MATHEMATICS

WORKSHEET_110726

CHAPTER 06 WE DISTRIBUTE, YET THINGS MULTIPLY (Ganita Prakashan)

(ANSWERS)

SUBJECT: MATHEMATICS **MAX. MARKS : 40**

CLASS : VIII **DURATION : 1½ hr**

General Instructions:

(i). **All** questions are compulsory.

(ii). This question paper contains 2**0** questions divided into five Sections A, B, C, D and E.

(iii). **Section A** comprises of **10 MCQs** of **1 mark** each. **Section B** comprises of 4 questions of **2 marks** each. **Section C** comprises of 3 questions of **3 marks** each. **Section D** comprises of 1 question of **5 marks** each and **Section E** comprises of 2 Case Study Based Questions of **4 marks** each.

(iv). There is no overall choice.

(v). Use of Calculators is not permitted

SECTION – A

Questions 1 to 10 carry 1 mark each.

1. If the product of two numbers is ab, then the increase in the product when the first number is increased by 4 is

(a) 4b (b) 4a (c) ab + 4 (d) a + b

Ans: (a)

$(a + 4)b = ab + 4b$

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2. Using algebraic identity, the value of 96 × 104 is

(a) 9984 (b) 9996 (c) 9976 (d) 10016

Ans: (a)

$(100 - 4)(100 + 4) = 10000 - 16 = 9984$

3. Which identity is most suitable to find 125^2 mentally?

(a) $(a-b)^2$ (b) $(a+b)^2$ (c) $(a + b)(a - b)$ (d) $a^2 + b^2$

Ans: (b)

$(100+25)^2$ uses square of a sum.

4. When one number is increased by 6 and the other decreased by 2, the change in product is

(a) 6b−2a (b) 6b−2a−12 (c) ab−12 (d) 6a−2b

Ans: (b)

$(a + 6)(b - 2) = ab + 6b - 2a - 12$

5. The square of any odd number is always

(a) even (b) a multiple of 4 (c) one more than a multiple of 8 (d) a multiple of 8

Ans: (c)

$(2n + 1)^2 = 4n(n + 1) + 1$

6. Which of the following expansions is correct?

(a) $(7x - 3)^2 = 49x^2 - 9$ (b) $(7x - 3)^2 = 49x^2 - 42x + 9$

(c) $(7x - 3)^2 = 14x^2 - 9$ (d) $(7x - 3)^2 = 49x^2 - 21x + 3$

Ans: (b) $(7x - 3)^2 = 49x^2 - 42x + 9$

$(a - b)^2 = a^2 - 2ab + b^2$

7. Using identities, the value of 85 × 95 is

(a) 8075 (b) 8100 (c) 8025 (d) 8125

Ans: (a)

$(90 - 5)(90 + 5) = 8100 - 25 = 8075$

8. The expression for increase in area when the side of a square changes from p to p+8 is
(a) 16p+64 (b) 8p+64 (c) $p^2 + 64$ (d) 16p
Ans: (a)
$(p + 8)^2 - p^2 = 16p + 64$

In the following questions 9 and 10, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

9. **Assertion:** $(a + b)^2 - (a - b)^2 = 4ab$
Reason: On expansion, square terms cancel.
Ans: (a) Both A and R are true and R is the correct explanation of A.

10. **Assertion (A):** The square of an even number is always divisible by 4.
Reason (R): Any even number can be written as $2n$.
Ans: (a) Both A and R are true and R is the correct explanation of A.
$(2n)^2 = 4n^2$

SECTION – B

Questions 11 to 14 carry 2 marks each.

11. Find the increase in product when 18 and 27 are both increased by 1.
Ans: Original = 486
New = $19 \times 28 = 532$
Increase = **46**

12. Expand $(9a-4)^2$.
Ans: $81a^2 - 72a + 16$

13. Evaluate 107 × 93 using identity.
Ans: $(100 + 7)(100 - 7) = 10000 - 49 = 9951$

14. Write the identity used to find the difference of two squares.
Ans: $(a + b)(a - b) = a^2 - b^2$

SECTION – C

Questions 15 to 17 carry 3 marks each.

15. Using algebraic identities:
(i) Write the identity for $(a+b)^2$.
(ii) Expand $(x+5)^2$.
(iii) Find the value of 25^2using identity.
Ans: (i) $a^2 + 2ab + b^2$
(ii) $x^2 + 10x + 25$
(iii) $(20 + 5)^2 = 625$

16. Using identity $(a + b)(a - b)$:
(i) Write the identity.
(ii) Express 72 × 68 using identity.
(iii) Find its value.

Ans: (i) $a^2 - b^2$
(ii) $(70 + 2)(70 - 2)$
(iii) $4900 - 4 = 4896$

17. Square of an odd number:
(i) Write an odd number in algebraic form.
(ii) Find its square.
(iii) State the conclusion.
Ans: (i) $2n + 1$
(ii) $4n(n + 1) + 1$
(iii) One more than multiple of 8

SECTION – D

Questions 18 carry 5 marks each.

18. Find the value of 115^2 using algebraic identity.
(i) Write the identity used.
(ii) Express 115 suitably.
(iii) Expand using identity.
(iv) Simplify and find the value.
Ans: (i) $(a+b)^2$
(ii) $115 = 100 + 15$
(iii) $10000 + 3000 + 225$
(iv) **13225**

SECTION – E (Case Study Based Question)

Question 19 to 20 carry 4 mark

19. Case Study-1: School Sports Ground Planning
A school has a square sports ground with each side measuring 45 m. Due to the introduction of new sports facilities, the management decides to increase the length of each side by 5 m. Instead of using lengthy calculations, the sports teacher asks students to apply algebraic identities learned in Class VIII to calculate the new area and the additional space created. This activity helps students understand how algebraic identities are useful in real-life planning and estimation problems.

(i) Write the identity used
(ii) Find original area
(iii) Find new area
(iv) Find increase in area
Ans: (i) $(a+b)^2$
(ii) 2025

(iii) $(45 + 5)^2 = 2500$
(iv) **475 sq m**

20. Case Study-2: Mental Maths Challenge

During a classroom mental-maths challenge, students are asked to calculate 98 × 102 without calculators. One student quickly applies the difference of squares identity by rewriting the numbers around 100. The teacher uses this example to explain how algebraic identities improve speed, accuracy, and confidence in calculations, especially in exams and competitions.

(i) Identify the identity used
(ii) Write the expression
(iii) Find the value
(iv) Verify the result

Ans: (i) $(a + b)(a - b)$
(ii) $(100 - 2)(100 + 2)$
(iii) $10000 - 4 = 9996$
(iv) LHS = 98 × 102 = 9996
From (iii) RHS = 9996
Hence, LHS = RHS