



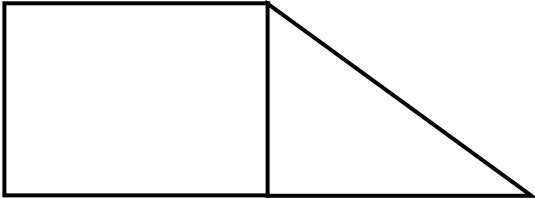
MATHEMATICS LESSON PLAN
GRADE 9
TERM 2: APRIL – JUNE

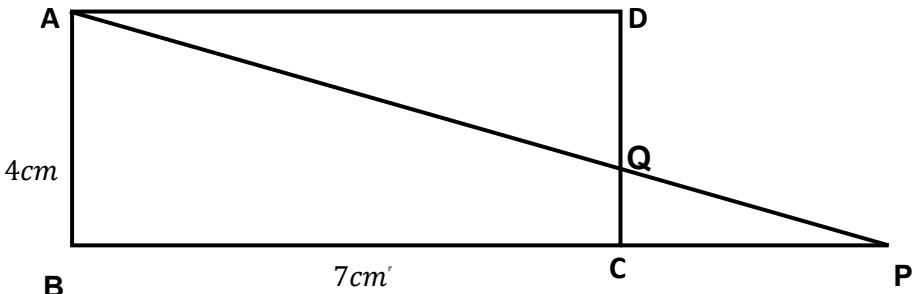
PROVINCE:	
DISTRICT:	
SCHOOL:	
TEACHER'S NAME:	
DATE:	
DURATION:	1 Hour

1. TOPIC: THEOREM OF PYTHAGORAS: Solve problems using the Theorem of Pythagoras (**Lesson 3**).

2. CONCEPTS & SKILLS TO BE ACHIEVED:

By the end of the lesson, learners should 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 workbooks, textbook, Sasol-Inzalo book
4. PRIOR KNOWLEDGE:	<ul style="list-style-type: none"> the Theorem of Pythagoras perimeter and area of 2D shapes
5. REVIEW AND CORRECTION OF HOMEWORK (suggested time: 10 minutes)	
6. INTRODUCTION (Suggested time: 10 Minutes)	
<p>Note: In this lesson, learners will be working with composite figures. They will work with perimeters and areas of composite figures when one of the figures is right angled triangle with an unknown length.</p> <p>The diagram below is an example of a composite figure.</p>  <p>We say it is a composite figure because it consists of two basic figures i.e. rectangle and a triangle. The area of a composite figure is calculated by dividing the area of a composite figure into its basic figures using relevant formulae for each basic figure.</p>	

7. LESSON PRESENTATION/DEVELOPMENT (Suggested time: 20 minutes)	
Teaching activities	Learning activities (Learners are expected to:)
<p>Note: There are useful formulas for areas and perimeters in CAPS Page 139.</p> <p>Ask learners to list the formulae</p> <p>Example 1</p> <p>ABCD is a rectangle with $AB = 4\text{ cm}$, $BC = 7\text{ cm}$ and $CQ = 1,5\text{ cm}$. Do the following calculations. Round off your answers to two decimal places if the answers are not whole numbers.</p>  <p>i. What is the length of QD?</p> <p style="margin-left: 40px;">$QD = 4\text{ cm} - 1,5\text{ cm}$ $= 2,5\text{ cm}$</p>	<p>list the formulae to calculate: Area of Triangle, Perimeter of rectangle and Perimeter of parallelogram.</p> <p>list the properties of the figures mentioned above.</p> <p>do calculations and provide reasons to justify their answers or statements where needed.</p>

- ii. If $CP = 4,2$ cm, calculate the length of PQ .

$$\begin{aligned}PQ^2 &= (4,2)^2 + (1,5)^2 \\ &= 17,64 + 2,25 \\ &= 19,89 \text{ cm}^2\end{aligned}$$

$$PQ = \sqrt{19,89 \text{ cm}^2}$$

$$\therefore PQ = 4,46 \text{ cm}$$

- iii. Calculate the length of AQ

$$\begin{aligned}AQ^2 &= (7 \text{ cm})^2 + (2,5 \text{ cm})^2 \\ &= 49 \text{ cm}^2 + 6,25 \text{ cm}^2 \\ &= 55,25 \text{ cm}^2\end{aligned}$$

$$\begin{aligned}\therefore AQ &= \sqrt{55 \text{ cm}^2} \\ &= 7,43 \text{ cm}\end{aligned}$$

