

MATHEMATICS



Topic: Multiplication of algebraic expressions

❖ “Note “ When multiplying expressions, you need to make use of:

1. The exponent laws of multiplication. $x^4 \times x^2 = x^6$

2. The distributive law.

$$a(b + c) = a \times b + a \times c$$

3. The associative law.

$$\begin{aligned} 5x + 2 - 3x &= 5x - 3x + 2 && \textit{Add the like terms} \\ &= 2x + 2 \end{aligned}$$

Worked examples

MULTIPLYING
MONOMIAL BY A
BINOMIAL

First multiply the numerical coefficients, and then multiply the variables

$$1. \quad 2x^2 \times -4x = -8x^3$$

or

$$2 \times -4 \times x^2 \times x = -8x^3$$

*Here we multiplying
a monomial by monomial*

$$2. \quad 3a^2 \times 5a^3 = 15a^5$$

or

$$3 \times 5 \times a^2 \times a^3 = 15a^5$$

$$3. \quad \text{Multiply and Simplify}$$

$$-3(4a - 2)$$

$$= -3 \times 4a - (-3) \times -2$$

$$= -12a + 6$$

DISTRIBUTIVE
LAW

$$4. \quad x(2x - 4) - 3x(x - 5)$$

$$= 2x^2 - 4x - 3x^2 + 15x$$

$$= -x^2 + 11x$$

ADD LIKE TERMS

Exercises

Exercise 8.5 pg 94

Simplify the following multiplication problems:

- | | |
|-----|-----|
| 1. | 22. |
| 4. | 24. |
| 7. | |
| 10. | |
| 13. | |
| 16. | |
| 19. | |

Exercise 8.6 pg 95

Simplify the following expressions:

- | | |
|-----|-----|
| 1. | 25. |
| 4. | 28. |
| 7. | 31. |
| 10. | 34. |
| 13. | 35. |
| 19. | |
| 22. | |