

# Why Mental Maths is Important for the Future of Maths

Grades 4, 5 and 6

# What Mental Maths Covers

- Everything!
- What it is particularly good for though is
  - Whole Numbers
  - Common Fractions
  - Number Patterns
  - Number Sentences
  - Measurement
  - Probability



# Where does Mental Maths Lead Us?

- Whole numbers
  - lead us to understand factorising (grade 9 upwards);
  - Everyday maths – rounding off, shopping, banking, investing
- Common Fractions
  - Percentages, decimals, algebraic fractions (grade 10 – 12)
- Number Patterns and Number Sentences
  - Algebra, solving problems, thinking abstractly, sequences (grade 10 – 12)
- Measurement
  - Planning a house, moving in, cooking, planning trips
- Probability
  - Gambling 😊

# Fun ideas for Introducing concepts like

- Addition and subtraction
- Multiples
- Factors
- Prime Factors
- Denominators
- Patterns
- Time
- Probability

# Addition and Subtraction – Drill Mode

- Press 
- Press 
- And choose 2 for Drill
  - You have two options:
    - Math
    - Table

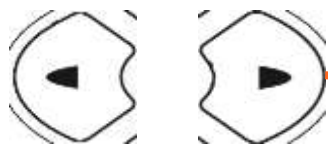


- Math
  - Covers plus, minus, times divide separately or as a set of mixed questions
- Table
  - Only tests a specific times table, for example, the 7 or 8 times table.




# Choose 0 for Math

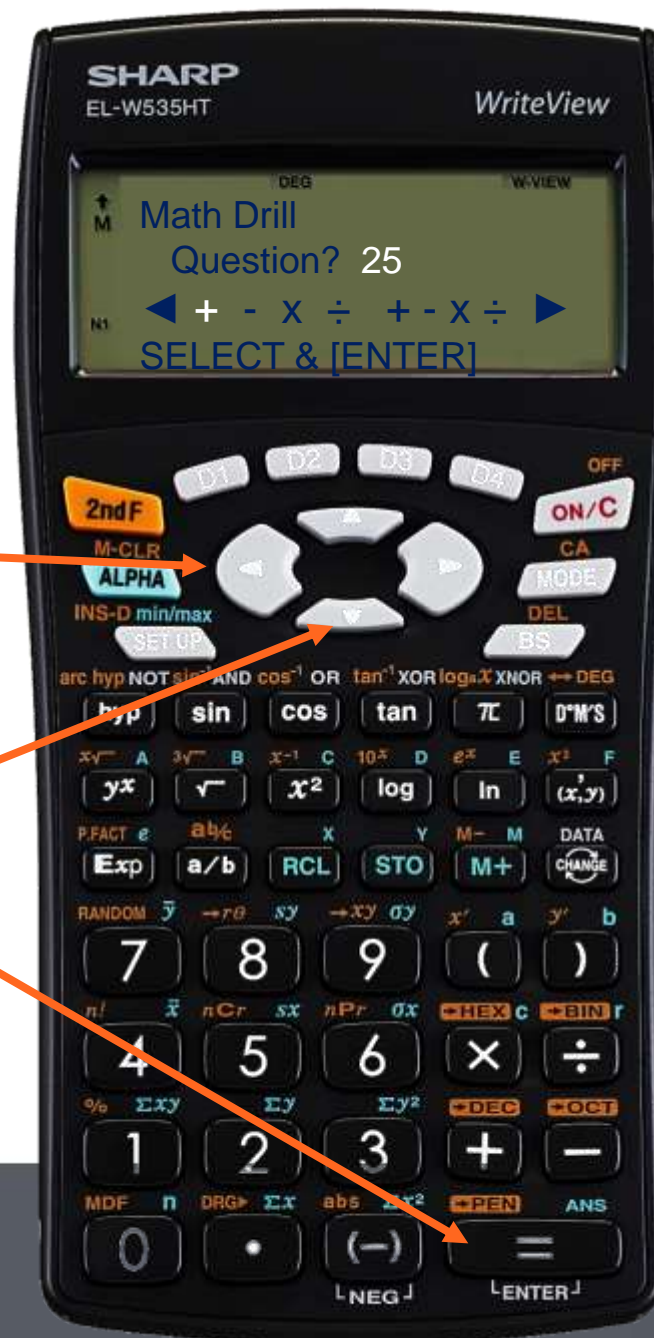
- Use your left and right arrows to choose between + , - , X, ÷, or + - X ÷.



