



Rationale

All students should be working towards or able to:

- Use a calculator to perform one-step calculations and interpret the results
- Key in and interpret money and measurement calculations
- Extend to calculations with more than one step, e.g. $18 \times (137 + 258)$
- Recognise rounding errors, e.g. recognise 2.999999999 as 3
- Recognise negative numbers and the sign change key if appropriate
- Find decimals equivalent to fractions
- Recognise recurring decimals, e.g. 0.333333
- Start to use memory keys and perform more complex calculations, such as $(123 + 739) \div (145 - 89)$
- Have a feel for the size of an answer and check it appropriately

Whilst all pupils should be able to use a calculator correctly, we aim to encourage the sensible use of it, and prefer pupils to initially consider some mental method or means of estimating the answer. The GCSE examinations include a specific non-calculator paper and as such we are committed to teaching pupils effective calculator skills.

We also recognise that the calculator can provide access to areas of the curriculum that might otherwise have been barred to pupils. It is a useful tool, for example, in the generation of lots of numerical or statistical data and can be used to speed up analysis.

Policy

- As a school we include a calculator on the school equipment list. Each student has access to an individual calculator in all appropriate sessions.
- We expect students to use a calculator where appropriate in a variety of subjects across the curriculum and, except for the much lower ability groups, this should be a scientific calculator.
- We recommend a particular model of calculator (CASIO fx-83GT PLUS/CASIO fx-85ES)
- We aim to instil a culture where pupils are able to choose effectively whether the use of a calculator is appropriate. Where they understand the advantages, disadvantages, needs and purpose.



General calculator skills that pupils need to develop:

- Selecting from the display the number of figures appropriate to the context of the calculation
- Entering numbers and interpreting the display when the numbers represent money, metric measurements, units of time or fractions
- Knowing the order in which to use the keys for calculations involving more than one step
- Using facilities such as the memory, brackets, the square root, cube root, sign change and fraction keys, and the constant facility
- Judging whether an answer is reasonable.

Particular calculator skills that we aim to develop:

1. Understand the four arithmetical operations and recognise which one to use in relation to a 'wordy' or 'real world' context or problem. Be able to correctly key in a complication calculation.
2. Understand the place value notation on the display, e.g. 5.3 in the context of money is likely to be £5.30. Half is entered as .5. Modify an answer by rounding appropriately, e.g. 7.3685 is £7.37
3. Adopt some checking procedure, e.g. do the calculation again and in a different order if possible. Have some idea about the sizes of numbers involved and what a reasonable answer might be.
4. If a result is important appreciate the need to check the sense of an answer by approximating, e.g. one significant figure (the calculator could be used to approximate). Is the decimal point in the right sort of place? Appreciate when an approximate answer is sufficient or preferable.
5. Appreciate that the calculator has a fixed way of working out calculations, e.g. BIDMAS, and that the brackets or an interim use of the equals sign may be necessary, e.g. calculating the mean average on a calculator.
6. Appreciate the need for a reasonable degree of accuracy, e.g. 5.476329cm is not the most appropriate final answer, as neither is 3.954 coaches.
7. Rather than using a calculator when simple calculations are involved in a larger calculation, an attempt should be made to carry out such calculations using mental methods, e.g. +8 instead of +5 and then +3
8. Use a calculator to change fractions into decimals. Know which way round to divide. Know how to use the button for fractions including mixed numbers.
9. Appreciate the standard form display of some calculators, e.g. 7 E 3. Understand and be able to use the exp button.
10. Understand and be able to use effectively the square root, cube root, square and power buttons.
11. Use the pi button when appropriate
12. Recognise that there are differences between certain models of calculators and that it is important that individuals understand how their calculator functions.