- iv. Calculate the area of $\triangle ADQ$

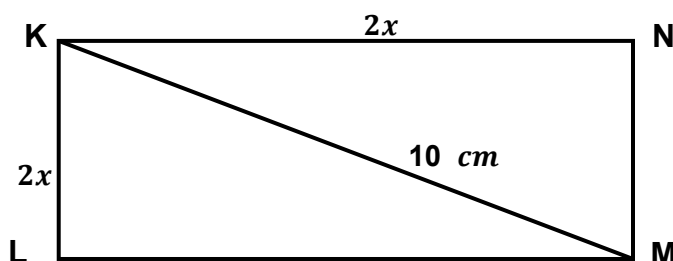
$$\begin{aligned}\text{Area of } \Delta &= \frac{1}{2} b \times h \\ &= \frac{7 \times 2,5}{2} \\ &= 8,75 \text{ cm}^2\end{aligned}$$

NB: Always encourage learners to analyse the diagram before they attempt to answer questions.

Example 2

Draw the figure below on the board. Ask learners to copy it in their books and solve it in their pairs. Facilitate a whole class discussion on the solutions provided by learners.

The diagonal of rectangle $KLMN$ is 10 cm and its length is double its breadth. Calculate its breadth and its length.

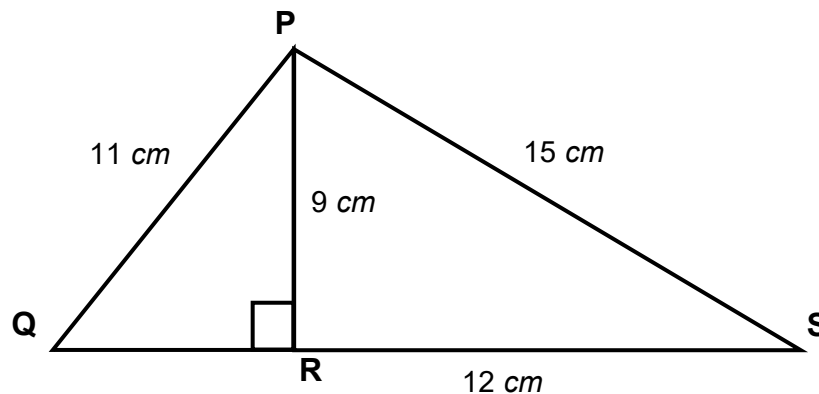


Work with their peers to solve the problem and discuss the solution.

8. CLASSWORK (Suggested time: 15 minutes)

Carefully choose the exercises which show different cognitive levels from Sasol-Inzalo workbooks, DBE workbooks, ANA question papers and any textbook used in your school. The following are some of the questions that can enhance the understanding of application of Pythagoras Theorem in compound shapes.

Study the diagram below. Calculate the area of $\triangle PQS$.



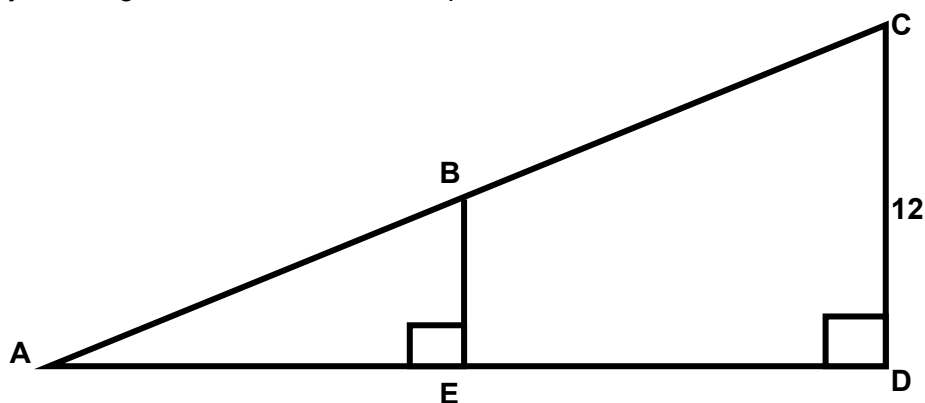
9. CONSOLIDATION/CONCLUSION & HOMEWORK (Suggested time: 5 minutes)

(a) Emphasise that:

- learners must analyse a diagram before responding to questions.
- they have to indicate units especially in the final answer

(b) Homework

Study the diagram below and answer questions that follow



Find the area in square units of the trapezoid BCDE if the length of AC is 20 units, the length of DC is 12 units, and the length of BE is 3 units.

NB: Learners may still struggle to work with compound shapes. Suggest to them that they decompose the compound figure into its basic shapes