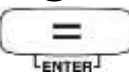
- Use your up and down arrows to choose between the different numbers of questions: 25, 50 or 100



- Press the  button when you are ready to start.



# On your screen you should see:

- Q 1/25
  - Means that you are on question 1 of 25 questions
- Your question may not be the same as the example because all the questions are generated randomly.
- Type in the answer to your question, e.g. mine would be 31 and press 
- If you are correct you will get a tick, if you are wrong, the question will be marked wrong and will be repeated again.

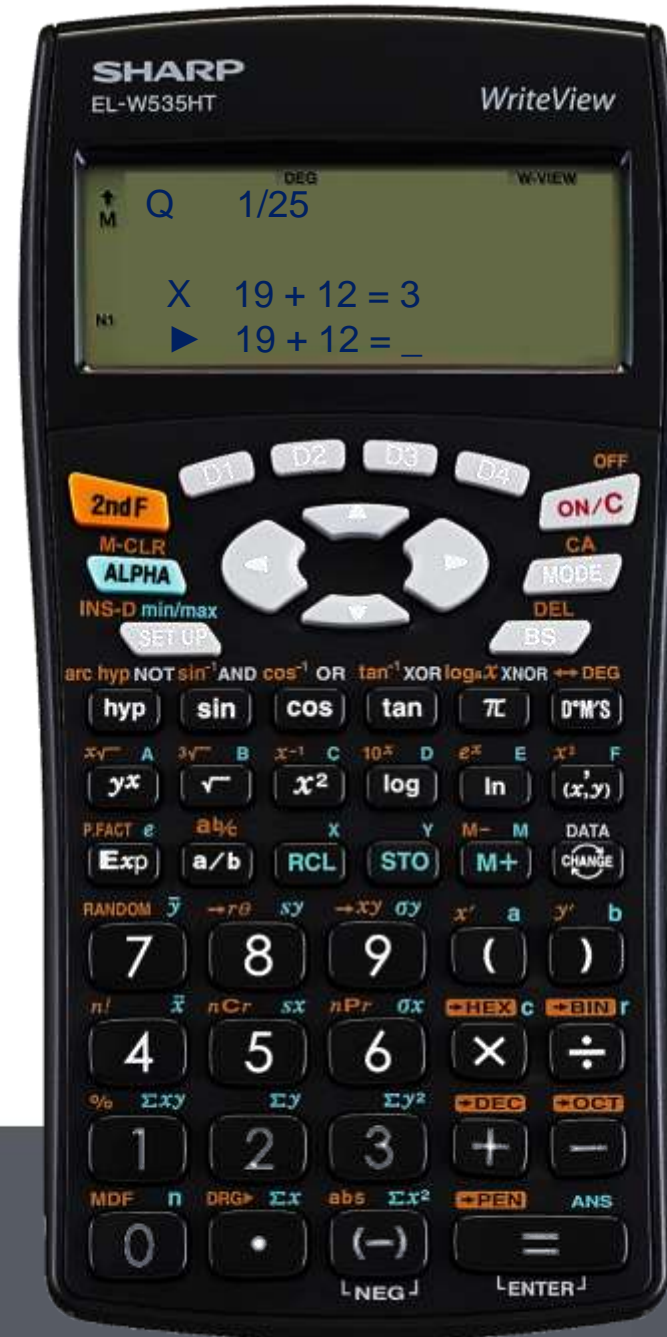




Correct answer



Incorrect answer



# Multiples -Table Mode

- Press **MODE** 3
- Type in the number you would like multiples of – e.g. 17.
- Then press **RCL** **RCL**
- And **=** 3 times to get back to the table.
- Scroll down your table to see all the multiples!



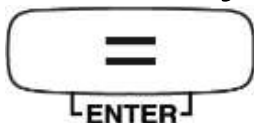
# Factors

- Press **ON/C** twice
- Type in the number you would like to find all the factor pairs of – e.g. 42
- Press **a/b**
- **RCL** **RCL**
- **=**  
ENTER



