UNIVERSITY OF JOHANNESBURG

FACULTY	: Education
DEPARTMENT	: Sciences and Technology Education
CAMPUS	: APK
MODULE	: TEACHING METHODOLOGY AND PRACTICUM: SENIOR PHASE MPSMAY1
SEMESTER	: Second
EXAM	: SSA January 2020

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MODERATOR : DR V RAMDHANY (UJ)

DURATION : SUBMISSION **MARKS** : 50

NUMBER OF PAGES: 4 PAGES

INSTRUCTIONS:

1. Answer ALL the questions.
2. Number your answers correctly according to the numbering system used in this question paper.
3. Use Arial font, font size 12 and 1.5 line spacing.
4. Each question should be supported by literature (sources).
5. Attach the reference list.

QUESTION 1: Assessment

Mathematics teachers use technology in the classroom to assist with feedback, gain learners' attention and assess performance (Miller, 2011). This semester, you had to design an assessment task with your peers using an online assessment tool. Reflect on your experience by discussing the following:

1.1 Opportunities related to online assessment the mathematics classroom. (6)

1.2 Challenges in using online assessment in the mathematics classroom. (6)

The purpose of assessment depends on the type of assessment used. Teachers need to ask themselves the purpose, form, method, and what assessment tool will be used (Nieuwoudt & Reyneke, 2011).

1.3 Discuss the concept of authentic assessment and motivate your answer with relevant literature. Pay attention to the following:

(a) Definition (2)

(b) Purpose (2)

(c) Benefits (6)

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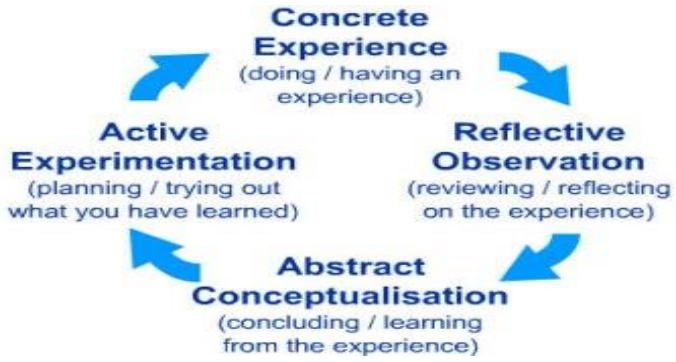
QUESTION 2: Reflective practice

There are various types of reflection that mathematics pre-service teachers are encouraged to engage in. These include reflection *in* action, reflection *on* action (Schön,1983) and reflection *for* action (Thompson & Thompson, 2008).

2.1 Reflect on your virtual lesson that you recorded during your WIL experience, using the different domains of reflection above, and Kolb's (1984) reflective cycle below.



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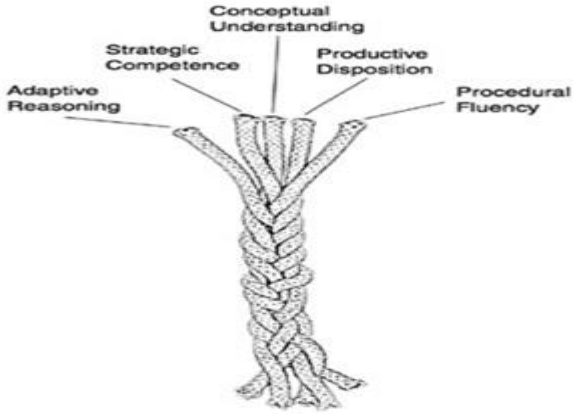
QUESTION 3: Theories of teaching and learning mathematics



The diagram above is a representation of the Strands of Mathematical Proficiency (Kilpatrick et al., 2001). Use your understanding of this theory to discuss how you would use it to teach a specific Senior Phase mathematics topic. Use literature to support your argument. Your discussion should address the following:

3.1 Procedural knowledge (4)

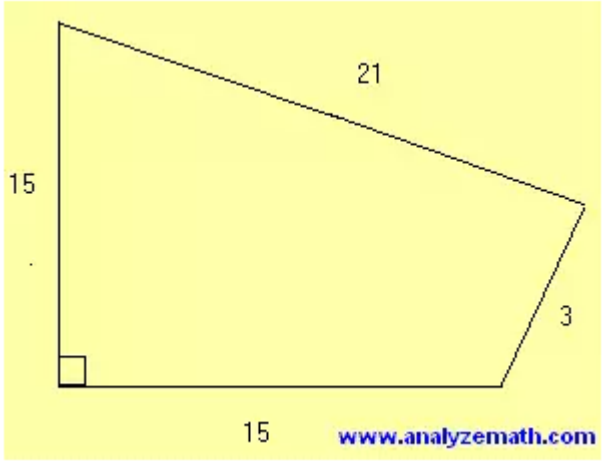
3.2 Conceptual understanding (4)

3.3 Strategic competence (4)

3.4 Find the area of the quadrilateral shown in the figure below (show all working). (4)

3.5 Which Van Hiele (1957) levels of geometric thinking is involved in this question below? (1)

3.6 Provide a motivation for your answer in 3.5 above. (3)



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TOTAL: 50

Resources for this take-home examination:

Question 1

Chen, N. S., Wei, C. W., Wu, K. T., & Uden, L. (2009). Effects of high-level prompts and peer assessment on online learners' reflection levels. *Computers & Education*, *52*(2), 283-291.

Kearns, L. R. (2012). Student assessment in online learning: Challenges and effective practices. *Journal of Online Learning and Teaching*, *8*(3), 198.

Suurtamm, C. A. (2004). Developing authentic assessment: Case studies of secondary school mathematics teachers' experiences. *Canadian Journal of Science, Mathematics and Technology Education*, *4*(4), 497-513.

Vonderwell, S., Liang, X., & Alderman, K. (2007). Asynchronous discussions and assessment in online learning. *Journal of Research on Technology in Education*, *39*(3), 309-328.

Zessoules, R., & Gardner, H. (1991). Authentic assessment: Beyond the buzzword and into the classroom. *Expanding student assessment*, 47-71.

Question 3

Christiansen, I. M., & Ally, N. (2013). Opportunities to develop mathematical proficiency in Grade 6 mathematics classrooms in KwaZulu-Natal. *Perspectives in Education*, *31*(3), 106-121.