Using and Applying Mathematics

Topic-based worksheets for Key Stage 2
(ages 8 – 11)

Centre for Innovation in Mathematics Teaching
University of Exeter

Sponsored by Corus Group plc
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Foreword

This work has been sponsored by Corus as part of the Company’s education support programme. Corus is heavily committed to training and re-training at all levels and the company is acknowledged as a leader in the development of innovative approaches to education and training, working in close collaboration with universities, colleges, schools and the professional institutions.

Corus is one of the world’s largest and most efficient metal producers. For example, it makes carbon and stainless steels for use in nearly all types of products, ranging from paper clips and cars to oil rigs and bridges. It caters for industries and services as diverse as transportation, construction, engineering, packaging, agriculture, health and many others. Corus is also a major aluminium producer.

The Company is continually modernising its plants and operations, and ranks as one of the major steel producers in the world. It is committed to a policy of continuous improvement in efficiency, product quality and environmental control.

Each year, Corus invests considerable time and energy in the provision of support to schools and pupils. This covers a variety of activities, including, for example, work experience schemes for pupils and teachers, sponsorship of curriculum developments, the production of educational resource materials and management training for educationalists. Sponsorships are offered each year to school leavers for a variety of degree courses. There is also a continuing need for well-educated craft and production personnel, technicians and office staff.

The Company’s major UK steelmaking plants are located on Teesside, in South Yorkshire, North Lincolnshire and South Wales, with smaller works at other locations throughout the country.

Corus is a high-technology company with excellent training facilities and ample opportunities for personal development and progress through its management system. Movement within the various branches and functions of the company is encouraged as are contacts with relevant academic and professional bodies.

Information on other Corus teacher support resources can be obtained from

Corus Education Resources
PO Box 10
Wetherby
LS23 7EL
(Tel: 01937 840243)

Copies of the catalogue and the reference guide linking the Corus teaching resources with the National Curriculum are available at no cost.

Full details of all resources, including internet learning resources, are also available from

www.coruseducation.com
Introduction

This resource pack provides useful, relevant and motivating material for mathematics teaching up to Key Stage 2.

It particularly emphasises the attainment target

**Using and Applying Mathematics**

but is also relevant to many components in the other attainment targets

**Number**

**Shape, Space and Measures**

**Handling Data**

References are made to the current National Numeracy 'Framework for Mathematics' and in particular the yearly teaching programmes. The reference notation is described in the section National Numeracy Strategy: Yearly Teaching Programme References

Please note that you are free to photocopy any of the resources for classroom use in your school. Some of them you might like to use without changes but others you might well wish to adapt to suit your style of presentation and your particular pupils.

Our main aim throughout has been to show how and where mathematics is used in practical real-life situations. Situations which readily provide suitable contexts can often be difficult to find. Too often in standard texts, pupils are asked to perform tasks and activities for their own sakes. Whilst we are not criticising this approach, we do firmly believe that, from a young age, pupils should both realise that maths is important in the outside world, and be able to perform calculations to support this. We very much hope that this pack will help with fulfilling these objectives.
This teaching resource is divided into six broad topics, namely

Cars

Entertainment

Environment

Home

Sports

Travel

For each topic, there is an introductory section giving National Numeracy Framework references and any other overview felt necessary. Generally each resource can be used on its own to supplement your normal workbooks, etc. but you might also find it helpful sometimes to take a particular topic and study it in some depth by using a number of the sheets. Please note, though, that the level of mathematics needed may vary quite considerably, with some material an extension to Key Stage 2.

Also given for each topic is a set of answers. For many of the tasks there are not precise answers but where helpful, we have given answers or sample answers.

The material for this resource has been developed by David Burghes, John Hiscocks and Frank Tapson at the Centre for Innovation in Mathematics Teaching, University of Exeter and prepared by Liz Holland.

