Title: How I teach number patterns in a grade 9 class .

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Target participants: Grade 9 teachers

Introduction

Numeric patterns are key topics in the general education and training band because they are a foundation for arithmetic series and sequences of the further education and training band. Numeric patterns help learners to identify the relationships and the learners to realise that equations are derived from contexts e.g. 2n +1 = 5 is an equation derived from the triangle numbers and number of matchsticks used to make triangles .The numeric patterns which I have been presenting to both teachers and learners resonate with me hence I want to share my teaching with other teachers**.**

Presentation

I usually give the learners the numeric patterns and geometric patterns and ask the learners to tell me if there is any rule used to make the numbers or diagrams .For instance 6 ; 11 ; 16 ; 21 ; 26 ; 31 ;36. Is there any rule used to make these numbers? The learners usually tell me that there is a rule. When I ask them the rule they usually tell me that it is "Add 5 to the previous numbers to get the following numbers. I usually ask them how long would take them to extend the pattern in order to know the 500th number of this pattern? The learners usually say it would take them about three days to extend the numeric pattern to the 500th number. I usually tell them that we can derive an algebraic expression which can help us to determine the 500th number of the numeric pattern without spending a lot of time.

How do I usually derive the general rule of the numeric patterns?

I usually ask the learners to find the common difference between the previous numbers and the following numbers. After getting the common difference, I usually ask the learners to use the common difference to multiply the numbers of numbers to get the numbers/terms of the numeric patterns. If the learners do not get the numbers I usually advise the learners to use operation that when used changes the numbers to the numbers of the pattern .I usually I advise the learners to put n in place of the number of numbers and the operation used to make the numbers of the pattern.

For instance 6; 11; 16; 21; 26; 31 the common difference is 5.

To derive the general rule we multiply the numbers of numbers by 5and we get

5 ; 10; 15 ;20 ;25 ;30 and we add 1 to these numbers to get the given numeric pattern.5 ; 10 ; 15 ;20 ;25 ;30 are 5n because we multiply the numbers of numbers by the common difference 5.The given pattern is 5n+1 because we add 1 to 5 ; 10 ;15 ; 20 ;15 ;20 ; 25 ; 30 to get the numbers of the given pattern.

I usually ask the learners to use the general rule to extend the pattern and to use the table eg

squares	1	2	3	4	5
3n+1(number of sticks use to make squares)	4	.....	.....	.....	.....

n	**.....**	**.....**	**.....**	**.....**	**.....**	**.....**
7n+1	**8**	**15**	**22**	**29**	**36**	**43**

Conclusion

I have found numeric patterns fascinating and a meaningful approach to equations. Patterns also enhance learners' ability to substitute. Numeric pattern identifications help learners to quickly complete tables when they are to draw the straight line graphs and parabola graphs. Linear patterns are good approach to quadratic or square patterns.

References

1. Goba B. ; Karen P.; Morgan H.; Smuts C& Van der Walt.(2006). ***Study&*** *Master Mathematics.* Cape Town :Cambridge University Press.

2. Unpublished workshop document prepared by Hlaleleni W on the 7/02/2012.