basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

MATHEMATICS LESSON PLAN

GRADE 9

TERM 2: April – June

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

1. **TOPIC: CONSTRUCTION OF GEOMETRIC FIGURES:** Investigating properties of geometric figures **(Lesson 13)**

2. **CONCEPTS & SKILLS TO BE ACHIEVED:**

   By the end of the lesson learners should know and be able to, by construction, investigate sides, angles and diagonals in quadrilaterals, focusing on the diagonals of rectangles, squares, parallelograms, rhombi and kites

3. RESOURCES:	DBE workbook 1, Sasol-Inzalo Book 1, textbook, ruler, protractor, a pair of compasses, pencil, eraser.
4. PRIOR KNOWLEDGE:	Quadrilaterals

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

Homework provides an opportunity for teachers to track learners' progress in the mastery of mathematics concepts and to 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)

Baseline Assessment:

Ask the learners to:

- Carefully study the quadrilaterals drawn below.

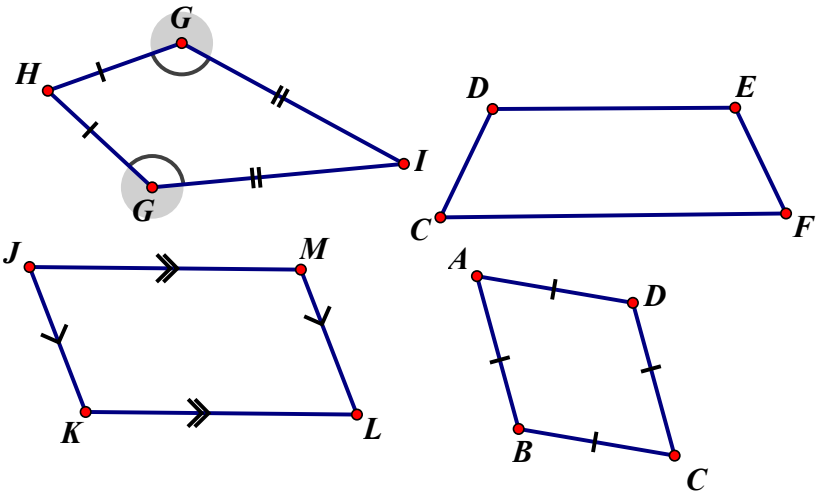


Figure 1

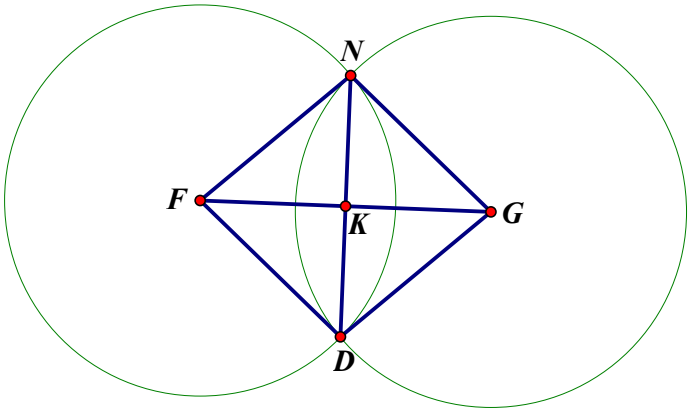
Use the diagrams to answer the following questions:

- which of the quadrilaterals is a kite? Give a reason for your answer.
- which of the quadrilaterals is a rhombus? Give a reason for your answer.

Note: Learners are expected to know that:

- a kite is a quadrilateral with two pairs of equal adjacent sides.
- a rhombus is a quadrilateral with all sides equal.

