EXERCISE 9.2

1. Find the product of the following pairs of monomials.

(i) 4, 7p

(ii) – 4p, 7p

(iii) – 4p, 7pq

(iv) $4p^3$, – 3p

(v) 4p, 0

Solution:

(i) 4 , 7 p = $4 \times 7 \times p = 28p$

(ii) $-4p \times 7p = (-4 \times 7) \times (p \times p) = -28p^2$

(iii) $-4p \times 7pq = (-4 \times 7)(p \times pq) = -28p^2q$

(iv) $4p^3 \times -3p = (4 \times -3)(p^3 \times p) = -12p^4$

(v) $4p \times 0 = 0$

2. Find the areas of rectangles with the following pairs of monomials as their lengths and breadths, respectively.

(p, q) ; (10m, 5n) ; ($20x^2$, $5y^2$) ; (4x, $3x^2$) ; (3mn, 4np)

Solution:

Area of rectangle = Length x breadth. So, it is multiplication of two monomials.

The results can be written in square units.

(i) $p \times q = pq$

(ii) $10m \times 5n = 50mn$

(iii) $20x^2 \times 5y^2 = 100x^2y^2$

(iv) $4x \times 3x^2 = 12x^3$

(v) $3mn \times 4np = 12mn^2p$

3. Complete the following table of products:

First monomial → Second monomial ↓	$2x$	$-5y$	$3x^2$	$-4xy$	$7x^2y$	$-9x^2y^2$
$2x$	$4x^2$	...	...	...	...	...
$-5y$	...	...	$-15x^2y$	...	...	...
$3x^2$	...	...	...	...	...	...
$-4xy$	...	...	...	...	...	...
$7x^2y$	...	...	...	...	...	...
$-9x^2y^2$	...	...	...	...	...	...

Solution:

First monomial / Second monomial	2x	-5y	$3x^2$	-4xY	$7x^2Y$	$-9x^2y^2$
2x	$4x^2$	-10xy	$6x^3$	$-8x^2y$	$14x^3y$	$-18x^3y^2$
-5y	-10xy	$25y^2$	$-15x^2y$	$20xy^2$	$-35x^2y^2$	$45x^2y^3$
$3x^2$	$6x^3$	$-15x^2y$	$9x^4$	$-12x^3y$	$21x^4y$	$-27x^4y^2$
-4xy	$-8x^2y$	$20xy^2$	$-12x^3y$	$16x^2y^2$	$-28x^3y^2$	$36x^3y^3$
$7x^2y$	$14x^3y$	$-35x^2y^2$	$21x^4y$	$-28x^3y^2$	$49x^4y^2$	$-63x^4y^3$
$-9x^2y^2$	$-18x^3y^2$	$45x^2y^3$	$-27x^4y^2$	$36x^3y^3$	$-63x^4y^3$	$81x^4y^4$

4. Obtain the volume of rectangular boxes with the following length, breadth and height, respectively.

(i) $5a, 3a^2, 7a^4$

(ii) $2p, 4q, 8r$

(iii) $xy, 2x^2y, 2xy^2$

(iv) $a, 2b, 3c$

Solution:

Volume of rectangle = length x breadth x height. To evaluate volume of rectangular boxes, multiply all the monomials.

(i) $5a \times 3a^2 \times 7a^4 = (5 \times 3 \times 7)(a \times a^2 \times a^4) = 105a^7$

(ii) $2p \times 4q \times 8r = (2 \times 4 \times 8)(p \times q \times r) = 64pqr$

(iii) $y \times 2x^2y \times 2xy^2 = (1 \times 2 \times 2)(x \times x^2 \times x \times y \times y \times y^2) = 4x^4y^4$

(iv) $a \times 2b \times 3c = (1 \times 2 \times 3)(a \times b \times c) = 6abc$

5. Obtain the product of

(i) xy, yz, zx

(ii) a, – a^2 , a^3

(iii) 2, 4y, $8y^2$, $16y^3$

(iv) a, 2b, 3c, 6abc

(v) m, – mn, mnp

Solution:

(i) xy × yz × zx = $x^2 y^2 z^2$

(ii) a × – a^2 × a^3 = – a^6

(iii) 2 × 4y × $8y^2$ × $16y^3$ = 1024 y^6

(iv) a × 2b × 3c × 6abc = $36a^2 b^2 c^2$

(v) m × – mn × mnp = $-m^3 n^2 p$