

SAVE A BABY KANGAROO

1. OVERVIEW

To the teacher: This case places the pupil in a real-life scenario in which an attempt is made to save a young orphaned animal. As the many factors involved in feeding and nurturing it are explored, the mathematical skills required emerge gradually as essential tools. The challenge is engaging, and accessible to pupils of all ability levels.

Lesson Outlines are provided for teachers familiar and confident with this type of problem-based learning, while a detailed lesson sequence and further support materials are offered for those less familiar. This case is designed to be used to explore a range of mathematical areas and concepts and should not be attached to a traditional classroom topic. It could be used effectively after a topic such as ‘handling data’ or ‘numeracy and mathematics’ for either application or consolidation of the skills developed there or as an illustration of how several skills from that area can be applied to the one broad problem. Please read the important information under Organisation and Pedagogy before beginning your lesson planning.

To the pupil: “Summer vacation arrives, and you are visiting your cousins on a large sheep station in outback Australia. One afternoon while out horse riding you find a female kangaroo that has just been killed on the road by a passing truck. Her joey is still alive in her pouch. It is just twelve centimetres long and weighs sixty grams. Will you be able to save its life?”

2. MATHEMATICAL CONTENT

The **mathematical activities** involved in this case are of three principle types: **planning and organising** (as in finding the optimum feeding regime for the joey); **exploring and discovering relationships** (as in considering the many variables to determine type and amount of milk formula); **interpreting and estimating** (as in using tabular and graphical data to determine the joeys species and age).

The **mathematical content** includes: **numeracy and mathematics** (size of number, accurate calculation, measurement and units); **space, shape and measure** (length and weight of joey); **number** (recall and use of number facts); **handling data; using and applying mathematics and thinking skills; ICT**. There is no essential pre-learning other than mathematical understanding and skills a pupil could reasonably be expected to have at this level.

3. ORGANISATION AND PEDAGOGY

This case is appropriate for all pupils and groups of this age.

Class work will include both individual and group work in most lessons. Class discussion at the beginning and end of lessons will review findings and confirm or remind of both short and long term goals of the activities.

The role of the teacher in this case is fourfold: to ensure that the aim or purpose of the activities is clear; to give the pupils a focus and context for their work; to organise and work with pupils on individual or group tasks to ensure that all are completed effectively; to draw together findings and results to ensure that pupils remain aware of what has been achieved and learned in preparation for subsequent activities and finally to provide materials as needed for activities. Homework is planned to build on and allow pupils to continue and complete classroom tasks, encourage their creative endeavours and complete reflective activities to ensure they remain aware of the focus and purpose of activities and the mathematics used. While this case may lead the teacher to consider some new approaches to the teaching and learning of mathematics, it is important – as always – to retain flexibility and exercise individual professional judgement on aspects such as content, timing, sequencing of activities, group and individual tasks, assessment, and adapting all tasks to meet the needs and abilities of the pupils.

4. RESOURCES

Case materials are provided from a website in a form that can be loaded onto the school intranet. Teachers are provided with lesson plans, pupil workbooks and data sheets; pupils receive individual images of ‘their’ joey that they will measure to determine age and species. Other support for teachers includes specific advice on each activity as well as vignettes, included as pop-up screens, written by trialling teachers that raise relevant and important issues of teaching and learning. These issues are different from what teachers may have experienced before in their mathematics teaching.

Pupils will require access to computers for data from the website or intranet and (if they choose) to graph and display data. Materials will be needed to draw graphs and to display information on posters. An optional home activity invites pupils to make biscuits.