



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

MATHEMATICS LESSON PLAN

GRADE 9

TERM 2: APRIL – JUNE 2015

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

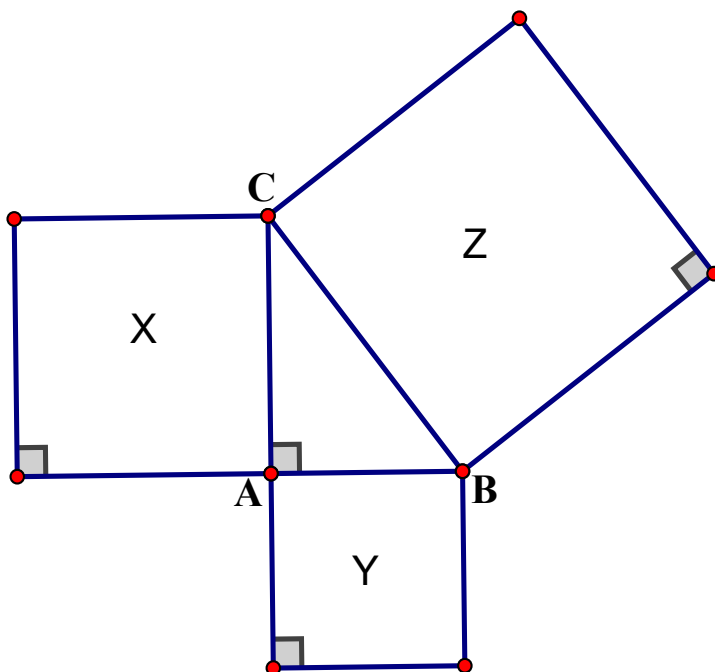
1. **TOPIC: THE THEOREM OF PYTHAGORAS:** Investigating the sides of a right- angled triangle (**Lesson 1**)

2. CONCEPTS & SKILLS TO BE ACHIEVED

By the end of the lesson learners should know and be able to use the Theorem of Pythagoras to solve problems involving unknown lengths in geometric figures that contain right- angled triangles.

3. RESOURCES:	DBE workbook, Sasol-Inzalo book, textbook, glue, pair of scissors, colouring pencils, ruler, protractor
4. PRIOR KNOWLEDGE:	<ul style="list-style-type: none"> • squares and square roots • area • surds • triangles
<p>5. REVIEW AND CORRECTION OF HOMEWORK (suggested time: 10 minutes)</p> <p>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.</p>	
<p>6. INTRODUCTION (suggested time: 10 Minutes)</p>	

Note to the teacher: Allow learners to work in small groups on this activity. Give each group a copy of the diagram attached as Annexure A (similar to the one below). Alternatively, a grid paper could be used by the learners to draw the sketch below with lengths of AB, AC and BC given as 3; 4 and 5 while you facilitate.



1. The figure above shows triangle ABC with squares on each of the sides.
 - a) Measure angle \widehat{CAB} ; \widehat{ABC} and \widehat{ACB}

- b) Measure the length of sides AB; AC and BC
- c) What is the relationship between the size of the angle and the length of the side opposite it?

2. Complete the following:

In a right-angled triangle, the largest angle is _____ and its opposite side is called the _____

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

Teaching activities	Learning activities (Learners are expected to :)
<p>Whole class teaching: Present the following activities as examples.</p> <p>Activity 1 Use the lengths of the sides measured in the introduction to calculate the areas of the three squares.</p>	<p>Do the activity as follows:</p> <p>Area of square y = $side \times side$ $= (3 \times 3)$ units $= 9$ square units</p> <p>Area of square X = $side \times side$ $= (4 \times 4)$ units $= 16$ square units</p> <p>Area of square z = $side \times side$ $= (5 \times 5)$ units $= 25$ square units</p>
<p>Activity 2 Note to the teacher: For this activity, divide your learners into small groups. This will enable you to provide resources for each group in case you have large class sizes . Cut and stick the square X and square Y into the Z square.</p> <p>a) Do they fit?</p>	<p>Work in small groups on this activity and discuss their findings.</p>



- b) How did you cut square X and square Y in order for them to fit?
- c) What can you say about these squares?

Note to the teacher: Drawing from the work done in Grade 8, learners should be able to come up with the following:

$$AB^2 + BC^2 = AC^2.$$

Activity 3

Note to the teacher: Present the following activity to the learners and allow them a few minutes to work on their own and then do the activity together with them. Engage learners in the presentation by asking probing questions.

Example 1

Simplify the following without using a calculator:

a) $\sqrt{36} = \sqrt{6 \times 6} = 6$

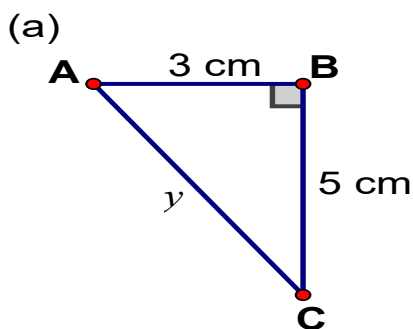
b) $\sqrt{5^2 + 12^2} = \sqrt{25 + 144} = \sqrt{169} = 13$

c) $\sqrt{7^2 - 6^2} = \sqrt{49 - 36} = \sqrt{13}$

Respond to probing questions asked by the teacher.

Example 2

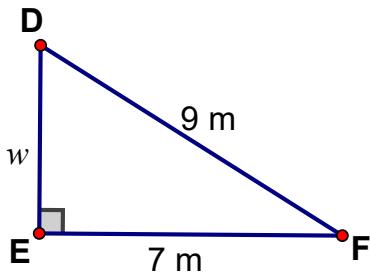
Determine the values of w and y . Leave your answer in a surd form where necessary:



Respond to probing questions asked by the teacher.

$$\begin{aligned}
 (AB)^2 + (BC)^2 &= (AC)^2 \\
 3^2 + 5^2 &= y^2 \\
 9 + 25 &= y^2 \\
 34 &= y^2 \\
 \sqrt{34} &= y
 \end{aligned}$$

(b)



$$\begin{aligned}
 (DF)^2 - (EF)^2 &= (DE)^2 \\
 9^2 - 7^2 &= w^2 \\
 81 - 49 &= w^2 \\
 32 &= w^2 \\
 \sqrt{32} &= w
 \end{aligned}$$

- respond to probing questions asked by the teacher.
- do the activity on their own for few minutes and then copy down the examples onto their exercise books from the board.

8. CLASSWORK (Suggested time: 15 minutes)

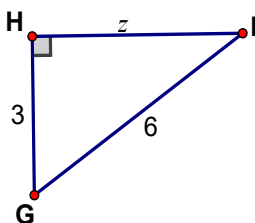
1. Simplify:

a) $\sqrt{100}$

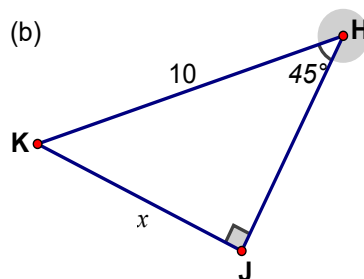
b) $\sqrt{15^2 - 10^2}$

2. Determine the value of x and z . Leave your answer in a surd form where necessary.

(a)



(b)



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

a) Emphasise that:

- the Theorem of Pythagoras is used to find the third side in any right – angled triangle
- in a right – angled triangle, the largest angle is 90° . Therefore, the longest side is always opposite the right angle. This side is called the **hypotenuse**.

b) Homework

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

Select activities from Sasol-Inzalo workbook on page 237 to 238 and DBE workbook on page 156 to 158



Annexure A

