

Dear Parents / Students

Due to the unprecedented situation, Knowledgeplus Training center is mobilized and will keep accompanying and supporting our students through this difficult time. Our Staff will be continuously, sending notes and exercises on a weekly basis through what's app and email. Students are requested to copy the notes and do the exercises on their copybooks. The answers to the questions below will be made available on our website on knowledgeplus.mu/support.php. Please note that these are extra work and notes that we are providing our students and all classes will be replaced during the winter vacation. We thank you for your trust and are convinced that, together, we will overcome these troubled times.

Knowledgeplus Training Center

Mathematics

Garde 8

Week 2

Notes and Exercise

Note:(All the Notes, Examples and Exercise are on the photos)

Note: (Please copy all the Notes, Examples and Exercise on your copy book).

Mathematics grade 8 ~~revision~~ revision ①

Algebraic Expressions & Algebraic Equation.

Coefficient and Constant Term

A term consists of a coefficient and a variable. The + and - signs in a algebraic expression separate it into terms.

Example: $4a - 3x$ consists of 2 terms: $4a$ and $3x$

The number that is placed in front of a term is called the coefficient of that variable.

Example: In $3x$, 3 is the coefficient and x is the variable

A term containing no variable is called a constant term.

Example: In $8a + 5$, 5 is the constant term.

For each of the following expressions, complete the sentence found on the right:

Ex ①

(a) $9m$ → The coefficient of m is _____.

(b) $7x$ → The coefficient of x is _____.

(c) $-2z$ → The coefficient of z is _____.

(d) $4x^2$ → The coefficient of x^2 is _____.

(e) $-5ab$ → The coefficient of ab is _____.

(f) $6c - 2d$ → The coefficient of _____ is 6 and the coefficient of d is _____.

Note: (Please copy all the Notes, Examples and Exercise on your copy book).

(g) $9m + 7n - 3y$ → The coefficient of m is _____, the coefficient of n is _____ and the coefficient of y is _____.

(h) $6e + 3f - 4$ → The coefficient of f is _____, the coefficient of _____ is 6 and the constant term is _____.

(i) $3x^2 - 2x + 7$ → The coefficient of x is _____, the coefficient of x^2 is _____ and the _____ is 7.

Simplification of expressions involving multiplication

Examples

Simplify the following

(a) $3u \times 5u$ (b) $6x^2 \times 4x^3$ (c) $2x^2y \times -8xy^2$

Solution

$$(a) \quad 3u \times 5u = (3 \times 5)u^{1+1} \\ = 15u^2$$

→ Using Multiplication Law

$$(b) \quad 6x^2 \times 4x^3 = (6 \times 4)x^{2+3} \\ = 24x^5$$

$$(c) \quad 2x^2y \times -8xy^2 = (2 \times (-8))x^{2+1}y^{1+2} \\ = -16x^3y^3$$

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Exercise 1

Simplify the following:

(a) $12x \times 3$

(b) $4a \times 5a$

(c) $6a^2 \times 2a$

(d) $3z^9 \times 12z^6$

(e) $-5s^3 \times 4s^2$

(f) $10a^4b^3c^9 \times 12a^2b^{12}c^6$

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Simplification of expression involving division

Example

Simplify the following

(a) $12m \div 3$ (b) $\frac{2c}{8c}$ (c) $28x^2y \div 7x$ (d) $\frac{4m^3n^2}{12m^2n}$

(a) $12m \div 3 = \frac{12 \times m}{3}$
 $= 4 \times m$
 $= 4m$

(b) $\frac{2c}{8c} = \frac{2}{8} c^{1-1} = 1$
 $= \frac{1}{4} c^0 \rightarrow (\text{Note: } c^0 = 1)$
 $= \frac{1}{4} \times 1$
 $= \frac{1}{4}$

(c) $28x^2y \div 7x = \frac{28}{7} x^{2-1} y$
 $= 4x^1 y$
 $= 4xy$

(d) $\frac{4m^3n^2}{12m^2n} = \frac{4}{12} m^{3-2} n^{2-1}$
 $= \frac{1}{3} m n$
 $= \frac{mn}{3}$

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Exercise

Simplify the following

(a) $2x^{10} \div x^4$

(b) $9y^7 \div 3y^5$

(c) $s^6 t^8 \div s^5 t^2$

(d) $4v^9 w \div 12v^3 w$

(e) $24a^{12} b^4 c^7 \div 21a^{11} b^2 c^5$

Note: (Please copy all the Notes, Examples and Exercise on your copy book).

$$(f) \frac{3a x^2 y^8}{x^5 y^4}$$

$$(g) \frac{3u^{15} v^9}{9u^6 v^9}$$

Simplification of expressions involving brackets

Example

Expand and simplify the following.

