Subject: Mathematics

Second Semester

Name:

Grade 6 (B, C, D, E, F)

Unit 7: Equations and formulae.

Worksheet (2)

Substitution.

You **substitute** for a variable in a formula by replacing the letter with its known value.

Example: $2y + 7$ and $y = 3$

$2*3 + 7 = 13$

Exercise (1): Answer the following questions.

1) If x = 5 find the value of:

a) $x + 8$

13

b) $x - 3$

2

c) $15 - x$

10

d) $2x$

10

e) $3x - 1$

14

f) $50 - 4x$

30

2) If p = 2   and q = 6 find the value of:

a) $3 + 2p$

7

b) $20 - 3q$

2

c) $p - \dfrac{q}{3}$

0

d) $4p + 6q - 20$ e) $3q - 6p$ f) $\frac{q}{2}$

24   **6**   **3**

3) If $a = 5$, $b = 6$, $c = 1$, $d = -9$, find the value of:

a) $2a + b$ b) $11 + 3b$ c) $3b - a$

16   **29**   **13**

d) $d - 2c + 2a$ e) $10c - 2d$ f) $8a - 3c$

-1   **28**   **37**

Exercise (2): Find the value of the following expressions if:

$x= 5$	$y= -2$	$p= -4$	$d= 7$

a) $x + 2y - 2p$ b) $p(x - y + d)$

9   **-56**

c) $-4(d - p)$ d) $4x - 2p + 7d$

-44   **77**

e) $-(5x - 2d - p)$ f) $x - y + p - d$

-15   **-4**

Formulae

A formula is a mathematical rule or relationship that uses letters to represent **amounts** that can be changed – these are called **variables**

Exercise (3): Answer the following questions.

1)

a) Write <u>an expression</u> for the number of grams g into y kilograms.

1000y

b) Derive <u>a formula</u> for the number of grams g into y kilograms.

g = 1000y

c) Use your formula to find the number of grams in **14 kg**.

g = 1000 x 14 = 14000 g

2) There are 8 tomatoes in a can of tomatoes.

a) Derive a formula for the number of tomatoes t, in c cans of tomatoes.

t= 8c

b) Use your formula to find the number of tomatoes in 7 cans of tomatoes.

t= 8 x 7 = 56 tomatoes

3) The cost of hiring a babysitter in dollars is $8 per hour.

a) Derive a formula for the cost of hiring a babysitter C in dollars for n hours.

C = 8n

b) Use your formula to calculate the cost of hiring a baby sitter for 12 hours.

C = 8 x 12 = $96

4)

a) Derive a formula to convert *D* days into *Y* years if:

1 year ➡ 365 days

D = 365Y

b) Use your formula to find out how many days we have in 5 years.

D= 365 x 5 = 1825 days

5) A plumber has a call-out fee of $4, plus an hourly (*h*) rate of $15.

a) Write a **formula** to calculate the total cost (*T*) of any job

T = 4 + 15h

b) Calculate the cost of a job estimated to take 4 hours.

T = 4 + 15 x 4

= $64