

KS2 Maths Workshop

23rd January 2024

Year 3

Pupils should be taught to:

- recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
- write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
- solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects

Year 4

Pupils should be taught to:

- recall multiplication and division facts for multiplication tables up to 12×12
- use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers
- recognise and use factor pairs and commutativity in mental calculations
- multiply two-digit and three-digit numbers by a one-digit number using formal written layout
- solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects

Year 5

Pupils should be taught to:

- identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 numbers
- know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers
- establish whether a number up to 100 is prime and recall prime numbers up to 19
- multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
- multiply and divide numbers mentally, drawing upon known facts
- divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context
- multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000
- recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)
- solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes
- solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
- solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates

Year 6

Pupils should be taught to:

- multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
- divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
- divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context
- perform mental calculations, including with mixed operations and large numbers
- identify common factors, common multiples and prime numbers
- use their knowledge of the order of operations to carry out calculations involving the 4 operations
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- solve problems involving addition, subtraction, multiplication and division
- use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

1

In this grid, there are four multiplications.

Write the **three** missing numbers.

| | | | | |
|---|---|----|---|----|
| 4 | × | 8 | = | |
| × | | × | | |
| 3 | × | | = | 21 |
| = | | = | | |
| | | 56 | | |

| | | | | | |
|-------|--|--|---|---|---|
| | | | 8 | 3 | 6 |
| × | | | 2 | 7 | |
| <hr/> | | | | | |

$$9 \times 41 =$$

| | | | | | | |
|-------|--|--|---|---|---|---|
| | | | 3 | 4 | 6 | 8 |
| × | | | 6 | 2 | | |
| <hr/> | | | | | | |

$$213 \times 0 =$$

$$25.34 \times 10 =$$

$$101 \times 1,000 =$$

19

A machine pours 250 millilitres of juice every 4 seconds.

How many **litres** of juice does the machine pour every **minute**?

Show
your
method

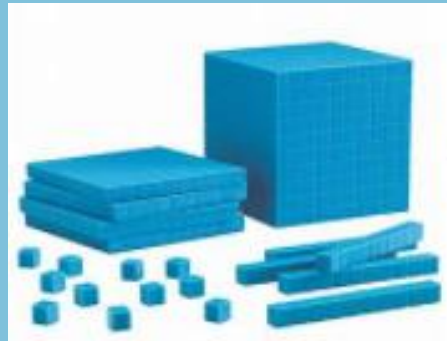
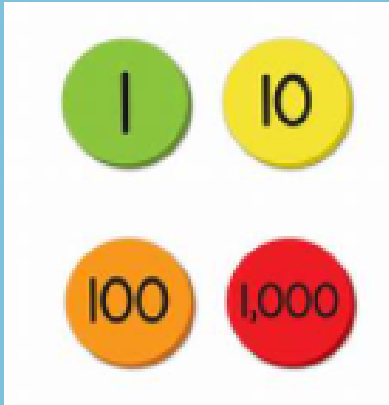
litres

