Using a calculator – Kay

Objectives

The relevant framework objectives are:

- add, subtract, multiply and divide integers (key objective)
- use formulae from mathematics and other subjects; substitute integers into simple formulae (key objective)
- carry out more difficult calculations effectively and efficiently using the function keys for sign change, powers, roots and fractions; use brackets and the memory.

Activity description

The pupils solved a problem that involved substituting numbers into a formula. They used calculators to reinforce decisions about which of the calculator functions should be applied in a given situation.

Commentary

Although this is not explicit in Kay's work, one characteristic of performance at level 7 is demonstrating a generalised understanding about the effects of the operations of multiplication and division with numbers of any size.

In this example Kay has shown an understanding of the rules of operations by deciding which calculator functions to apply to solve the problem. This is typical of performance at level 7 in this aspect of Ma2.

Items of work

Kay decides which calculator functions to apply for this exercise

The acceleration of the masses M and m is given by the formula $a = \frac{mMg}{m+M}$ where g is the acceleration due to gravity.

Use your calculator to find a (in m/s^2) when M = 0.1635kg, m = 0.00352kg, given that g = $9.8 m/s^2$ (give the answer correct to 2 significant figures).

$$a = \frac{mMg}{m+M}$$

$$a = \frac{0.00352 \times 0.1635 \times 9.8}{0.00352 + 0.1635}$$

$$a = 0.03376$$

$$a = 0.034 \ m/s^2 \ (2sf)$$

Keyed as : [0.00352 × 0.1635 × 9.8] ÷ [0.00352 + 0.1635] =

About this entry

Subject:	mathematics
Year:	8
Key stage:	3
NC programme of study:	Ma2p3o, Ma2p4a, Ma2p4b, Ma2p5f
Attainment target:	Ma2
Evidence for:	level 7

Framework for teaching mathematics − objectives:

- Add, subtract, multiply and divide integers.
- Substitute integers into simple formulae.