



<u>FACULTY</u>	: Education
<u>DEPARTMENT</u>	: Childhood Education
<u>CAMPUS</u>	: Soweto Campus
<u>MODULE</u>	Introduction to Mathematics for the Foundation Phase :(MFP10A1)
<u>SEMESTER</u>	: Two
<u>EXAM</u>	: January Take-Home Special Exam 2020

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MODERATOR : Dr J Maseko (University of Johannesburg)

SUBMISSION
DATE: : **MARKS** : 100

NUMBER OF PAGES: 9 PAGES

INSTRUCTIONS:

1. Answer ALL THE QUESTIONS.
 2. Number your answers clearly.
 3. Typed exams should use 12pt, Arial-font and all text justified.
 4. Hand-written worked out solutions should be neat and legible.
 5. Complete the declaration sheet.
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FIRST NAME & SURNAME:

STUDENT NUMBER:

I DECLARE THAT:

- This is my own work
- I have not plagiarised from any source
- I have not sought help from any one
- I have numbered each question in accordance with the question paper

SIGNATURE:

QUESTION 1

- 1.1 Use 4 (four) different algorithm showing how the following mathematical problem can be solved

$$\frac{8}{27} \div \frac{4}{9}$$

12

- 1.2 James solved the addition of fractions problems in the following way:

$$\begin{aligned} \frac{3}{5} - \frac{2}{4} \\ = \frac{3-2}{5-4} \\ = \frac{1}{1} \\ = 1 \end{aligned}$$

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|--------|---|---|
| 1.2.1 | What errors is James making? Explain, what could be the misconception? | 4 |
| 1.2.2 | What steps would you take to help James correct his mistakes? Discuss in a less than one -page long paragraph without giving step by step how the problem can be calculated. | 8 |
| 1.3. | When adding fractions with the same denominators, you can Just add the numerators and keep the same denominator. | |
| 1.3.1. | Does this rule always work, Give an example to substantiate your reasoning | 2 |
| 1.3.2. | Often, teacher inform learners of this rule without making learners aware why we just subtract the numerators and keep the same denominator. How will you explain to the learner why we only add the numerator and keep the same base | 4 |

- 1.3.3 What kind of misconceptions can be caused by using this principle without conceptual understanding? Give an example to elaborate your reasoning 4

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Question 2

- 2.1. Use long division method to write $\frac{1}{17}$ in decimal form without rounding off 5
- 2.2. Use a square grid (diagram) to represent 1.990 4
- 2.3. Decimal operation is not taught at the foundation phase level. What topic taught in foundation phase prepare learners for the decimals taught in grade 4? 2

[11]

Question 3

- 3.1. Define what percentage is in your own words 2
- 3.2. Percentage is not taught in foundation phase level. However, A primary school has both foundation phase and intermediate phase. If you were to be asked to teach a grade 4 level to substitute for an absent teacher who was supposed to introduce the concept of percentage to the grade 4 class using the topic already taught in foundation phase. Give a brief description on how you will introduce the concept of percentage using diagrams. 6
- 3.3. The following methods are used when one is converting fraction to percentage. Study the following two methods and answer the question

below:

Method A

$$\frac{3}{4} \times \frac{25}{25}$$

$$= \frac{75}{100}$$

$$= 75\%$$

Method B

$$\frac{3}{4} \times 100$$

$$\frac{3}{4} \times \frac{100}{1}$$

$$= \frac{300}{4}$$

$$= 75\%$$

Explain the procedure used in each method and highlight the underlying concept used and give the disadvantage that one method has over the other.

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Question 4

- 4.1. Draw a concept map to illustrate your understanding of number patterns and the link it has with the early algebra. (See rubric attached at the end of this question paper).

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[25]

Question 5

- 5.1 If the sum between four consecutive odd numbers is 316, determine the difference between the smallest number and 201.

5

- 5.2 A father is 30 years older than his son. Six years ago, the father was three times as old as his son. How old is the father and the son now?

5

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Total: 100

Rubric for Question 2.3: Concept Map

Assessment criteria	Outstanding	Exceeds standard	Adequately meets standard	Below standard
	4 - 5	3	2	0-1
Organization	<ul style="list-style-type: none"> Well organized Logical format Contains main concepts All key words and concepts necessary to promote an overview of the unit are used and well organized to give added meaning. 	<ul style="list-style-type: none"> Thoughtfully organized Easy to follow most of the time Contains most of the main concepts Most key words and concepts from the units are covered in a meaningful way and are thoughtfully organized. 	<ul style="list-style-type: none"> Somewhat organized Somewhat incoherent Contains only a few of the main concepts Many key words and concepts from the unit are covered and are somewhat organized. 	<ul style="list-style-type: none"> Choppy and confusing Contains a limited number of concepts. Many key words and concepts from the unit are missing.
	8 - 10	5 - 7	2 - 4	0 - 1
Content, concepts and terminology	<ul style="list-style-type: none"> Shows an understanding of the topic's concepts and principles and uses appropriate terminology and notations No misconceptions/errors evident. 	<ul style="list-style-type: none"> Makes some mistakes in terminology or shows a few misunderstandings of concepts Few misconceptions are evident. 	<ul style="list-style-type: none"> Makes many mistakes in terminology and shows a lack of understanding of many concepts Some misconceptions are evident. 	<ul style="list-style-type: none"> Shows no understanding of the topic's concepts and principles Many misconceptions are evident.
	8 - 10	5 - 7	2 - 4	0 - 1
Connections and knowledge of the relationships between concepts	<ul style="list-style-type: none"> All words accurately connected. Connections indicate superior organization/understanding and enhance meaning. Arrows easily connect concepts in an informative manner. Identifies all the important concepts and shows an understanding of the 	<ul style="list-style-type: none"> All words accurately connected. Connections are clear and logical. They connect concepts to promote clarity and convey meaning. Identifies important concepts but makes some incorrect connections Some meaningful connections made 	<ul style="list-style-type: none"> Most words accurately connected. Connections are somewhat clear and convey some meaning. Makes some incorrect connections 	<p>Some words accurately connected. Connections aren't clear, they convey little meaning and do not promote clarity.</p> <p>Fails to use any appropriate concepts or appropriate connection</p>

	<div>relationships among them</div> <ul style="list-style-type: none">• Meaningful and original insights demonstrated			
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