



### Algebraic Expressions and Identities Ex 6.6 Q5

**Answer :**

(i) Let us consider the following expression:

$$\frac{58^2 - 42^2}{16}$$

Using the identity  $(a + b)(a - b) = a^2 - b^2$ , we get:

$$\begin{aligned}\frac{58^2 - 42^2}{16} &= \frac{(58 + 42)(58 - 42)}{16} \\ \Rightarrow \frac{58^2 - 42^2}{16} &= \frac{100 \times 16}{16} \\ \Rightarrow \frac{58^2 - 42^2}{16} &= 100\end{aligned}$$

Thus, the answer is 100.

(ii) Let us consider the following expression:

$$178 \times 178 - 22 \times 22$$

Using the identity  $(a + b)(a - b) = a^2 - b^2$ , we get:

$$178 \times 178 - 22 \times 22 = 178^2 - 22^2 = (178 + 22)(178 - 22) = 200 \times 156 = 31200$$

Thus, the answer is 31200.

(iii) Let us consider the following expression:

$$\frac{198 \times 198 - 102 \times 102}{96} = \frac{198^2 - 102^2}{96}$$

Using the identity  $(a + b)(a - b) = a^2 - b^2$ , we get:

$$\begin{aligned}\frac{198 \times 198 - 102 \times 102}{96} &= \frac{198^2 - 102^2}{96} = \frac{(198 + 102)(198 - 102)}{96} \\ \Rightarrow \frac{198 \times 198 - 102 \times 102}{96} &= \frac{(198 + 102)(198 - 102)}{96} \\ \Rightarrow \frac{198 \times 198 - 102 \times 102}{96} &= \frac{300 \times 96}{96} \\ \Rightarrow \frac{198 \times 198 - 102 \times 102}{96} &= 300\end{aligned}$$

Thus, the answer is 300.

(iv) Let us consider the following expression:

$$1.73 \times 1.73 - 0.27 \times 0.27$$

Using the identity  $(a + b)(a - b) = a^2 - b^2$ , we get:

$$1.73 \times 1.73 - 0.27 \times 0.27 = 1.73^2 - 0.27^2 = (1.73 + 0.27)(1.73 - 0.27) = 2 \times 1.46 = 2.92$$

Thus, the answer is 2.92.

(v) Let us consider the following expression:

$$\frac{8.63 \times 8.63 - 1.37 \times 1.37}{0.726} = \frac{8.63^2 - 1.37^2}{0.726}$$

Using the identity  $(a + b)(a - b) = a^2 - b^2$ , we get:

$$\begin{aligned} \frac{8.63 \times 8.63 - 1.37 \times 1.37}{0.726} &= \frac{8.63^2 - 1.37^2}{0.726} = \frac{(8.63 + 1.37)(8.63 - 1.37)}{0.726} \\ \Rightarrow \frac{8.63 \times 8.63 - 1.37 \times 1.37}{0.726} &= \frac{(8.63 + 1.37)(8.63 - 1.37)}{0.726} \\ \Rightarrow \frac{8.63 \times 8.63 - 1.37 \times 1.37}{0.726} &= \frac{(8.63 + 1.37)(8.63 - 1.37)}{0.726} \\ \Rightarrow \frac{8.63 \times 8.63 - 1.37 \times 1.37}{0.726} &= \frac{10 \times 7.26}{0.726} \\ \Rightarrow \frac{8.63 \times 8.63 - 1.37 \times 1.37}{0.726} &= \frac{10 \times \cancel{7.26}^{10}}{\cancel{0.726}} \\ \Rightarrow \frac{8.63 \times 8.63 - 1.37 \times 1.37}{0.726} &= 100 \end{aligned}$$

Thus, the answer is 100.

Algebraic Expressions and Identities Ex 6.6 Q6

**Answer :**

(i) Let us consider the following equation:

$$4x = (52)^2 - (48)^2$$

Using the identity  $(a + b)(a - b) = a^2 - b^2$ , we get:

$$4x = (52)^2 - (48)^2$$

$$4x = (52 + 48)(52 - 48)$$

$$4x = 100 \times 4 = 400$$

$$\Rightarrow 4x = 400$$

$$\Rightarrow x = 100 \quad (\text{Dividing both sides by 4})$$

(ii) Let us consider the following equation:

$$14x = (47)^2 - (33)^2$$

Using the identity  $(a + b)(a - b) = a^2 - b^2$ , we get:

$$14x = (47)^2 - (33)^2$$

$$14x = (47 + 33)(47 - 33)$$

$$14x = 80 \times 14 = 1120$$

$$\Rightarrow 14x = 1120$$

$$\Rightarrow x = 80 \quad (\text{Dividing both sides by 14})$$

(iii) Let us consider the following equation:

$$5x = (50)^2 - (40)^2$$

Using the identity  $(a + b)(a - b) = a^2 - b^2$ , we get:

$$5x = (50)^2 - (40)^2$$

$$5x = (50 + 40)(50 - 40)$$

$$5x = 90 \times 10 = 900$$

$$\Rightarrow 5x = 900$$

$$\Rightarrow x = 180 \quad (\text{Dividing both sides by } 5)$$

\*\*\*\*\* END \*\*\*\*\*