UNIVERSITY
OF
JOHANNESBURG

FACULTY	: Education
DEPARTMENT	: Childhood Education
CAMPUS	: Soweto Campus
MODULE	: Mathematics for the Foundation Phase 2B (MFP20B2)
SEMESTER	: Two
EXAM	: November 2020

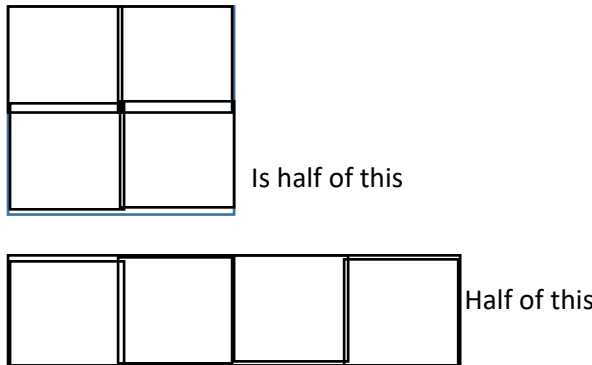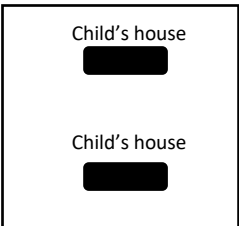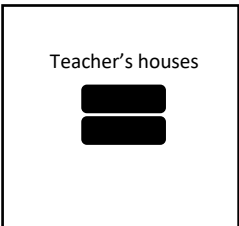|			
ASSESSOR(S)	: Mr K Baloyi		
MODERATOR	: Mr L Molaodi		
SUBMISSION	:	**MARKS**	: 100

NUMBER OF PAGES: 6 PAGES

INSTRUCTIONS:

1. You must answer all questions.
2. **You may not collaborate with other students about this submission. Your work will be screened for plagiarism and any evidence of copying directly from other sources (including other students and your own earlier assignments) will result in you failing this assessment**.
3. Clearly number each question and submit in the correct order.
4. All text must be 12 Arial font size, 1.5 line spacing and justified text.
5. Calculations may be written out by hand and pasted in the submission document as an image

1. For this question you are expected to analyse the following two videos and answer the questions that follow:

Video 1	Video 2
Source:	Source:
https://www.youtube.com/watch?v=jNCCW7pyMww	https://www.youtube.com/watch?v=OeN-vLl1j-c
Teacher 1 with child 1	Teacher 2 with child 2

00:00 okay guess what I have here 00:04 so I'm gonna ask you… there's a square 00:07 how many square cards will fit into that space? 00:09 ***Four*** 00:14 okay put it down (child places four squares into a bigger one) okay all right thank you 00:19 I'm gonna give you another card here (teacher gives child a rectangular card that can fit the same number of squares) 00:24 now how many of these square cards will 00:27 fitting into that space here ***three (the child places four cards on the rectangular card instead of three)*** 00:39 how many cards are there ***four*** (notice the child when he realizes his mistake) 00:42 okay so they're both 4 this is four and this is four 00:46 what do you notice? 00:48 how can they both be the same amount of 00:51 cards if the two shapes are different, they're not the same shape? 00:54 The two shapes are different 01:00 ***because half of this*** (referring to the rectangular shape) ***is half of this*** (referring to half of the square card)	0:08 so, we gonna pretend like this is my yard and that's your yard 0:12 do we have the same amount of yard? **Child does no respond** 0:15 are these papers the same size? *0:17 **child nods*** 0:20 ya, ok, (teacher nods too) 0:22 this is my house, ok, so I'm putting my house right here 0:26 and then this is your house, I'm putting your house right here 0:30 do we still have the same yard? ***Child does not respond*** 0:33 are our yards still the same size? 0:35 ***child nods*** 0:36 why do you think that? 0:37 ***because (child)*** 0:38 because (teacher) 0:40 ***coz they don't have the same house but they still have the same pattern*** 0:47 they have the same pattern, ok 0:50 ***child puts hands over head*** 0:57 so I added another house to mine (puts blocks on paper) and I added another house to yours 1:01 do we still have the same amount of yard? 1:04 ***child nods*** 1:06 why do you think that? 1:08 ***coz*** 1:09 coz why? 1:10 ***coz we have the same blocks*** 1:12 ya, how many blocks do I have on my yard 1:15 ***two*** 1:16 and how many do you have on yours? 1:17 ***two***
Is half of this Half of this	Childs yard Teacher's yard