Comments on the usefulness and relevance of this resource would be welcomed and will help CIMT and Corus to evaluate the effectiveness of this type of ongoing support for teachers in the classroom. Please contact

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Year 1

A: Numbers and the number system
   A1  Counting properties of numbers and number sequences
   A2  Place value and order
   A3  Estimating

B: Calculations
   B1  Understanding addition and subtraction
   B2  Rapid recall of addition and subtraction facts
   B3  Mental calculation strategies (+ and −)

C: Solving problems
   C1  Making decisions
   C2  Reasoning about number shapes
   C3  Problems involving 'real life', money or measures
   C4  Organising and using data

D: Measures, shape and space
   D1  Measures
   D2  Shape and space
Year 2

A: Numbers and the number system
   A1 Counting properties of numbers and number sequences
   A2 Place value and order
   A3 Estimating and rounding
   A4 Fractions

B: Calculations
   B1 Understanding addition and subtraction
   B2 Rapid recall of addition and subtraction facts
   B3 Mental calculation strategies (+ and −)
   B4 Understanding multiplication and division
   B5 Rapid recall of multiplication and division facts
   B6 Mental calculation strategies (× and ÷)
   B7 Checking results of calculations

C: Solving problems
   C1 Making decisions
   C2 Reasoning about number shapes
   C3 Problems involving ‘real life’, money or measures
   C4 Organising and using data

D: Measures, shape and space
   D1 Measures
   D2 Shape and space
National Numeracy Strategy: Yearly Teaching Programme References

Year 3

A: Numbers and the number system
   A1 Counting properties of numbers and number sequences
   A2 Place value and order
   A3 Estimating and rounding
   A4 Fractions

B: Calculations
   B1 Understanding addition and subtraction
   B2 Rapid recall of addition and subtraction facts
   B3 Mental calculation strategies (+ and −)
   B4 Pencil and paper procedures (+ and −)
   B5 Understanding multiplication and division
   B6 Rapid recall of multiplication and division facts
   B7 Mental calculation strategies (× and ÷)
   B8 Checking results of calculations

C: Solving problems
   C1 Making decisions
   C2 Reasoning about number shapes
   C3 Organising and using data

D: Measures, shape and space
   D1 Measures
   D2 Shape and space

E: Handling data
   E1 Organising and using data
Year 4

A: Numbers and the number system
   A1 Counting properties of numbers and number sequences
   A2 Place value and order
   A3 Estimating and rounding
   A4 Fractions

B: Calculations
   B1 Understanding addition and subtraction
   B2 Rapid recall of addition and subtraction facts
   B3 Mental calculation strategies (+ and −)
   B4 Pencil and paper procedures (+ and −)
   B5 Understanding multiplication and division
   B6 Rapid recall of multiplication and division facts
   B7 Mental calculation strategies (× and ÷)
   B8 Pencil and paper procedures (× and ÷)
   B9 Checking results of calculations

C: Solving problems
   C1 Making decisions
   C2 Reasoning about number shapes
   C3 Organising and using data

D: Measures, shape and space
   D1 Measures
   D2 Shape and space

E: Handling data
   E1 Organising and interpreting data
Year 5

A: Numbers and the number system
   A1 Counting properties of numbers and number sequences
   A2 Place value and order
   A3 Estimating and rounding
   A4 Fractions

B: Calculations
   B1 Understanding addition and subtraction
   B2 Rapid recall of addition and subtraction facts
   B3 Mental calculation strategies (+ and −)
   B4 Pencil and paper procedures (+ and −)
   B5 Understanding multiplication and division
   B6 Rapid recall of multiplication and division facts
   B7 Mental calculation strategies (× and ÷)
   B8 Pencil and paper procedures (× and ÷)
   B9 Using a calculator
   B10 Checking results of calculations

C: Solving problems
   C1 Making decisions
   C2 Reasoning about number or shapes
   C3 Problems involving 'real life', money or measures
   C4 Organising and using data

D: Measures, shape and space
   D1 Measures
   D2 Shape and space

E: Handling data
   E1 Organising and interpreting data
Year 6

A: Numbers and the number system
   A1 Counting properties of numbers and number sequences
   A2 Place value and order
   A3 Estimating and rounding
   A4 Fractions

B: Calculations
   B1 Understanding addition and subtraction
   B2 Rapid recall of addition and subtraction facts
   B3 Mental calculation strategies (+ and −)
   B4 Pencil and paper procedures (+ and −)
   B5 Understanding multiplication and division
   B6 Rapid recall of multiplication and division facts
   B7 Mental calculation strategies (× and ÷)
   B8 Pencil and paper procedures (× and ÷)
   B9 Using a calculator
   B10 Checking results of calculations

C: Solving problems
   C1 Making decisions
   C2 Reasoning about number or shapes
   C3 Problems involving 'real life', money or measures
   C4 Organising and using data

D: Measures, shape and space
   D1 Measures
   D2 Shape and space

E: Handling data
   E1 Handling data