# Adding and subtracting mentally

## National Curriculum attainment target

• Perform mental calculations including large numbers

## Lesson objective

• Perform mental calculations including large numbers

**Previous related lessons**

Unit 1, Week 2, Lesson 1; Unit 1, Week 2, Lesson 2; Unit 5, Week 1, Lesson 4

**Prerequisites for learning**

Pupils need to:

• understand the place value of seven-digit numbers

• add and subtract mentally to and from six-digit numbers

**Vocabulary**

• add, subtract, place value

**Future related lessons**

None

**Success criteria**

Pupils can:

• identify which digit to add or subtract to/from

• identify which digits will not change

• add/subtract mentally

## Getting Started

• Choose an activity from Number – Addition and subtraction.

• Choose a game or activity from *Fluency in Number Facts: Y5/Y6* – Addition and subtraction.

Collins Connect
Year 6, Unit 9, Week 1

## Teach

**Resources**

mini whiteboard, pen and eraser (per child); 1–6 dice (per class)

• Display: the Spinner tool and set it up to show hundred thousands, ten thousands, thousands and hundreds. Say: **In this lesson we are going to be using our mental addition and subtraction skills.**

• Write on the board: 1 000 000. Say: **One million is our start number. Write it on your whiteboards.**

• Say: **First we need to spin the spinner.** Spin the spinner and read the place value to the class, e.g. hundred thousands.

• Say: **Next we need to roll the dice.** Roll the dice and read the digit to the class, e.g. 4.

• Say: **Now we put the place value and the digit together. As we rolled 'hundred thousands' and the digit 4, we need to add 400 000 to our start number.**

• Ask: **Which digit do we need to focus on to add this number to one million?** Ask a pair to share their answer.

• Say: **Add the number mentally and write down the answer.** Check children's answers and write the answer on the board underneath 1 000 000.

• Say: **This is now our new start number.**

• Choose a child to spin the spinner and roll the dice. Say the number that needs to be added.

• Say: **Point to the digit that you need to focus on when adding this number.** Ask a child to explain how they know this is the correct digit.

• Ask children to add it on mentally, check their answers and write the new number on the board.

• Repeat this several times. As you work through the activity, encourage children to think about which digits change and which digits stay the same, according to the number being added.

• Say: **Now let's make it more challenging. This time we are going to roll the spinner and the dice twice.** Ask a child to roll them twice and write the place values and the digits on the board.

• Use the digits and the place values in the order spun and put them together to make a number, e.g. 300 200.

• Ask: **How will you add this number on mentally?** Ask a pair to share their answer.

• Say: **Add the number on mentally and write down the answer.** Check children's answers and write the answer on the board.

- Repeat several times. Again, as you work through the activity, encourage children to think about which digits change and which digits stay the same, according to the number being added.
- Display: the Spinner tool. Repeat, this time using subtraction. As you work through the activity, encourage children to think about which digits change and which digits stay the same, according to the number being subtracted.

## Individualised Learning

Refer to Activity 1 from the Learning activities on page 358.

**Pupil Book 6C** – Page 4: Mental Addition and Subtraction
Resources: paper clip and pencil – for the spinner (per child/pair); 1–6 dice (per child/pair)

**Progress Guide 6** – Support, Year 6, Unit 9, Week 1, Lesson 1: Race to 500 000
Resources: paper clip and pencil – for the spinner (per child/pair); 1–6 dice (per child/pair)

## Plenary

- Ask any children who have worked on Challenge 2, 3 in the Pupil Book to share their variations of the game with the class.
- Discuss each game as a class. Ask: **Do you think this is an improved version?**
- Record the aspects of the games that the class think are better. These could be used to develop a class version.
- If no one has worked on Challenge 2, 3, read it out to the class. Ask children to discuss it in pairs or threes and make suggestions for variations to the games.

**Homework Guide 6**
Year 6, Unit 9, Week 1, Lesson 1: Mental Subtraction

## Overcoming Barriers

- Children will find mental calculation challenging if they are not confident with the place value of the numbers they are working with. They need to understand which digits will change and which will stay the same according to the number being added or subtracted.