# Factor Pairs Cntd.



- Leave your start at 0 so press

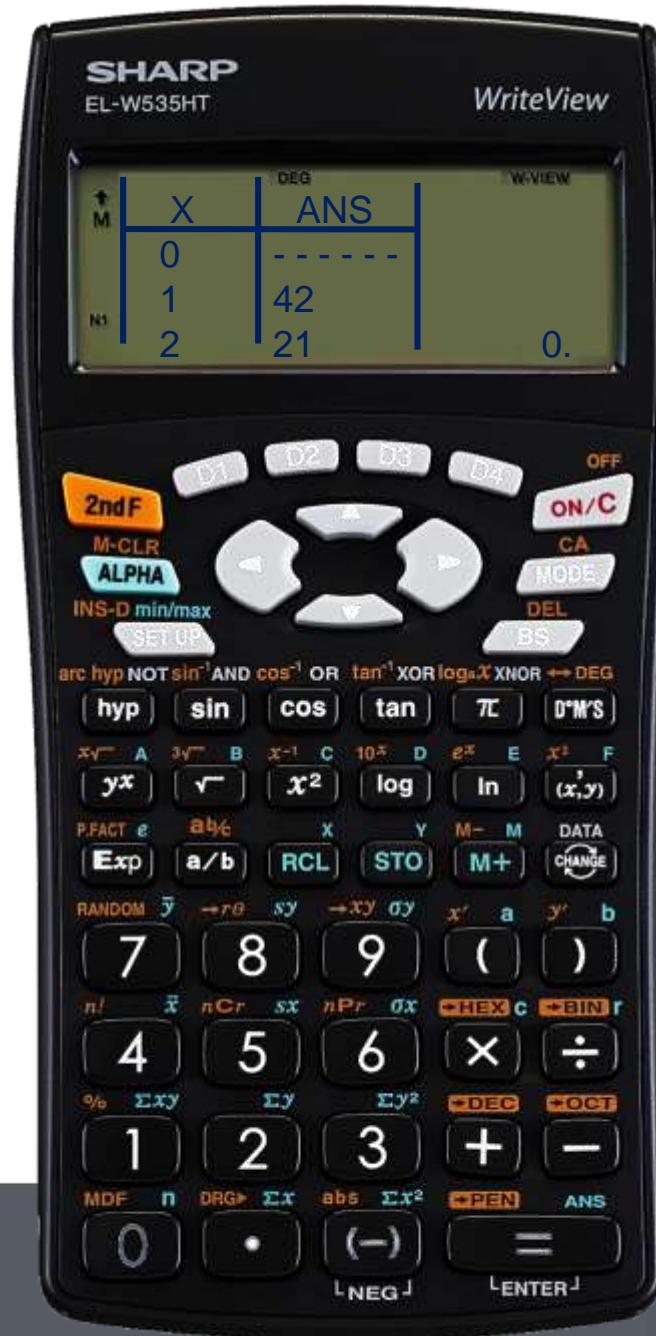


- Make your step (what you are counting in) 1 by typing in 1 and press




# Factor Pairs Cntd.

- You should now have a table with the first line as 0 and - - -
- Use your  and  arrow keys to scroll through the table.
- Anything in the ANS column with a decimal is NOT a factor because it has a remainder.
- Your factors are 1 and 42, 2 and 21, 3 and 14, 6 and 7.



Remember that the - - - - line means that the answer is undefined 😊

Remember that you can go up the table  
Press   
And look at the negative side of the number line as well

# Prime Factors (Grd 7)

- Press **MODE** 0
- Prime Factorisation
  - Type in the number you want to find prime factors of e.g. 42.

- Press **=**  
ENTER
- Press **2ndF** **Exp**



# Denominators

## – How to find the LCM and HCF (Grd 7)

- E.g. Given two numbers 42 and 63, what is their LCM and HCF?
  - Find the prime factors of 42 and 63

- $42 = 2 \times 3 \times 7$
- $63 = 3^2 \times 7$
  
- Line up the factors that are the same in the same columns and create new columns for each factor that doesn't match:
  - $2 \times 3 \times 7$
  - $3 \times 7 \times 3$
  
- That means our HCF is  $3 \times 7 = 21$  and our LCM =  $2 \times 3 \times 7 \times 3 = 126$  (This is our denominator).



# Alternative method (After teaching exponents)

- $42 = 2 \times 3 \times 7$
- $63 = 3^2 \times 7$
  
- For the HCF find the bases that are common and keep the lowest exponent, so  $\text{HCF} = 3^1 \times 7^1 = 21$
  
- For the LCM (or denominator), keep each base and the highest power of each base, so  $\text{LCM} = 2^1 \times 3^2 \times 7^1 = 126$ .

