

TOPIC 1 – USING NUMBERS

Week 1: Timetables, charts and money

Objectives & Resources	Lesson Notes
<p>Lesson 1</p> <p>Objectives To be familiar with everyday uses of tables and charts</p> <p>To carry out calculations from information given in tables and charts</p> <p>Resources <i>Pupil Book 1.2, pages 3–9</i> <i>Homework Book 1, section 1.1</i> <i>Plain paper</i></p> <p>Extension Complete the activity <i>Posting a parcel</i> on page 13</p>	<p>Mental Starter</p> <ul style="list-style-type: none"> • Write down the number 60. Why is this number important when we think about time? • How many days are there in each month of the year? • How many seconds are there in two minutes? • How many days are there in three weeks? <p>Main Lesson</p> <ul style="list-style-type: none"> • Data can be shown in various ways such as lists, tables and charts. Can you think of different ways to do this? For example: menus; train timetables; football results. • Make a display of the different ways data can be represented. Explain to your teacher why it is important to be able to read the data correctly. • Read through the examples on pages 7 to 9 of your book. Ask your teacher if you do not understand any of the answers. • Answer <i>Exercise 1A</i>. <p>Plenary Without looking at your work, give some examples of the different tables and charts that can be used to represent data. Can you give examples of when tables have been more or less effective and explain why you think the tables are effective or not?</p> <p>Homework Your teacher will tell you which questions to complete from the <i>Homework Book 1, section 1.1</i></p>

Week 1: Positive and negative numbers

Objectives & Resources	Lesson Notes
<p>Lesson 2</p> <p>Objectives To use a number line to order positive and negative numbers</p> <p>To understand and use the symbols < (less than) and > (greater than)</p> <p>Resources <i>Pupil Book 1.2, pages 14-15</i> <i>Homework Book 1, section 1.2</i> <i>Intervention Workbook 3, pages 20–21</i></p> <p>Extension Complete the challenge <i>Extreme temperatures</i> on page 16</p>	<p>Starter Read the information at the top of page 14 and copy out the number line. Your teacher will pick a number to start on - count down from that number in 3s using the number line. Try again counting up in 4s.</p> <p>Main Lesson</p> <ul style="list-style-type: none"> • Read through the examples on pages 14 and 15 of your book. Ask your teacher if you do not understand any of the answers. • Answer <i>Exercise 1B</i> <p>Plenary Draw a blank number line. Mark 0 and positive and negative numbers. Take it in turns with your teacher to ask and answer questions e.g. $-2 + 5$, $-2 - 3 + 4$ and so on.</p> <p>Homework Your teacher will tell you which questions to complete from the <i>Homework Book 1, section 1.2</i></p>

Week 1: Adding negative numbers

Objectives & Resources	Lesson Notes
<p>Lesson 3</p> <p>Objectives To carry out additions and subtractions involving negative numbers</p> <p>To use a number line to calculate with negative numbers</p> <p>Resources <i>Pupil Book 1.2, pages 17-18</i> <i>Homework Book 1, section 1.3</i> <i>Intervention Workbook 3, pages 20–21</i></p> <p>Extension Complete the problem solving <i>Magic Squares</i> on page 19</p>	<p>Starter 'Addition makes numbers bigger.' When is this statement true? When is it false? 'Subtraction makes numbers smaller.' When is this statement true? When is it false? You may find it helpful to use a number line to explain your answers to your teacher.</p> <p>Main Lesson</p> <ul style="list-style-type: none"> Copy out and complete the pattern below $5 + +1 = 6$ $5 + 0 = 5$ $5 + -1 = 4$ $5 + -2 = \dots$ $5 + \dots = \dots$ $5 + \dots = \dots$ Try again starting with 7. Complete the sentence 'Adding a negative number gives the same result as...' Read through the examples on pages 17 and 18 of your book. Ask your teacher if you do not understand any of the answers. Answer <i>Exercise 1C</i> <p>Plenary Design your own question based on the work you have done in the last two lessons. Give your question to your teacher to try.</p> <p>Homework Your teacher will tell you which questions to complete from the <i>Homework Book 1, section 1.3</i>.</p>

NOTES TO THE TEACHER

Week 1

Lesson 1 - Timetables, charts and money

Mental Starter

Students often forget that they are working in a different base when working with time. For example, they might interpret $7\frac{1}{4}$ hours as 7 hours and 25 minutes instead of 7 hours and 15 minutes. Also, they might tackle 7:55 to 8:10 as a standard decimal calculation, which would give 55 minutes rather than 15 minutes.

Establish that there are 60 seconds in a minute, 60 minutes in an hour, 24 hours in a day, seven days in a week, four weeks (approx.) in a month, 12 months in a year, 365 days in a year (366 in a leap year).

