MATHEMATICS LESSON PLAN

GRADE 9

TERM 2: APRIL – JUNE

PROVINCE:	
DISTRICT:	
SCHOOL:	
TEACHER'S NAME:	
DATE:	
DURATION:	1 Hour

1. **TOPIC: AREA AND PERIMETER OF 2D SHAPES:** Area and perimeter **(Lesson 5)**

2. **CONCEPTS & SKILLS TO BE ACHIEVED:**
   By the end of the lesson learners should know and be able to
   - investigate how doubling any or all of the dimensions of a 2D figure affects its perimeter and area.

3.	RESOURCES:	DBE workbook, Sasol-Inzalo book 1, textbook
4.	PRIOR KNOWLEDGE:	• formulae for calculating the perimeter and area of 2D shapes • multiplication of rational numbers • solving by substitution.

5. REVIEW AND CORRECTION OF HOMEWORK (suggested time: 10 minutes)

Homework offers an opportunity for teachers to track learners' progress in the mastery of mathematics concepts and identify the problematic areas which require immediate attention. Therefore, it is recommended that you place more focus on addressing errors from learner responses that may later become misconceptions.

6. INTRODUCTION (Suggested time: 10 Minutes)

Present the following activity to learners:
• The square below is $1\ cm \times 1\ cm$

Calculate the perimeter and area of the square.
Solution:

$Perimeter = 4s$ and $Area = s^2$
$\qquad = 4 \times 1\ cm$ $\qquad = (1\ cm)^2 or\ 1\ cm \times 1\ cm$
$\qquad = 4cm$ $\qquad = 1\ cm^2$

• Now if we double (**Doubling means to multiply by 2)** the dimensions of original square, the new square measures $2\ cm \times 2cm$. The shape of the new square would be as follows:

Calculate the perimeter and the area of the new square.

Solution:

$Perimeter = 4s$ and $Area = s^2$
$\qquad = 4 \times 2\ cm$ $\qquad = (2\ cm)^2 or\ 2\ cm \times 2\ cm$
$\qquad = 8\ cm$ $\qquad = 4\ cm^2$

• What do you observe about the perimeter and the area of original square and the New square?
Solution:
  ➢ The perimeter of the new square is $2 \times$ perimeter of the original square.
  ➢ The area of the new square is $4 \times$ area of the original square.

• Is the observation **TRUE** for **ALL** 2D figures?

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Teaching activities	Learning activities (Learners are expected to:)
Activity 1: Arrange learners in small groups and let each group Completethe table below:	complete activity 1

Name of figure	Dimensions of Original figure (in cm)	Perimeter and Area of Original figure	Dimensions of New figure (in cm)	Perimeter and Area of New figure
Rectangle	$l = 3, b = 4$	$P = 14\ cm$ $A = 12\ cm^2$	$l = 6, b = 4$	
Rectangle	$l = 3, b = 4$	$P = 14\ cm$ $A = 12\ cm^2$	$l = 3, b = 8$	
Rectangle	$l = 3, b = 4$	$P = 14\ cm$ $A = 12\ cm^2$	$l = 6, b = 8$	
Square	$s = l = b = 4$	$P = 16\ cm$ $A = 16\ cm^2$	$l = 4, b = 8$	
Square	$s = l = b = 4$	$P = 16\ cm$ $A = 16\ cm^2$	$l = 8, b = 4$	
Square	$s = l = b = 4$	$P = 16\ cm$ $A = 16\ cm^2$	$s = l = b = 8$	

Activity 2:

Let each group use the information on the completed table to report on their findings whether doubling any or all of the dimensions had an effect on the perimeter and area of 2Dfigures assigned to them?

SOLUTIONS
Activity 1:

(share their solutions with the whole class.)

Name of figure	Dimensions of Original figure (in cm)	Perimeter and Area of Original figure	Dimensions of New figure (in cm)	Perimeter and Area of New figure
Rectangle	$l = 3, b = 4$	$P = 14\ cm$ $A = 12\ cm^2$	$l = 6, b = 4$	$P = 20cm$ $A = 24cm^2$
Rectangle	$l = 3, b = 4$	$P = 14\ cm$ $A = 12\ cm^2$	$l = 3, b = 8$	$P = 22cm$ $A = 24cm^2$
Rectangle	$l = 3, b = 4$	$P = 14\ cm$ $A = 12\ cm^2$	$l = 6, b = 8$	$P = 28cm$ $A = 48cm^2$
Square	$s = l = b = 4$	$P = 16\ cm$ $A = 16\ cm^2$	$l = 4, b = 8$	$P = 24cm$ $A = 32cm^2$
Square	$s = l = b = 4$	$P = 16\ cm$ $A = 16\ cm^2$	$l = 8, b = 4$	$P = 24cm$ $A = 32cm^2$
Square	$s = l = b = 4$	$P = 16\ cm$ $A = 16\ cm^2$	$s = l = b = 8$	$P = 32cm$ $A = 64cm^2$

(share their solutions with the whole class.)

(Share their findings with the whole class.)

Activity 2
- When any of the dimensions is doubled, there following pattern is observed on both 2D figures:
  - ✓ Rectangle: No pattern is observed on the perimeter and its new area is two times original area.
  - ✓ Square: No pattern is observed on the perimeter and its new area is two times original area.
- When both dimensions are doubled, there following pattern is observed on both 2D figures:
  - ✓ Rectangle: The perimeter is doubled and its area is four times bigger.
  - ✓ Square: The perimeter is doubled and its area is four times bigger.

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8.	**CLASSWORK**(Suggested time: 15 minutes)
	Sasol-Inzalo book 1 page 264 no. 3 (Figure A and B)

**9. CONSOLIDATION/CONCLUSION& HOMEWORK**(Suggested time: 5 minutes)

a) **Emphasise that**:
   -when **any** dimension of any 2D shape is doubled, the area of the original shape is **multiplied by 2** and the perimeter varies with no pattern.
   -when **both** dimensions of any 2D shape are doubled, the **perimeter** of the original shape is **multiplied by2**and the **area** of the original shape is**multipliedby4**.

b) The primary purpose of Homework is to give each learner an opportunity to demonstrate mastery of mathematics skills taught in class. Therefore Homework should be purposeful and the principle of 'Less is more' is recommended, i.e. give learners few high quality activities that address variety of skills than many activities that do not enhance learners' conceptual understanding. Carefully select appropriate activities from the Sasol-Inzalo book 1, DBE workbooks and/or textbooks for learners' homework. The selected activities should address different cognitive levels.

Homework:
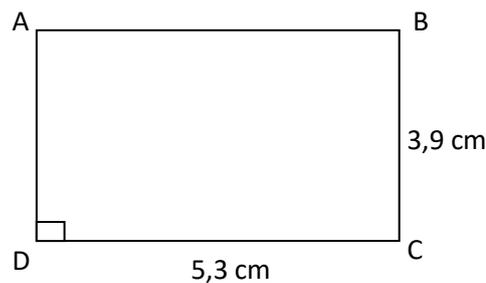
a) Calculate the perimeter and area of rectangle ABCD.

b) Double both sides of rectangle ABCD and, then calculate the perimeter and the area.

c) What will be perimeter and area of the new rectangle?

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