1.1. In your own words, define conservation to a grade 1 learner (2)

1.2. What could the teacher have done differently in each of the tasks. Provide examples from the video transcripts to support your claims (3)

1.3. State, with reasons, which van Hiele level each of the learners are in? (4)

1.4. It is often argued that it is unfair to make conclusions about whether children have developed measurement concepts without interrogating the methods used by teachers. Briefly explain what negative effect the repeated questions in the videos may have on the children's responses (6)

1.5. How does your answer in 1.4 support or dispute Piagetian measurement experiments? (5)

QUESTION 2 [20 marks]

The principal of Sethlare Primary School in Limpopo province needs to address the learners in one of the school halls. However, due to the Covid-19 pandemic there are strict rules relating to social distancing. The learners may stand as close as possible to the walls and corners of the hall. However, there should be a shoulder to shoulder distance of 1 meter between them and a 1,5-meter distance front and back. The hall was able to accommodate 30 socially distanced learners who are facing one of the shorter sides of the rectangular hall.

2.1. Draw a diagram representing the given information. Show ALL the learners as dots in the diagram with at least 5 rows of learners and clearly mark the distance between them on all sides. (The spaces between the learners and the walls are ignored, therefore the dimensions of the hall are regarded as approximations in your calculation)

Your diagram should show the following:

- Learner in rows and columns from wall to wall. 30 learners in the hall (show them as 30 dots)

- distance between the learners clearly marked out along rows and columns

- Length of the hall in metres (m)

- Width of the hall in metres (m)

(5)

2.2. If you were using a scale of 1m = 1,5cm, what would be the length of the hall in your diagram in cm (2 decimal places)? (2)

2.3. What is the approximate width of your diagram in cm? (2)

2.4. What is the approximate area of the hall in your diagram in cm? (2)

2.5. What is the approximate area of the school hall in metres (m)? (2)

2.6. There are 3 possible row/column combinations of learners; 5x6 learners, 10x3 learners and 2x15 learners. If there are more learners front and back than sideways, prove that the areas of the halls are not conserved. Show all calculations for each of the areas. (6)

2.7. Give a reason why the areas are not conserved even though the number of learners remains the same. (1)

QUESTION 3   **[40 MARKS]**

3. Mishra and Koehler introduced the TPACK framework as a way for bringing together Technology knowledge to teach specific content knowledges in pedagogically strategic ways. Technology does not necessarily relate to computers but to the tools used in teaching.

3.1. Write an essay of not more than 1 page in which you draw from literature and discuss why it is important for a foundation phase teacher to use tools and / or technological resources to teach small children about measurement. (15)

3.2. Complete the table below and provide examples of tools and how they might be used to teach about measurement in a grade 1 classroom. (25)

	Provide a brief description of the content strand to the learner in your own words while you consider the learner's level of development and vocabulary (5)	What tools can you use to teach the concept? Provide two different tools with a brief explanation why such a tool is appropriate for those learners. The tools should be acquired by the learners in a cost-effective manner. (10)	How would you playfully teach the learners the content using one of the tools you selected? (10)
Attributes of measurement			
3.3. Length			
3.4. Area			
3.5. Volume/Capacity			
3.6. Time			
3.7. Mass			

QUESTION 4   **[20 MARKS]**

4. 21st century education demands classroom innovation and the use of educational technologies for teaching and learning. Educational robotics is one of the key technologies in the 21st century and in developing countries such as South Africa. One of robotics affordances is that it fits perfectly with constructionism. Seymour Papert envisioned constructionism as being about learners learning by making things that do things. The child is in charge of the technology and not the other way around.

You are a teacher in the foundation phase grade 3 mathematics classroom. The school wants to introduce educational robotics into the grade 3 mathematics classroom. One of the staff members heard you explain the meaning of TPACK and recommended that you make some presentations to them about the affordances of robotics.

4.1. Drawing from the pool of educational robots introduced in this module and from the CAPS document, select one floor robot that you think would be suited to

teach any three of the CAPS measurement content. Write an essay in which you specify the content, the robot features and how you can use it to teach the selected content. Lastly you must demonstrate how the learners could playfully engage with the robot during each of the lessons. Your essay should not exceed 1 page. (14)

4.2. If you were to design your own educational robot, what would it look like? What would it allow the learners to do? Why would it be perfect for the mathematics classroom? (6)

TOTAL: 100