Lesson 7　　Word problems

Objectives

Consolidate the rapid recall of multiplication facts up to 10 × 10, and quickly derive associated division facts (Y7)

Vocabulary

product

Oral and mental starter　　　　　　　　10 minutes

Practise the recall of multiplication facts up to 10 × 10. Build on the main teaching of lesson 2.

Discuss with pupils strategies to help them learn multiplication facts, for example:

- 7 × 8 = (7 × 7) + 7; 7 × 8 = (5 × 8) + (2 × 8)
- 7 × 8: double 7 (14), double 14 (28) and double 28 = 56
- Doubling the 3 times table gives the 6 times table.

Demonstrate patterns, links between related facts and squares.

Extend questioning to include division, drawing out links:

$$8 × 7 = 56 \qquad 7 × 8 = 56 \qquad 56 ÷ 8 = 7 \qquad 56 ÷ 7 = 8$$

Q How many sixes are there in 54?

Ask further similar questions.

Apply this knowledge to simple mental problems.

Q It costs 15p to park a car for 8 minutes. How much will it cost to park for 16 minutes? ... 24 minutes? ... 40 minutes?

Q Six eggs cost 70p. How much will 30 eggs cost?

Main teaching　　　　　　　　35 minutes

Objectives

Solve word problems (Y7)

Solve simple problems about ratio and proportion (Y7)

Vocabulary

prime, consecutive
litre, metre
euro

Resources

OHTs 7.1a and b and 7.2 (Plenary)

class set of calculators

Springboard 7 Unit 15

Resource sheet 7.3 (Plenary)

OHT 7.1a and **b** list a set of word problems. Questions 1–4 can be solved in one step. The rest are multi-step problems.

Select a problem. Ask pupils to read the question. Clarify any vocabulary. Through questioning, help pupils to build up a strategy to solve the problem.

Q What am I being asked to do/calculate?

Q What information am I given?

Encourage pupils to summarise this by writing down or marking key words or numbers.

Q What calculation do I need to do?

Insist that pupils write down the calculation, for example 56.7 × 9.

Q How will I do that calculation: in my head, by writing or using a calculator?

Q What is the answer? Does it make sense? How can I check it?

To give pupils confidence, ask them to work in pairs and to pick two problems to solve. Clarify any vocabulary.

Invite a pair to explain their solution. Sort out any errors or misconceptions using other pupils' responses.

Move on to further questions.

Problems involving money and other real-life situations are included in Springboard 7 Unit 15 pages 491 and 492.

The Framework supplement of examples pages 2–20 list a range of suitable problems.

Plenary　　　　　　　　15 minutes

By the end of the lesson

pupils should be able to:

- solve a range of word problems.

Framework supplement of examples pages 2–20

Level 4

Pick one of the multi-step questions on **OHT 7.1a** and **b**.

Invite pupils to describe the process of solving the problem.

Emphasise the need to:

- write down the calculation before completing it, especially when using a calculator;
- interpret the answer in the context of the question;
- check the answer;
- include the correct units in the answer.

You may want to use the adapted test question on **OHT 7.2** to consolidate the work. **Resource sheet 7.3** lists some questions taken from mental tests.

Problems

1   In a school hall there are 38 chairs in a row.
How many chairs are there in 23 rows?

2   A group of 534 people is going on a coach trip.
Each coach can carry 52 people.
How many coaches are needed?

3   Find the cost of 208 bottles of cola at 35p
per bottle.

4   I have cut 65 cm from a 3.5 m length of rope.
How much rope is left?

5   How many 28p stamps can I buy for £5?
How much change will I get?

6   Six friends went to a restaurant.
The total cost of the set menu for the group
was £75.
How much would the set menu cost for eight
people?

7   For every eight biscuits in a box, five of them
are chocolate.
There are 40 biscuits in the box.
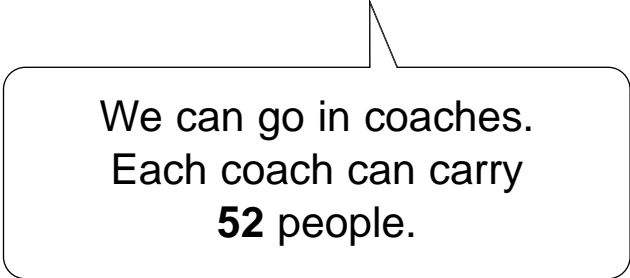How many of them are chocolate biscuits?

Problems

8 When a travel agent changes money he charges
£2 and then gives 1.5 euros for each £1.
I have £50 to change.
How many euros will I receive?

9 A soup recipe uses four large carrots in each $\frac{1}{2}$
litre of soup.
How many large carrots do I need to make
3 litres of soup?

10 The sum of two prime numbers is 45.
What are the numbers?

11 Find two consecutive numbers with a product
of 1406.

12 In a school, three classes each have 28 pupils,
one class has 29 pupils and four classes each
have 30 pupils.
How many pupils are there altogether?
What is the mean class size?

Coaches

(a)   A club wants to take 3000 people on a journey to London.

The club secretary says:

> We can go in coaches.
> Each coach can carry
> **52** people.

How many coaches do they need for the journey?
Show your working.   2 marks

(b)   Each coach costs £420.

How much is each person's share of the cost?

2 marks

Mental mathematics questions

1 Multiply twelve by thirty.

2 What is forty-two divided by six?

3 What is twenty-one divided by three?

4 What is one quarter of thirty-two?

5 How many five-pence coins make forty-five pence?

6 A pen costs three pounds forty-nine. I buy two pens.
How much change do I get from ten pounds?

7 What is the cost of four birthday cards at one pound
and five pence each?

8 What is the cost of five cassettes at one pound
ninety-nine pence each?

9 A tape costs three pounds ninety-nine.
How much would five of these tapes cost?

10 Two tickets cost eight pounds.
How much do five tickets cost?

11 A bag of oranges costs one pound forty-nine pence.
How many bags could you buy with ten pounds?

12 Gary collects ten-pence coins. Altogether he has
twelve pounds.
How many ten-pence coins is that?