



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: GEOMETRY OF 2D-SHAPES: Solving problems (Lesson 12)

2. CONCEPTS & SKILLS TO BE ACHIEVED:

By the end of the lesson learners should know and be able to solve geometric problems involving unknown sides and angles in triangles and quadrilaterals, using known properties of triangles and quadrilaterals, as well as properties of similar triangles.

3. RESOURCES:	DBE workbook, Sasol-Inzalo Book 1, textbooks
4. PRIOR KNOWLEDGE:	<ul style="list-style-type: none"> • minimum conditions for similar triangles • solving of equations

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.

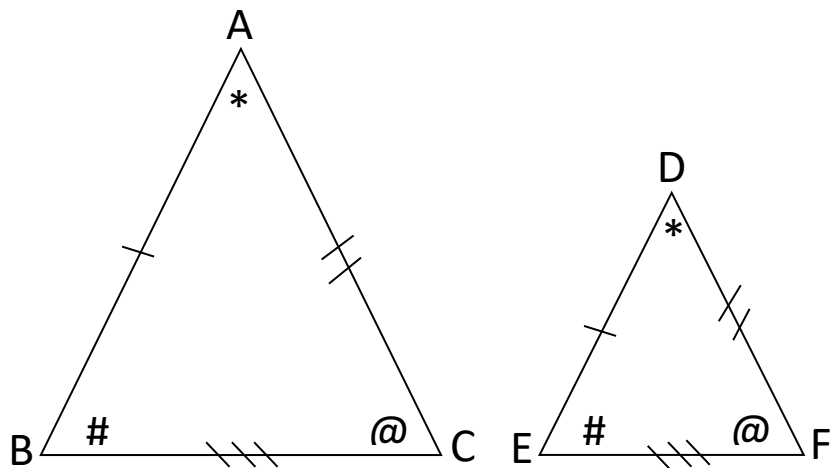
6. INTRODUCTION (Suggested time: 10 Minutes)

Activity 1

Ask learners to list the conditions for similarity of triangles.

Activity 2

Discuss with learners the notation of similar triangles.



The correct notation is very important when naming the similarity between triangles. For example, the notation for the triangles above should be: $\triangle ABC \sim \triangle DEF$, because it indicates that $\hat{A} = \hat{D}$, $\hat{B} = \hat{E}$, $\hat{C} = \hat{F}$ and $\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$

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

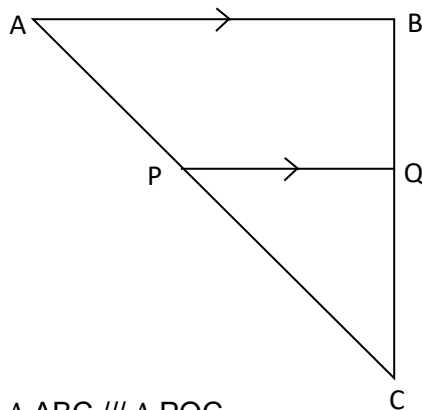
Teaching activities

Learning activities (Learners are expected to:)

Activity 1

Demonstrate to learners how to use the conditions for similar triangles to prove that triangles are similar.

- Study the figure below and answer the questions that follow.



- Prove that $\triangle ABC \sim \triangle PQC$
- Calculate the length of AB
If AC = 10 units
PC = 4 units
PQ = 2 units

Solution

Statement	Reason
(a) In $\triangle ABC$ and $\triangle PQC$: $\hat{C} = \hat{C}$ $\hat{ABC} = \hat{PQC}$ $\hat{BAC} = \hat{PQC}$ $\therefore \triangle ABC \sim \triangle PQC$	common Corresponding \angle s (AB // PQ) Corresponding \angle s (AB // PQ) (A,A,A)
(b) In $\triangle ABC$ and $\triangle PQC$: $\frac{AB}{PQ} = \frac{BC}{QC} = \frac{AC}{PC}$ $\frac{AB}{2} = \frac{10}{4}$ $4 AB = 20$ $AB = 5$ units	$\triangle ABC \sim \triangle PQC$

