

Using and Applying Mathematics

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

**Centre for Innovation in Mathematics Teaching
University of Exeter**



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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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National Numeracy Strategy: Yearly Teaching Programme References

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

National Numeracy Strategy: Yearly Teaching Programme References

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 (\times and \div)
- 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 (\times and \div)
- 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

National Numeracy Strategy: Yearly Teaching Programme References

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 (\times and \div)
- B8 Pencil and paper procedures (\times and \div)
- 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

National Numeracy Strategy: Yearly Teaching Programme References

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 (\times and \div)
- B8 Pencil and paper procedures (\times and \div)
- 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

National Numeracy Strategy: Yearly Teaching Programme References

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 (\times and \div)
- B8 Pencil and paper procedures (\times and \div)
- 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