Concrete

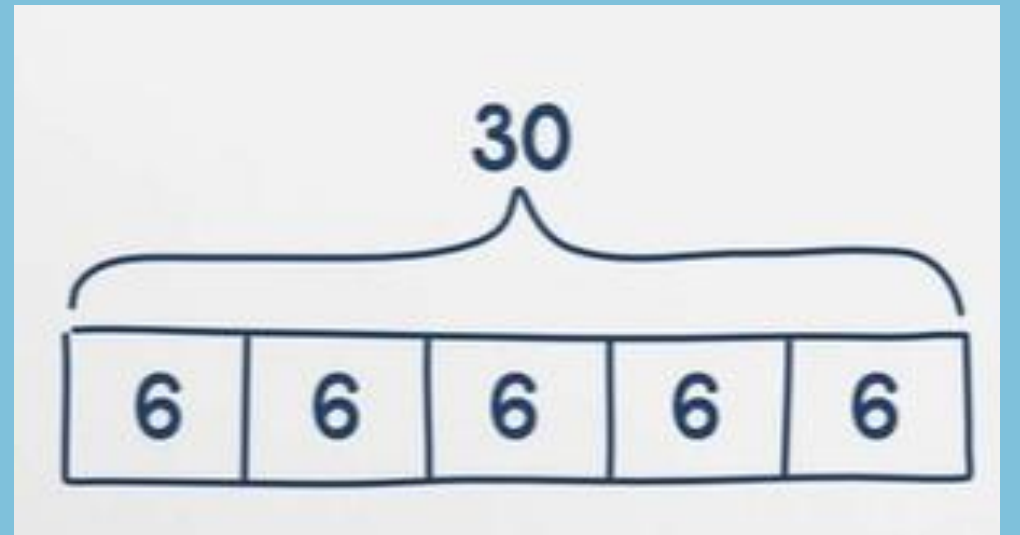
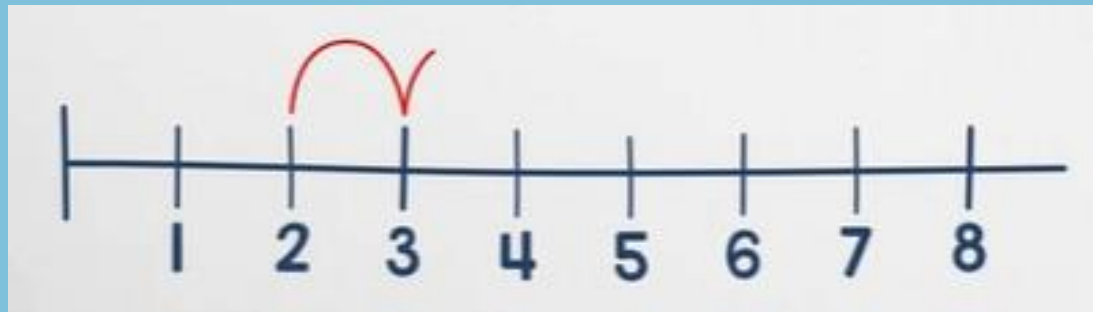
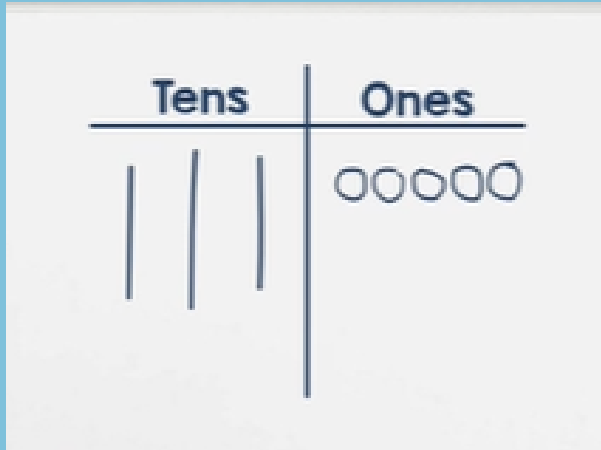
Pictorial

