

N1.7

Multiplication and division facts and $TU \times U$

objectives

- Recall multiplication facts to 10×10 and derive associated division facts.
- Use a written method to calculate $TU \times U$.

starter

As a class, recite the eight times table, forwards and backwards. Ask a few random questions, varying the wording.

Vocabulary

multiplied by
divided by
product
multiple
remainder

Q What is 32 divided by 8?

Q What is the product of 5 and 8?

Q What is the next multiple of 8 after 40?

Q How many eights make 56?

Q What is the remainder when 50 is divided by 8?

Discuss ways to remember awkward facts. For example, to remember ten times a number is always easy. To find five times a number is also easy, as it is half of ten times the number. For example, 10 times 8 is 80, so 5 times 8 is half of 80, or 40.

Remind the class that they can always work out eight times a number by starting with twice the number, doubling it to get four times the number, and doubling again to get eight times the number.

main activity

Vocabulary

commutative

Resources

OHT N1.7a
counting stick
ITP *Multiplication grid*
(optional)

Use a counting stick and count along it and back again in multiples of 3. Then chant the three times table forwards and backwards: 'one three is three, two threes are six, three threes are nine, ...'.

Show pupils how they can use doubling to work out the six times table from the three times table by completing **OHT N1.7a**, working across the rows. Ask questions such as:

Q What is 3 multiplied by 5? What is 6 multiplied by 5?

Q How many threes make 24? How many sixes make 24?

Do this first with the OHT in place. Use the counting stick to practise counting along it and back again in multiples of 6. Remove the OHT and continue the questioning. Remind pupils to use their knowledge of the three times table and doubling strategies if they cannot remember a fact in the six times table.

Remind pupils of the commutative law of multiplication: seven twos are the same as two sevens. Remind them that if they know a fact one way round, they know it the other way round as well.

Build up the seven times table on the board, using facts that pupils already know. Chant the table, forwards and backwards.

Remind the class that they know how to multiply a number by 10 or 100, and that the digits will move one or two places to the left accordingly.

Q How could we multiply a number by 20?

Demonstrate that $7 \times 20 = 7 \times 2 \times 10 = 14 \times 10 = 140$.

Q How could we multiply a number by 60?

Demonstrate that $8 \times 60 = 8 \times 6 \times 10 = 48 \times 10 = 480$.

Q How could we multiply a number by 600?

Demonstrate that $9 \times 600 = 9 \times 6 \times 100 = 54 \times 100 = 5400$.

You could, if you wish, use the ITP *Multiplication grid* downloaded from www.standards.dfes.gov.uk/numeracy to introduce pupils to multiplication in this part of the lesson. Select options and ask questions similar to those below.

Write $7 \times 53 = 53 \times 7$ on the board.

Q What is an estimate of the answer?

Establish that the answer will lie between $7 \times 50 = 7 \times 5 \times 10 = 350$ and $7 \times 60 = 7 \times 6 \times 10 = 420$. It will be closer to 350 than to 420, since 53 is closer to 50 than to 60.

Point out that 53 can be written as $50 + 3$. Draw a grid on the board.

x	50	3
7		

x	50	3
7	350	21

Work through the left-hand grid with the class to get the right-hand grid. Ask:

Q How can we get the answer to 53×7 from the grid?

Add 350 and 21 mentally to get the answer 371. Work through one or two more examples, e.g. 37×4 , 72×6 . Explain that the grid can be used as a jotting to support or explain a mental calculation.

Say that they may be able to do simple examples mentally without writing anything. Try 13×4 and 16×6 as mental calculations.

other tasks

Springboard 7

Units 6 and 15

Unit 6 section 2: Mental calculations

3 Multiplying in your head using partitioning page 220

Unit 6 section 5: Multiplication

1 Multiples of 6, 7, 8 and 9 page 231

3 Multiplication for $TU \times U$ page 232

Star challenge 9: Little problems page 233

Unit 6 section 6: Division

1 Division page 235

2 Ways of asking the same thing page 235

Unit 15 section 3: Multiplication – written methods

1 $TU \times U$ page 482

plenary

Resources

100-square or
OHT N1.2b
mini-whiteboards

Show **OHT N1.2b**, a 100-square. Ask pupils to use their whiteboards and to answer questions such as these.

Q I am thinking of a multiple of 8 lying between 50 and 60. What is it?

Q I am thinking of a multiple of 9 lying between 30 and 40. What is it?

Q I am thinking of a multiple of 7 that is greater than 40 and less than 50. What could it be?

Invite individual pupils to justify their answers by asking:

Q How do you know?

Expect them to justify by stating the relevant multiplication or division fact: 'I know that 56 is a multiple of 8 because $8 \times 7 = 56$ and $56 \div 8 = 7$.'

Remember

- Use multiplication facts that you know to work out other multiplication facts.

$1 \times 3 = \square$

$2 \times 3 = \square$

$3 \times 3 = \square$

$4 \times 3 = \square$

$5 \times 3 = \square$

$6 \times 3 = \square$

$7 \times 3 = \square$

$8 \times 3 = \square$

$9 \times 3 = \square$

$10 \times 3 = \square$

$1 \times 6 = \square$

$2 \times 6 = \square$

$3 \times 6 = \square$

$4 \times 6 = \square$

$5 \times 6 = \square$

$6 \times 6 = \square$

$7 \times 6 = \square$

$8 \times 6 = \square$

$9 \times 6 = \square$

$10 \times 6 = \square$