Title: An introduction lesson to Trigonometry with Geogebra

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Target audience:

Mathematics teachers in the Further Education and Training Band (FET).

Motivation for Workshop

- To expose teachers to Geogebra & mathematics material that allows learners to construct mathematical concepts and knowledge through empirical experiences.
- The introduction to Trigonometry can be done by pen-and-paper activities but with Geogebra you can create in the same time far more activities to do more investigations and also give more accurate results. Dynamic software can be used to explore and visualise geometrical properties by dragging objects and transforming figures in ways beyond the scope of traditional paper-and-pencil geometry.
- "Learners must be exposed to meaningful problems and not given algorithms, definitions and rules. "Few people know that mathematics is an activity. Little children are taught mathematics as an activity, but as they mature into rational beings, we are prone to teach them a well-organized prefabricated deductive system of mathematics, because rational beings may be supposed to understand deductive systems. You know that it does not work very well."(Freudenthal, Geometry between the Devil and the Deep Sea, 1971).

Content of workshop

Participants will:

- Explore software to familiarise themselves with the working of the software.
- Creating triangles that are right-angled and not right-angled in Geogebra.
- Activities will cover how to start teaching Trigonometry in grade 10 (CAPS).
- Define the six Trigonometry ratios

PROPOSED TIME ALLOCATION FOR WORKSHOP ACTIVITIES

Presenter gives a brief presentation on Geogebra and what you can do with Geogebra.	**10 minutes**
Participants to familiarise themselves with Geogebra.	**15 minutes**
Participants will construct a triangle that is not right-angled and then explore with the applet the six ratios between the sides of the triangle.	**25 minutes**
Participants will construct a triangle that is right-angled and then explore with the applets the six ratios between the sides of the triangle.	**30 minutes**
Participants will construct triangles that are right-angled and similar and then explore with the applet the six ratios between the sides of the triangles.	**25 minutes**
Related discussions and installation of software.	**15 minutes**