



Algebraic Expressions and Identities Ex 6.6 Q3

**Answer :**

(i) Here, we will use the identity  $(a + b)^2 = a^2 + 2ab + b^2$   
 $(102)^2 = (100 + 2)^2 = (100)^2 + 2 \times 100 \times 2 + 2^2 = 10000 + 400 + 4 = 10404$

(ii) Here, we will use the identity  $(a - b)^2 = a^2 - 2ab + b^2$   
 $(99)^2 = (100 - 1)^2 = (100)^2 - 2 \times 100 \times 1 + 1^2 = 10000 - 200 + 1 = 9801$

(iii) Here, we will use the identity  $(a + b)^2 = a^2 + 2ab + b^2$   
 $(1001)^2 = (1000 + 1)^2 = (1000)^2 + 2 \times 1000 \times 1 + 1^2 = 1000000 + 2000 + 1 = 1002001$

(iv) Here, we will use the identity  $(a - b)^2 = a^2 - 2ab + b^2$   
 $(999)^2 = (1000 - 1)^2 = (1000)^2 - 2 \times 1000 \times 1 + 1^2 = 1000000 - 2000 + 1 = 998001$

(v) Here, we will use the identity  $(a + b)^2 = a^2 + 2ab + b^2$   
 $(703)^2 = (700 + 3)^2 = (700)^2 + 2 \times 700 \times 3 + 3^2 = 490000 + 4200 + 9 = 494209$

Algebraic Expressions and Identities Ex 6.6 Q4

**Answer :**

Here, we will use the identity  $(a - b)(a + b) = a^2 - b^2$

(i) Let us consider the following expression:

$$\begin{aligned}(82)^2 - (18)^2 \\&= (82 + 18)(82 - 18) \\&= 100 \times 64 \\&= 6400\end{aligned}$$

(ii) Let us consider the following expression:

$$\begin{aligned}(467)^2 - (33)^2 \\&= (467 + 33)(467 - 33) \\&= 500 \times 434 \\&= 217000\end{aligned}$$

(iii) Let us consider the following expression:

$$\begin{aligned}(79)^2 - (69)^2 \\&= (79 + 69)(79 - 69) \\&= 148 \times 10 \\&= 1480\end{aligned}$$

(iv) Let us consider the following product:

$$197 \times 203$$

$\therefore \frac{197+203}{2} = \frac{400}{2} = 200$ ; therefore, we will write the above product as:

$$\begin{aligned} 197 \times 203 &= (200 - 3)(200 + 3) \\ &= (200)^2 - (3)^2 \\ &= 40000 - 9 \\ &= 39991 \end{aligned}$$

Thus, the answer is 39991.

(v) Let us consider the following product:

$$113 \times 87$$

$\therefore \frac{113+87}{2} = \frac{200}{2} = 100$ ; therefore, we will write the above product as:

$$\begin{aligned} 113 \times 87 &= (100 + 13)(100 - 13) \\ &= (100)^2 - (13)^2 \\ &= 10000 - 169 \\ &= 9831 \end{aligned}$$

Thus, the answer is 9831.

(vi) Let us consider the following product:

$$95 \times 105$$

$\therefore \frac{95+105}{2} = \frac{200}{2} = 100$ ; therefore, we will write the above product as:

$$\begin{aligned} 95 \times 105 &= (100 + 5)(100 - 5) \\ &= (100)^2 - (5)^2 \\ &= 10000 - 25 \\ &= 9975 \end{aligned}$$

Thus, the answer is 9975.

(vii) Let us consider the following product:

$$1.8 \times 2.2$$

$\therefore \frac{1.8+2.2}{2} = \frac{4}{2} = 2$ ; therefore, we will write the above product as:

$$\begin{aligned} 1.8 \times 2.2 &= (2 - 0.2)(2 + 0.2) \\ &= (2)^2 - (0.2)^2 \\ &= 4 - 0.04 \end{aligned}$$

$$= 3.96$$

Thus, the answer is 3.96.

(viii) Let us consider the following product:

$$9.8 \times 10.2$$

$\therefore \frac{9.8+10.2}{2} = \frac{20}{2} = 10$ ; therefore, we will write the above product as:

$$\begin{aligned} & 9.8 \times 10.2 \\ &= (10 - 0.2)(10 + 0.2) \\ &= (10)^2 - (0.2)^2 \\ &= 100 - 0.04 \\ &= 99.96 \end{aligned}$$

Thus, the answer is 99.96.

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