Main Lesson

Show the student a selection of calendars, bus timetables, tables of sports results, television listings of programmes from newspapers and magazines.

Make sure that the student reads each question in Exercise 1A carefully and talk about the mathematics involved. Talk about the details of the context in questions 2 or 3 and address any questions that the student may have about the details and the language used. **More able** students who are confident with simple time and money questions can start with question 4.

For FS or PS questions, encourage her to draw on knowledge of bank statements, credit and debt, and profit or loss accounts; and to try to solve each problem more efficiently, and to experiment with different ways to represent the information provided.

Homework

If the student has all/most questions from Exercise 1A correct then set questions 4, 6 and 7-10 from the *Homework Book 1, section 1.1*

If the student has struggled with Exercise 1A then set questions 1-7 from the *Homework Book 1, section 1.1*

Lesson 2 - Positive and negative numbers

Starter

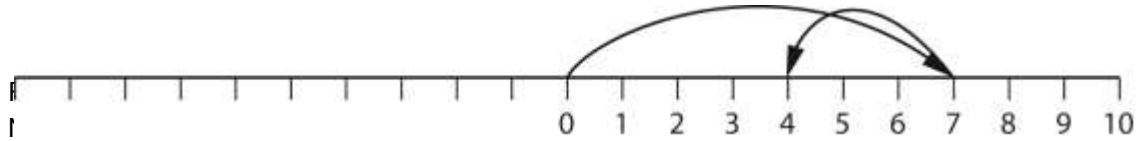
Students often confuse the operation of subtraction and negative numbers as numbers on a number line. This is reinforced by the fact that the sign is the same for both. Encourage the student to visualise the number line when making calculations. This will help her to see the place of negative numbers and the effect of the operation of subtracting both positive and negative numbers; and to discuss the difference.

Main Lesson

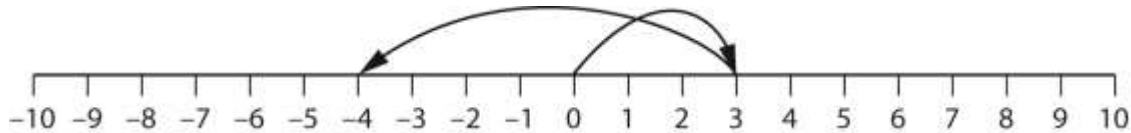
As well as looking at the examples in the book you could draw (horizontally or vertically) a number line, and mark 20 segments on it. Start at the mid-point and number the right half of the line from 0 to 10.

Ask the student how we could use the number line to calculate $7 - 3$.

Establish that we start at 0 and move first in the positive direction for 7, and then in the negative direction for -3 . Mark the number line as shown here.



With practice, she should grasp the idea of extending the line in the negative direction.



Make sure that the student reads each question in Exercise 1B carefully and talk about the mathematics involved. **More able** students who are confident with the simple ordering of numbers, including negative numbers, can start with question 5.

Homework

If the student has all/most questions from Exercise 1B correct then set questions 5-7 and the brainteaser from the *Homework Book 1, section 1.2*.

If the student has made several mistakes on questions from Exercise 1B then set questions 1-5 from the *Homework Book 1, section 1.2*.

If the student has struggled with Exercise 1B then set questions 1-4 from the *Intervention Workbook 3 section 1.8, pages 20–21* and then set questions 1-5 from the *Homework Book 1, section 1.2* if they have gained confidence.

Lesson 3 - Adding negative numbers

Starter

Students often learn mathematical rules without understanding the reasoning behind them. They need a visual image such as the number line and/or an understanding of the patterns that lead directly to the rules; in this case, how we use the four operations with both positive numbers and negative numbers. This will ensure that when they are in stressful situations such as examinations, they can use these images as backup if they are uncertain.

If we add a negative number then the number becomes smaller e.g. $5 + -3 = 2$.

If we subtract a negative number then the number becomes bigger e.g. $5 - -3 = 5 + 3 = 8$.

Main Lesson

Adding a negative number gives the same result as subtracting a positive number.

Make sure that the student reads each question in Exercise 1C carefully and talk about the mathematics involved. **More able** students could focus on the contextual and PS/MR questions 6–8. They could also design their own 3×3 magic square using negative numbers. You could give -2 as the starting point, and tell pupils that the sum of the rows will be three times this.

Homework

If the student has all/most questions from Exercise 1C correct then set questions 5-8 from the *Homework Book 1, section 1.3*.

If the student has made several mistakes on questions from Exercise 1C then set questions 1-6 from the *Homework Book 1, section 1.3*.

If the student has struggled with Exercise 1C then set questions 5-9 from the *Intervention Workbook 3 section 1.8, pages 20–21* and then set questions 1-6 from the *Homework Book 1, section 1.3* if they have gained confidence.