Abstract

Concrete



Pictorial



Abstract

$$7 + 5 = ? \quad 34 - 12 = ?$$

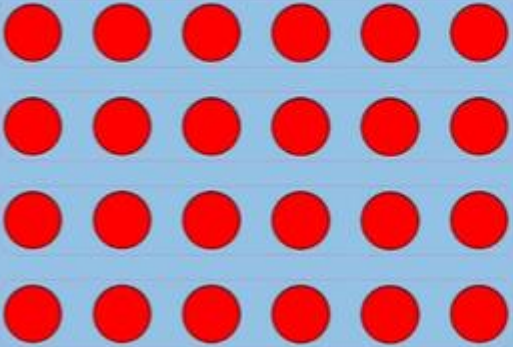
$$3a + 5 = 17$$

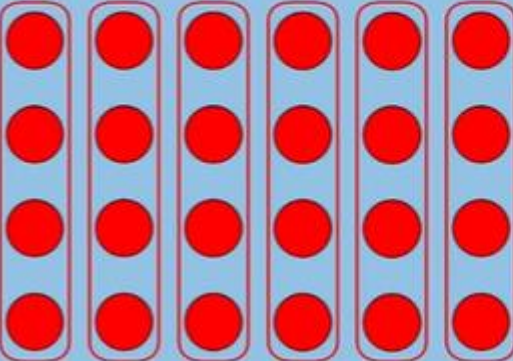


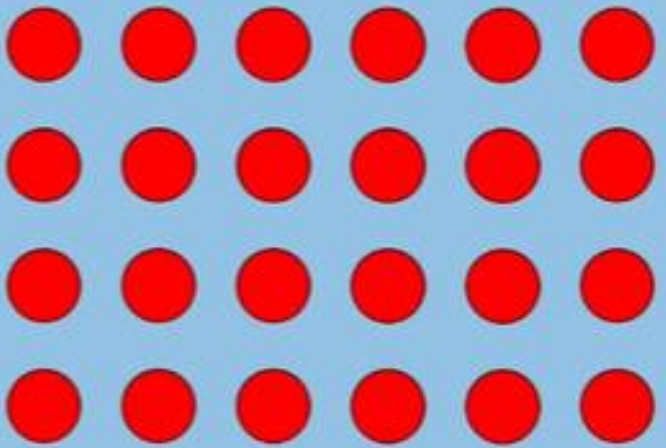
$$4 \times 3 = 12$$

Arrays

Muffins come in boxes of 6. Peter buys 4 boxes of muffins. How many muffins does he buy altogether?

| Model | Calculations |
|---|----------------------|
|  | $6 + 6 + 6 + 6 = 24$ |

| Model | Calculations |
|---|--|
|  | $6 + 6 + 6 + 6 = 24$ $4 + 4 + 4 + 4 + 4 + 4 = 24$ |

| Model | Calculations |
|--|--|
|  | $6 + 6 + 6 + 6 = 24$ $4 + 4 + 4 + 4 + 4 + 4 = 24$ $6 \times 4 = 4 \times 6 = 24$ |

Grid Method


23 x 6

| Model | | Calculations | |
|---|--|--------------|--|
| \times |  | \times | $\begin{array}{r} 20 \quad 3 \\ \hline 6 \quad 120 \quad 18 \end{array}$ |
|  |  | | |
|  |  | | |
|  |  | | |
|  |  | | |
|  |  | | |
|  |  | | |
| | | |  |

01:58

Grid Method

$$35 \times 4$$

| Model | | Calculations | |
|-------|---|--------------|--|
| x | _____ ○○○○○○ | x | $\begin{array}{r} 30 \ 5 \\ 4 \hline 120 \ 20 \end{array}$ |
| 00 |  | 4 | $\begin{array}{c} 140 \\ / \quad \backslash \\ 120 \quad 20 \end{array}$ |
| 000 | | | |
| 0000 | | | |

Formal Column Method

$$35 \times 4$$

| Model | | |
|----------|--|--|
| Hundreds | Tens | Ones |
| |  |  |

| Calculations |
|---|
| $\begin{array}{r} 23 \\ \times 6 \\ \hline \end{array}$ |

| Model | | |
|--|--|--|
| Hundreds | Tens | Ones |
|  |  |  |

| Calculations |
|---|
| $\begin{array}{r} 23 \\ \times 6 \\ \hline 138 \\ \hline \end{array}$ |

Formal Column Method

13 x 15

| Model | | Calculations | |
|-------|--|--|--|
| | | $\begin{array}{r} \times \quad 10 \quad 3 \\ 10 \quad \quad 100 \quad 30 \\ 5 \quad \quad 50 \quad 15 \\ \hline 100 \\ 30 \\ 50 \\ + 15 \\ \hline 195 \end{array}$ | |

01:27

| Model | | Calculations | |
|-------|--|--|--|
| | | $\begin{array}{r} \quad \quad 13 \\ \times \quad 15 \\ \hline 15 \\ 50 \\ 30 \\ + 100 \\ \hline 195 \end{array}$ | |

02:26