THE BENIFITS OF NATURAL TEXTBOOK DISPLAY CALCULATORS IN THE MATHS LITERACY CLASSROOM

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Adequate knowledge of calculator skills makes the teaching of Maths Literacy easier and enables the educator to assist their learners more efficiently. As educators, we need to be aware that the Basic calculator doesn't have all the benefits of a Scientific calculator. With the Casio ***Natural Textbook Display*** *Scientific Calculator – "as you see it on the paper you see it on the calculator screen"*

Target audience: FET Maths Literacy

Motivation:

In the new Maths Literacy CAPS document the syllabus has been revised, so that learners will be able to manage with a basic calculator. However, this equipment has been recommended and not prescribed and educators have the option to stick with the Scientific calculator.

The **Natural Textbook Display** Scientific calculator is ideal when working with fractions, decimals and time conversions. The use of this calculator can foster a positive attitude towards Mathematics and can increase a learner's understanding and self confidence.

Content:

This workshop will cover: the use of the Fraction buttons & conversions between equivalent forms of fractions and decimals. The calculator SET UP to assist with rounding off to specific decimal point. Finding the square, cube and square root of a number. Time calculations and Independent Memory

Equipment required: Casio **fx-82ZA PLUS** Scientific Calculator.

Fraction button use & conversions between mixed numbers & decimals	10 mins
Calculator SET UP to assist with rounding off to specific decimal point	5 mins
Finding the square, cube and square root of a number.	10 mins
Time calculations	10 mins
Independent Memory	10 mins
Discussion	15 mins

WORKSHEET:

Casio Scientific Technology Tip
ONLY use [ON] when switching the scientific calculator on.
To clear your screen, use [AC]
this saves your calculator's temporary memory (see the ▲ in the top right corner of the screen)
Use [REPLAY] to review previous calculations.

FRACTIONS

A. COMMON FRACTIONS	Calculator Key: $\frac{\blacksquare}{\square}$
$\frac{9}{5}+\frac{1}{4}$ $= \frac{41}{20}$ Improper fraction $= 2,05$ Decimal $= 2\frac{1}{20}$ Mixed number	• Conversion between improper fraction and decimal **[S⇔D]** • Conversion between improper fraction or decimal to mixed number [SHIFT] **[S⇔D]**
B. MIXED NUMBERS	Calculator Key: $\blacksquare\frac{\square}{\square}$
$2\frac{3}{4}\times 4\frac{5}{12}$ $=\frac{583}{48}$ $=12,14583333$ $=12\frac{7}{48}$	**How to FIX your calculator to round off to TWO decimal places:** [SHIFT] [MODE] 6 (Fix) <u>On your screen:</u> Fix 0 ~ 9? Now select decimal places. **Select 2**

Activity 1

$3\frac{1}{2}\times\frac{2}{4}$	=.....Improper fraction =.....Decimal =.....Mixed number

EXPONENTS AND ROOTS

A. EXPONENTS	Calculator Keys: x^2, x^3 and $x^{\blacksquare}$
$2^3 + 3^2 = 17$	

B. ROOTS	Calculator Keys: $\sqrt{\blacksquare}$, $\sqrt[3]{\blacksquare}$ and $\sqrt[\blacksquare]{\square}$
$\sqrt{\frac{9}{4}} = \frac{3}{2} = 1{,}50 = 1\frac{1}{2}$	

Activity 2

$\sqrt{13^{\frac{1}{2}} - 2} \times \sqrt{13^{\frac{1}{2}} + 2}$	=.....

How to clear your calculator from rounding off to 2 decimal places

Key Sequence:

[SHIFT] [MODE] 8 (Norm)

<u>On your screen:</u> Norm 1 ~ 2?

Norm 1 is the default setting and gives answers in scientific notation. e.g. 1 ÷ 50 000 = 2 x 10^{-5}

Norm 2 is generally preferred as answers are only expressed in scientific notation when they are too big to fit on the screen. e.g. 1 ÷ 50 000 = 0.00002

Select 2

TIME CALCULATIONS

Converting from a decimal to hours, minutes and seconds

Remember: $\text{time} = \frac{\text{distance}}{\text{speed}}$
How long will it take to travel a distance of 534 km, if your average speed is 90 km/h?
$\frac{534}{90} = \frac{89}{15}$ [S⇔D] = 5.933333333 [º’”]
= 5 º 56 ’ 0 ” which is 5 hours, 56 minutes and 0 seconds

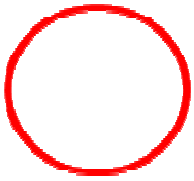
Converting from hours, minutes and seconds to a decimal

Remember: $\text{speed} = \frac{\text{distance}}{\text{time}}$
At what speed are you travelling if 150 km takes 1 hour 16 minutes and 17 seconds?
150 [$\frac{\blacksquare}{\square}$] 1 [º’”] 16 [º’”] 17 [º’”] [=]
= 117.98 km/h rounded to 2 decimal places

Activity 3

1. How long would it take you travel 355 km from Johannesburg to Nelspruit if your average speed is 120 km/h?	=.....Improper fraction =.....Decimal =.....hours.....minutes.....seconds
2. What speed is a cheetah travelling if it covers 400 m in 12 seconds?	=.....km/h

INDEPENDENT MEMORY



The CAPS document states that in the **TOPIC: Numbers and calculations with numbers** it is required that the learners are able to use the Independent Memory function.

This function allows you to add calculation results to; or subtract results from the independent memory.

To add the result of 10 × 5 to M	10 [×] 5 [M+]	50
To subtract the result of 10 + 5 from M	10 [+] 5 [SHIFT] [M+] (M-)	15
To recall the contents of M	[RCL] [M+] (M)	35

The "M" appears on the display when there is any value other than zero stored in the independent memory.

<u>How to clear your Casio fx-82ZA PLUS calculator:</u>
[SHIFT] 9[CLR] [3]ALL [=]YES [AC]
<u>This returns the calculator to the initial default settings & clears the memory.</u>

HINTS TO MAKE THE TEACHING OF THE CALCULATOR EASIER

- If you are introducing calculator work to a new class it is easier if all learners have the same calculator.
- Always keep the instruction booklet that you receive with your calculator so that you can refer to it whenever you are not sure how to do a calculation.
- Use the examples provided in the instruction booklet to find out how to use the keys correctly.
- There are 3 modes on the Casio Scientific Calculator fx-82ZA PLUS, always make sure that your calculator is in the right mode before you begin.
  [MODE]

1. Computational – normal scientific calculations
2. Statistics – data handling & regression
3. Table – graph work & functions

Calculators play a vital role in the classroom: not by *substituting* Mathematics, but by *supplementing* our subject. It's conventional Mathematics by new methods.

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