# Patterns

- Our pattern is add 3
- Let's start at 5.
- On your calculator say  $5 + 3 =$
- Now press  $+ 3 =$
- And keep pressing  $=$  to continue the pattern






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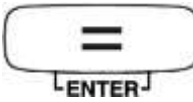
# Second Option

- Press **MODE** 3
- Type in  $5 + 3$  **RCL** **RCL**
- **=**  
ENTER
- At the screen with start and step press = and = again.
- Use  to scroll down the table and see the pattern in the ANS column 😊





# Time calculations

- “Suzy Train Station Question”
- If Suzy gets on the train at 9:45 and gets off at 14:20, how long was she on the train for?
- Remember to use 24-hour time

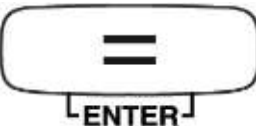
- Press 14 
- 20 
- 9 
- 45 



Answer – 4 hours, 35 minutes and 0 seconds

You can convert this answer to only hours by pressing   Which should give you  $4\frac{7}{12}$  hours.

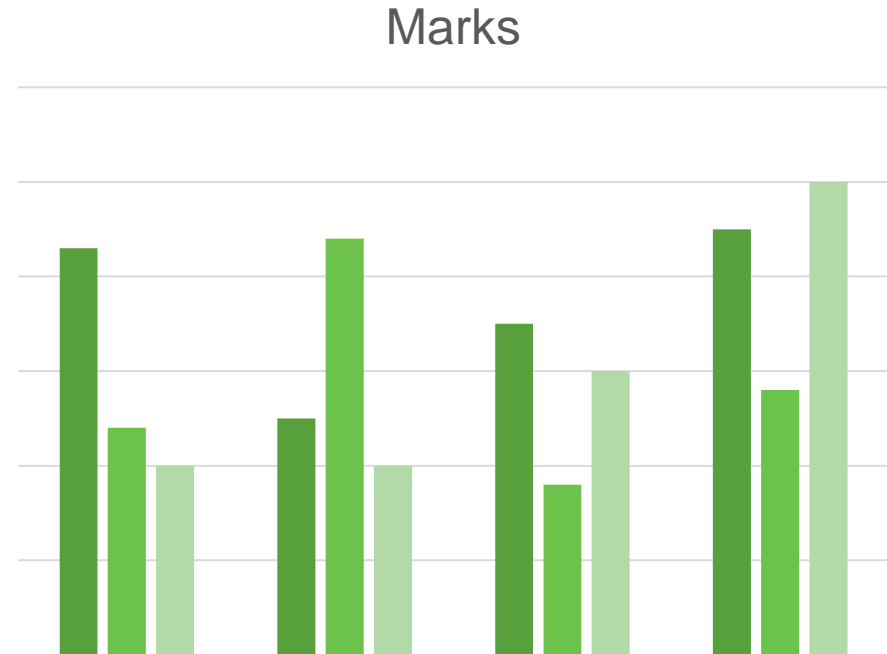
# Probability

- Playing with the dice:
- Press **2ndF** 7
  - Choose between:
    - 0: RAND
    - 1: R-DICE
    - 2: R-COIN
    - 3: R-INT
- Press 1 and then  to roll the dice.



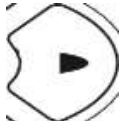
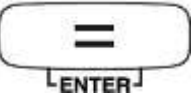


# And of course, to save you time:

- Short cut for class marks:
- If you want to convert between the total of your test or exam to another total.
- E.g. If you have an test out of 40 and want to work out percentages.
- You are converting from 40 to 100




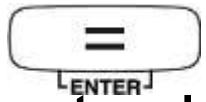
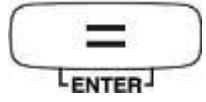
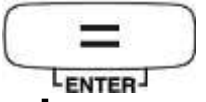
# Class marks cntd.

- Press 
- What you are converting too goes on top (e.g. 100)
- Press 
- What you are converting FROM goes at the bottom (e.g. 40).
- Press 
- Type in the first students mark, e.g. 33 and press 








# Class marks cntd.

- To change the mark to a decimal press the  key twice.
- Now, without pressing anything else, just type in your next student's mark, e.g. 25 and .
- Continue to do this, mark  mark  until you have finished your class list 😊



# Don't forget the competition 😊

- Drill mode (Press  2 0)
- Choose 25 questions (press )
- Choose + - x ÷ (press )
- Fastest time this week wins a microwave 😊



Thank you 😊

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