a$

(7) $b \times b \times b \times$ ..... 10 times

ANSWER:

(1) $\frac{7}{9} \times \frac{7}{9} \times \frac{7}{9} \times \frac{7}{9} \times \frac{7}{9}$

Here $\frac{7}{9}$ is multiplied 5 times.

$\therefore$ Index form of $\frac{7}{9} \times \frac{7}{9} \times \frac{7}{9} \times \frac{7}{9} \times \frac{7}{9}$ is $\left(\frac{7}{9}\right)^5$

(2) $8 \times 8 \times 8$

Here 8 is multiplied 3 times.

$\therefore$ Index form of $8 \times 8 \times 8$ is $(8)^3$

(3) $m \times m \times m \times m$

Here m is multiplied 4 times.

$\therefore$ Index form of $m \times m \times m \times m$ is $(m)^4$

(4)

$\left(-\frac{5}{7}\right) \times \left(-\frac{5}{7}\right) \times \ldots\ldots\ldots$ 6 times

$= \left(-\frac{5}{7}\right) \times \left(-\frac{5}{7}\right) \times \left(-\frac{5}{7}\right) \times \left(-\frac{5}{7}\right)$

$\times \left(-\frac{5}{7}\right) \times \left(-\frac{5}{7}\right)$

Here $\left(-\frac{5}{7}\right)$ is multiplied 6 times.

∴ Index form of

$\left(-\frac{5}{7}\right) \times \left(-\frac{5}{7}\right) \times \left(-\frac{5}{7}\right) \times \left(-\frac{5}{7}\right)$ is

$\times \left(-\frac{5}{7}\right) \times \left(-\frac{5}{7}\right)$

$\left(-\frac{5}{7}\right)^{6}$

(5)

$\frac{2}{3} \times \frac{2}{3} \times \ldots\ldots\ldots$ 9 times $= \frac{2}{3} \times \frac{2}{3}$

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

Here $\frac{2}{3}$ is multiplied 9 times.

∴ Index form of

$\frac{2}{3} \times \frac{2}{3} \times \frac{2}{3} \times \frac{2}{3} \times \frac{2}{3} \times \frac{2}{3} \times \frac{2}{3} \times \frac{2}{3}$ is

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

$\left(\frac{2}{3}\right)^{9}$

(7) $b \times b \times \ldots$ 10 times = $b \times b \times b \times b \times b \times b \times b \times b \times b \times b$

Here b is multiplied 10 times.

$\therefore$ Index form of $b \times b \times b \times b \times b \times b \times b \times b \times b \times b$ is $(b)^{10}$

Question 3:

Write the base and index of the following numbers:

(1) $(-1)^{20}$
(2) 7^5
(3) a^5
(4) $(-2)^4$
(5) 10^{100}
(6) $\left(\frac{3}{11}\right)^9$
(7) $\left(-\frac{7}{13}\right)^{10}$
(8) a^6
(9) $(xy)^3$
(10) $\left(\frac{a}{b}\right)^2$

(1) $(-1)^{20}$ = (−1) × (−1) × (−1) × ... 20 times
Here (−1) is the base and 20 is the index.

(2) $7^5 = 7 \times 7 \times 7 \times 7 \times 7$
Here 7 is the base and 5 is the index.

(3) $a^5 = a \times a \times a \times a \times a$
Here *a* is the base and 5 is the index.

(4) $(-2)^4 = (-2) \times (-2) \times (-2) \times (-2)$
Here (−2) is the base and 4 is the index.

(5) 10^{100} = 10 × 10 ×10 × ... 100 times
Here 10 is the base and 100 is the index.

(6) $\left(\frac{3}{11}\right)^9 = \frac{3}{11} \times \frac{3}{11} \times \frac{3}{11} \times \frac{3}{11} \times \frac{3}{11} \times \frac{3}{11} \times \frac{3}{11} \times \frac{3}{11} \times \frac{3}{11}$
Here $\frac{3}{11}$ is the base and 9 is the index.

(7) $\left(-\frac{7}{13}\right)^{10} = \left(-\frac{7}{13}\right) \times \left(-\frac{7}{13}\right) \times \left(-\frac{7}{13}\right) \times \left(-\frac{7}{13}\right) \times \left(-\frac{7}{13}\right) \times \left(-\frac{7}{13}\right) \times \left(-\frac{7}{13}\right) \times \left(-\frac{7}{13}\right) \times \left(-\frac{7}{13}\right) \times \left(-\frac{7}{13}\right)$
Here $\left(-\frac{7}{13}\right)$ is the base and 10 is the index.

(8) $a^6 = a \times a \times a \times a \times a \times a$
Here a is the base and 6 is the index.

(9) $(xy)^3 = (xy) \times (xy) \times (xy)$
Here (xy) is the base and 3 is the index.

(10) $\left(\frac{a}{b}\right)^2 = \frac{a}{b} \times \frac{a}{b}$
Here $\frac{a}{b}$ is the base and 2 is the index.