LABASA SANGAM (SKM) COLLEGE

YEAR 11 APPLIED MATHS WORKSHET

STRAND 1 BASIC Mathematics

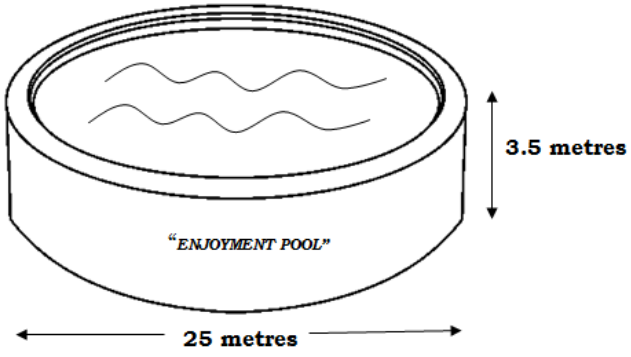
1. If $(p \blacksquare q) \blacksquare r = p \blacksquare (q \blacksquare r)$, then the operation ▪ is
   A. closed
   B. commutative
   C. associative
   D. distributive

2. A function is given as $(x) = \frac{x}{1-x^2}$. What are the restricted value(s) of 'x' for which the function is undefined?
   A. $\{1\}$
   B. $\{1, -1\}$
   C. $\{1, 2\}$
   D. $\{-1\}$

3. Make "r" the subject of the formula; $v = \frac{1}{3}\pi r^2 h$

4. Mr Baker buys a gas stove on 11 monthly payments. The **cash price** is $850. He pays 15% **deposit** and the store charges 10% **interest**. How much is each payment.

5. The diagram below shows a **cylindrical** "Swimming Pool".



   Calculate the volume of the pool.

6. An operation table defined by ● is given in the table below.

●	**A**	**b**	**c**	**d**
A	D	a	b	c
B	A	b	c	d
C	B	c	d	a
D	C	d	a	b

(i) Why is the set closed under ●?

(ii) What is the **identity element**?

(iii) Give the **inverse** of a.

(iv) Evaluate b ●(c ● d).

STRAND 2 ALGEBRA

1. The solution set for $x^2 - 25 = 0$ is

A. $\{2, 25\}$

B. $\{-25, 25\}$

C. $\{2, -25\}$

D. $\{-5, 5\}$

2. $3a^2 + 2a + 2a^2$ is equal to

A. $7a$

B. $7a^2$

C. $3a^2 + 4a$

D. $5a^2 + 2a$

3. $\frac{x}{c} - \frac{2}{c}$ is equal to

A. $\frac{x-2}{2c}$

B. $\frac{x-2}{c}$

C. $\frac{2x}{c^2}$

D. $\frac{2x}{c}$

4. Calculate the value of the following.

$$\sum_{n=1}^{4}(2n^2 + 3)$$

5. Expand and simplify $(y - 2) - 2(y - 3)$

6. Solve the inequality $\frac{3-2x}{3} > 5$

7. Solve $\frac{2x}{3} + \frac{2-x}{2} = 3$

8. Solve $\left| \frac{a-2}{3} \right| = 2.$

9. Evaluate $\begin{bmatrix} 2 & 3 \\ -4 & 2 \end{bmatrix}\begin{bmatrix} 3 & 1 \\ 4 & -2 \end{bmatrix}$

10. Matrix $P = \begin{bmatrix} 4 & -2 \\ 2 & -2 \end{bmatrix}$

    (i) What is the order of P?

    (ii) Calculate its determinant

    (iii) Evaluate 2P

    (iv) Find its multiplicative inverse

11. An **arithmetic** sequence is given as 1, 5, 9, 13, 17…

    (i) Find the first term.

    (ii) What is the sum of first 9 terms.

12. A geometric sequence is given as $\{1, 3, 9, 27, 81 \ \ldots \ldots \ldots\}$.

    (i) Calculate the common ratio.

    (ii) Find the 10^{th} term of the sequence.

    (iii) What is the sum of the first 10 terms?