7. LESSON PRESENTATION/DEVELOPMENT (Suggested time: 20 minutes)

Teaching activities	Learning activities: (Learners are expected to:)
Through guided instructions, investigate with learners the diagonals of a rhombus. Take learners through the following steps: • Construct two intersecting circles each with a radius of 6 cm. Label the centres F and G. Label the points of intersection N and D. • Draw line segments that join F to N, N to G, G to D and D to F to form a quadrilateral FNGD. • Draw diagonals of this quadrilateral and call their point of intersection K. If learners correctly followed the steps, their construction should look as follows.  **Figure 2** • Measure and record the lengths of line segments FG, FK, KG, ND, NK and DK • Measure and record the size of ∠ NKG • Measure and record the sizes of ∠NGD, ∠GDF, ∠DFN and ∠FNG Learners are expected to answer the following questions to consolidate the investigation: (a) what type of quadrilateral is FNGD? Give a reason for your answer. (b) how are the diagonals of this quadrilateral related? Conclude the investigation by writing an outline of the steps learners are expected to go through if they have to investigate diagonals of a rhombus.	• conduct the investigation following the teacher's instructions. • discuss and write down their observations. • write down steps one should go through to investigate diagonals of a rhombus. • investigate the diagonals of a kite.

8. CLASSWORK (Suggested time: 15 minutes)

Learners should follow the steps of the activity below to investigate the diagonals of a kite:

Activity

- Construct two intersecting circles, one with a radius of 6 cm and the other with a radius of 4,5 cm. Label the centres of the circles S and T. Label the points of intersection J and R.
- Draw line segments that join S to J, J to T, T to R and R to S to form a quadrilateral SJTR.
- Draw diagonals of this quadrilateral and call their point of intersection V.

Their constructions should look as follows if they correctly followed the above steps:

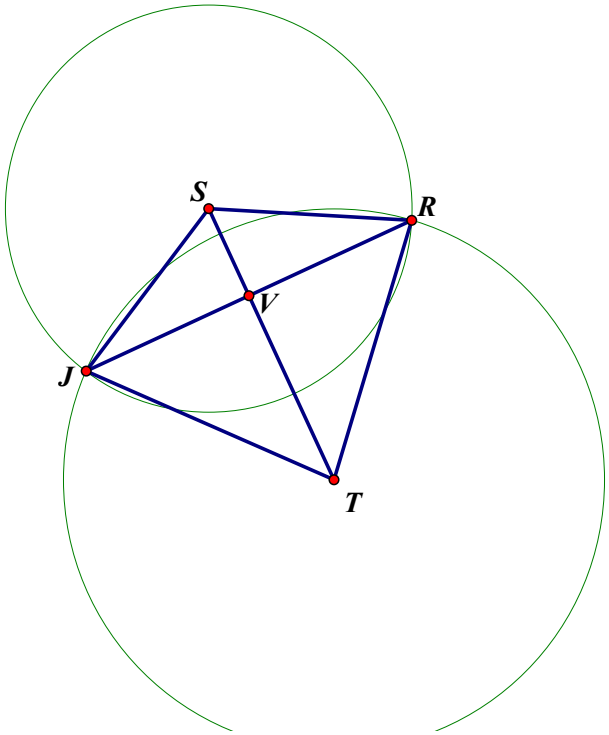


Figure 3

- Measure and record the lengths of line segments ST, SV, VT, JR, JV and VR.
- Measure and record the size of ∠JVT.
- Measure and record the sizes of ∠SRT, ∠RTJ, ∠TJS and ∠JSR

Learners should answer the following questions to consolidate the investigation:

(a) what type of quadrilateral is SJTR? Give a reason for your answer.
(b) how are the diagonals of this quadrilateral related?

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

a) **Emphasise that:**

- Diagonals of a rhombus bisect each other at $90°$.
- Only one diagonal of a kite is bisected by the other.

Notes for the teacher:

- Allow quick learners to construct rhombi and kites of their own measurements.
- Learners should write observations and conclusions they arrived at below their constructions
- Draw the attention of the learners that if circles are of the same radius, then all the sides of the quadrilateral are equal.

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 books, DBE workbooks and/or textbooks for learners' homework. The selected activities should address different cognitive levels.

Homework

Sasol-Inzalo Book 1 page 192 No 1 – 4. page 193 - 194 No1 - 6