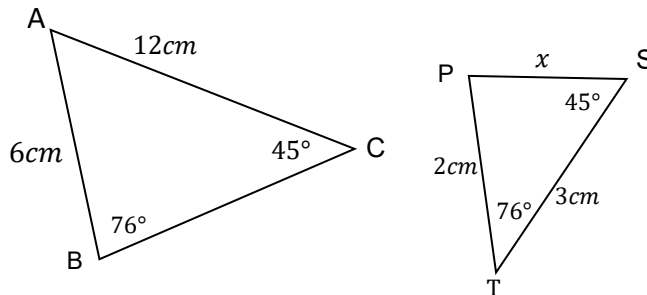
- follow demonstration and engage in questions as demonstration unfolds.
- copy example in their notebooks.



Activity 2

Work through the problem showing learners how to use the properties of similar triangles to find unknown sides

Calculate the length of PS if $\triangle ABC \sim \triangle PTS$



Possible solution

$\frac{AB}{PT} = \frac{BC}{TS} = \frac{AC}{PS} \text{ (Given } \triangle ABC \sim \triangle PTS)$	
$\frac{6}{2} = \frac{12}{x}$	Substitute the given sides
$\frac{6}{2} = \frac{12}{x}$	Cross multiply
$6x = 24$	
$\frac{6x}{6} = \frac{24}{6}$	Applying the multiplicative inverse
$x = 4 \text{ cm}$	

8. CLASSWORK (Suggested time: 15 minutes)

In $\triangle PQR$, $PQ = 7,5 \text{ cm}$, $QR = 6,4 \text{ cm}$, $\hat{P} = 50^\circ$ and $\hat{R} = 60^\circ$. In $\triangle TSM$, $TM = 4,8 \text{ cm}$, $SM = 4,5 \text{ cm}$, $\hat{S} = 70^\circ$ and $\hat{T} = 60^\circ$.

- Write down the size of \hat{M} with reasons.
- Prove that $\triangle PQR \sim \triangle MST$.
- Calculate the lengths of PR and ST.

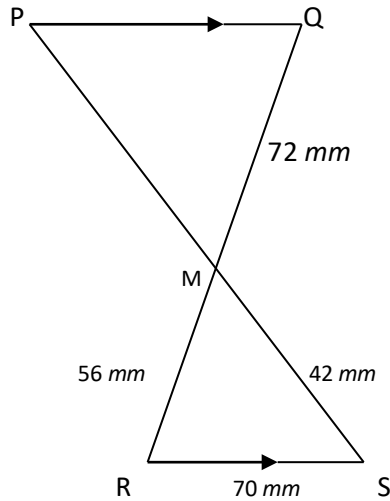


9. CONSOLIDATION/CONCLUSION & HOMEWORK (Suggested time: 5 minutes)

a) Homework

1. Study the figure below and answer the following questions:

- (a) Prove $\triangle PQM \sim \triangle SRM$.
- (b) Calculate the lengths of PM and PQ.



2. Consider the similar triangles drawn below using concentric circles. Explain why the triangles are similar in each diagram.

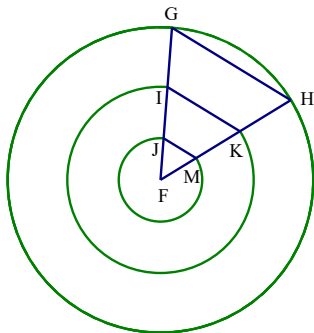


Figure 1

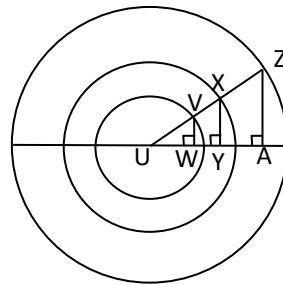


Figure 2