

Can I explain and record my method when I use a calculator to solve a problem?

Teaching guidance

Key vocabulary

key, operation, inverse, trial and improvement, bracket, method, working, calculation

Models and images and resources

Overhead or whiteboard calculators

It is helpful to use an overhead or whiteboard calculator to demonstrate calculator methods to the class. It is particularly useful if the overhead calculator matches the calculators that children are using so that they can use exactly the same key presses that you do.



Sets of word problems

Apples weigh about 250 g each. Roughly how many apples would you expect in a 3 kg bag?

Amir buys a 5 kg sack of peanuts for £9.99. He measures out 150g bags of peanuts and sells these for 65p each. How much profit will he make?

Coach fares from Oxford to London cost £13.50 for adults and £6.85 for children. How much would the total fare be for three adults and 12 children?

It is useful to have sets of word problems on card. Ask children to sort the problems into those that involve one step and those that are multi-step.

Focus on solving one or two problems in a session, discussing the interpretation of the problems, operations needed, strategies used and appropriate recording for each step of the problem.

Teaching tips

- Ensure that you regularly present opportunities to use calculators in mathematics and that they are readily available so that children are used to choosing when and if to use them as a mathematical resource.
- Give children plenty of practice in breaking multi-step problems into individual steps and identifying the appropriate calculation for each step. When using a calculator, encourage children to put one step into the calculator at a time, recording the calculation they key into their calculator.
- Children should make sure that it is clear what the answer to each calculation tells them, for example by writing a prompt such as: Price for 5 cartons = ...
- Children need to know that, where they are given space to 'show their method' for a problem, if they are using a calculator they need to write in the calculation they have entered into their calculator.
- Ensure that children understand that, where a problem involves measures, these must be in the same unit before they are entered into the calculator. For example, for the problem 'How many 35p stamps can be bought for £5?', children need to either convert the 35p into £0.35 and enter $5 \div 0.35$ or convert the £5 into 500p and enter $500 \div 35$.
- Make sure that children always estimate the answer to a problem before using a calculator. They should then check that the answer they have obtained is sensible.
- Make sure that children always reread the problem they are answering before deciding how to interpret the answer on their calculator display:
 - Where a display represents an amount of money they need to interpret the decimal places appropriately, recognising for example that 1.2 is £1.20.
 - Where a display represents a measure, children need to be sure what unit the amount is in.
 - Children need to consider whether an answer needs rounding up or down according to the context.
- It is more beneficial to study one or two complex problems in depth than to rush through several superficially. The focus for problem-solving lessons should be on interpreting the problem, identifying appropriate methods, carrying these out accurately and recording steps to the solution.
- Ensure children regularly compare their methods and recording with those of other children. Set up formal opportunities for children to offer feedback to one another on how clear and thorough their recording is, giving suggestions for improvement.
- Build in opportunities for children to redraft solutions to complex problems, improving the solutions in the light of feedback from others. Display children's answers to problems.