(a) $9(x+y)$ (b) $5(x+6)$ (c) $2(s-12)$ (d) $3(t-5)$

$$(a) \begin{array}{l} \overbrace{9(x+y)} \\ = (9 \times x) + (9 \times y) \\ = 9x + 9y \end{array}$$

$$(b) \begin{array}{l} \overbrace{5(x+6)} \\ = (5 \times x) + (5 \times 6) \\ = 5x + 30 \end{array}$$

$$(c) \begin{array}{l} \overbrace{2(s-12)} \\ = 2s - (2 \times 12) \\ = 2s - 24 \end{array}$$

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$$(d) \quad 3(t-5) = (3 \times t) - (3 \times 5) \\ = 3t - 15$$

Exercise

Expand and simplify

$$(a) \quad 3(2x + 10y)$$

$$(b) \quad 4(2x + 8)$$

$$(c) \quad 20(7x + 3z)$$

$$(d) \quad 9(3x + 11)$$

$$(e) \quad 7(u - 23)$$

$$(f) \quad 14(2x - 3y)$$

$$(g) \quad 20(3a - 7b)$$

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$$(h) 8(2m - 3n)$$

E Exercise

Example 2

Expand and simplify.

$$(a) -4(a+8) \quad (b) -5(8n-2y)$$

solution

$$(a) \begin{aligned} -4(a+8) &= (-4 \times a) + (-4 \times 8) \\ &= -4a - 32 \end{aligned}$$

$$(b) \begin{aligned} -5(8n-2y) &= -40n - (-5 \times 2y) \end{aligned}$$

$$(b) \begin{aligned} -5(8n-2y) &= (-5 \times 8n) - (-5 \times 2y) \\ &= -40n + 10y \end{aligned}$$

Note: $+ \times + = +$

$+ \times - = -$

$- \times + = -$

$- \times - = +$

Note:(Please copy all the Notes, Examples and Exercise on your copy book).

Exercise 2

Expand and simplify

(a) $-7(d+9)$

(b) $-2(3x+2y)$

(c) $-3(2ab+4ad)$

(d) $-6(16r+ty)$

(e) $-5(10e+9f)$

(f) $-17(3u+6v)$

(g) $-12(8uv-10uw)$

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Expand and simplify the following: (example 3)

(a) $3u(4u-7)$ (b) $-2x(3x-4y)$

Solution

$$(a) \quad 3u(4u-7) = (3u \times 4u) - (3u \times 7) \\ = 12u^2 - 21u$$

Note: $a \times a = a^2$
 $a \times a = a^{1+1}$
 $= a^2$

$$(b) \quad -2x(3x-4y) = (-2x \times 3x) - (-2x \times 4y) \\ = -6x^2 + 8xy$$

Exercise 3

(a) $x(x+9)$

(b) $a(2a+b)$

(c) $2xy(3x+6y)$

(d) $-v(2v-12)$

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Example 4

$$(a) 3(2a+4b)+4(3a+2b) \quad (b) 3(3a-5b)-4(2a-3b)$$

$$(c) -3(2a-3b)+4(-a+2b)$$

Solution

$$\begin{aligned} (a) 3(2a+4b)+4(3a+2b) &= 6a+12b+12a+8b \\ &= 6a+12a+12b+8b \\ &= 18a+20b \end{aligned}$$

$$\begin{aligned} (b) 3(3a-5b)-4(2a-3b) &= 9a-15b-8a+12b \\ &= 9a-8a-15b+12b \\ &= a-3b \end{aligned}$$

$$\begin{aligned} (c) -3(2a-3b)+4(-a+2b) &= -6a+9b-4a+8b \\ &= -6a-4a+9b+8b \\ &= -10a+17b \end{aligned}$$

Exercise 4

$$(a) 6(x+y)+4(x-y)$$

$$(b) 2(u+v)+9(2u+v)$$

Note:(Please copy all the Notes, Examples and Exercise on your copy book).

$$(c) 10(s+3t) + 12(2s-5t)$$

$$(d) 10(s-3t) + 12(2s+5t)$$

$$(e) 4(a+9) + 6(a-10)$$

$$(f) 17(2a+3b) - 20(4a+b)$$

$$(g) 12(x-7) - 18(2x-9)$$

$$(h) 31(c+4d) - 24(2c-5d)$$