

SPRINGBOARD 6 LESSON 12

ADDITION AND SUBTRACTION 1

TOTAL TIME

 A circular icon with the number '30' in white on a red background, with the word 'MINUTES' written in red below it.
Objective:

- Choose and use the appropriate operations of addition and subtraction to solve problems, explain methods and show working

Vocabulary:

- more than
- altogether
- how many

By the end of the lesson children should be able to:

- associate key words such as 'more than', 'altogether' and 'how many', with the correct operation needed to solve real life problems.

Resources:

- OHT 12.1
- Resource Sheet 12.1
- Resource Sheet 12.2
- whiteboards and pens

ORAL AND MENTAL STARTER

 A circular icon with the number '10' in white on a red background, with the word 'MINUTES' written in red below it.

Give out Resource Sheet 12.1.

Q: Altogether how many Year 6 children attend Number Line Lane Primary School and Roundup Road Middle School?

Take responses and identify the key word in the question. Establish that the calculation is an addition.

Q: What other questions could we ask that will involve addition?

Q: What questions can you ask that involve subtraction?

Take responses and list the different key words that the children have used in their question.

Show the children OHT 12.1 and give each pair of children two words from the list of words on OHT 12.1.

Ask them to make up two questions using the words and the information on Resource Sheet 12.1. Children write their questions on whiteboards.

Children swap whiteboards and answer each other's questions.
Discuss the questions and identify the key words and the calculation used for each question. Check answers and correct any errors.

MAIN TEACHING ACTIVITY



Ask the children to read Question 1 on Resource Sheet 12.2. Ask the children what information they are given and what they are asked to find out.

Use the following questions to develop children's understanding of the question, and discuss their responses and reasons.

Q: Will the answer be more than or less than 1470?

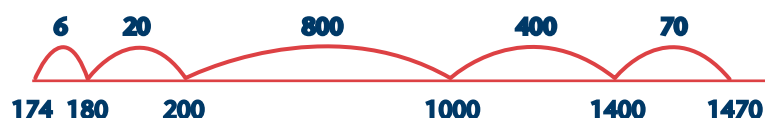
Q: Which operation do we need to carry out?

Q: How did you decide this?

Q: Can we ask the question a different way?

Agree on the correct operation and ask children to carry out the calculation $1470 - 174$ on their whiteboards. Compare the different strategies used and discuss the efficiency of each method.

Remind children who are not confident with a compact written method that the empty number line can be used in the written test. Quickly show the empty number line and work through the method of counting up from 174.



Establish that the answer is 1296.

Discuss how to reduce the number of steps needed to increase efficiency.

Remind the children that addition is the inverse of subtraction, and can be used to check the answer by calculating $1296 + 174$.

Ask the children to work through Questions 2 and 3. Discuss each problem and identify the operation required. Explore children's method and get them to check their answers using the inverse operation.

PLENARY

Discuss Question 4 on Resource Sheet 12.2.

Ask different children to read out one piece of information.

Q: What is the question asking us to calculate?

Establish that for this problem we need to work out the answer in stages.

Ask the following questions to identify the stages.

Q: Who goes to the cinema?

Q: How much does it cost the 2 adults to go?

Q: How much does it cost the 3 children to go?

Q: How much does it cost for 2 adults and 3 children to go to the cinema?

Give out calculators and ask the children to record their calculation on their whiteboards.

Collect answers and discuss methods and recordings. Establish that the cost is £10.90.

Q: How many ice creams are bought? What is the cost?

Q: What else is bought?

Establish that a bag of popcorn and 3 cans of cola are bought and that the total cost of the ice creams, drinks and popcorn is $£1.50 + £1.80 + £1.10 = £4.40$.

Collect all the costs and ask:

Q What change will there be from the £20?

Agree that the change is $£20 - (£10.90 + £4.40) = £4.70$.

Ask the children for the steps they have gone through to work out the problem.

Remind the children that some test questions have a box where they record the calculations they do, even when they have a calculator.

Remember:

- Read the question carefully and look for key words to help you understand the problem.
- Decide what information you need for your calculations.
- Use the calculation method you understand and write down the calculation.

**LESSON 12 RELATED TEST QUESTION
1998 TEST B (CALCULATOR PAPER)**

5 One length of a swimming pool is 25 metres.



(a) How many lengths are there in a 150 metre race?

1 mark

Six children swim a 50 metre race.

Lane	Name	Time in seconds
1	Bryn	92.4
2	Craig	86.3
3	Fiona	90.4
4	Harun	85.1
5	Jody	84.7
6	Dean	89.2

(b) Who finished first?

1 mark

(c) How many seconds faster was Dean than Fiona?

seconds

1 mark

GUIDANCE FROM MARK SCHEME

Question	Requirement	Additional Guidance
5a	6	
5b	Jody	Accept 84.7 or Lane 5 or 5.
5c	1.2	

ANALYSIS OF CHILDREN'S ANSWERS

- The questions were accessible to the majority of children and most children working at level 4 could extract the required information from the simple tables.
- Children's interpretation and use of the information they were given was less secure. Some children responded with values that were not derived from the table; other children gave wrong answers as they made false assumptions and had not read the question correctly.

**LESSON 12 RELATED TEST QUESTION
1999 TEST A (NON-CALCULATOR PAPER)**

3 This table shows the cost of sending a letter.

Mass	Cost in pence	
	first class	second class
up to 60g	26	20
61g to 100g	39	31
101g to 150g	49	38
151g to 200g	60	45
201g to 250g	70	55

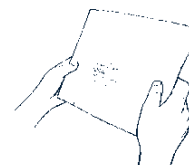
Paul is sending a letter.
It costs 38p second class.

(a) How much would it cost him to send it first class?

p

1 mark

Jenny has a letter with a mass of 170g.



(b) What does it cost to send it first class?

p

1 mark

Question	Requirement	Additional Guidance
3a	49	Accept £0.49p
3b	60	Accept £0.60p

For 3a and 3b, accept unambiguous indications of answers on the diagram.

If 49 and 60 are indicated on the diagram but it is not clear to which parts of the question they refer, then award the mark for 3b only.

IMPLICATIONS FOR PLANNING

- Children should be taught to read questions carefully, and be given the opportunity to discuss the information in the question to help them identify what the question is asking.
- Use past test questions to generate associated questions, for example 'A letter costs 60p to send first class – what does it weigh?' Incorporate the interrogation of secondary data in lesson plans.
- During the main part of the lesson introduce children to the language used in test questions. Encourage them to generate their own questions using this language.