



Years 3 & 4 Maths Workshop

Multiplication

Expectations in Multiplication & Division

Year 3 vs. Year 4

Multiplication & Division

Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.

I can recall and use multiplication and division facts for the 3, 4 and 8 times tables.

Write and calculate mathematical statements for multiplication and division using the multiplication tables that he/she knows, including for two-digit numbers times one-digit numbers, using mental methods and progressing to formal written methods.

I can calculate multiplication and division problems, both mentally and in writing, using the times tables, including two digit numbers times one digit numbers.

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.

I can solve problems, including missing number problems, involving multiplication and division, including factors and ratio.

Multiplication & Division

Recall multiplication and division facts for multiplication tables up to 12×12 .

I can recall times tables facts up to 12×12 .

Use place value, and known and derived facts, to multiply and divide mentally, including: multiplying by 0 and 1, dividing by 1, multiplying together three numbers.

I can use place value and number facts to multiply and divide mentally, including multiplying by 1 and 0; dividing by 1; and multiplying together 3 numbers.

Recognise and use factor pairs and commutativity in mental calculations.

I can use factor pairs in mental calculations.

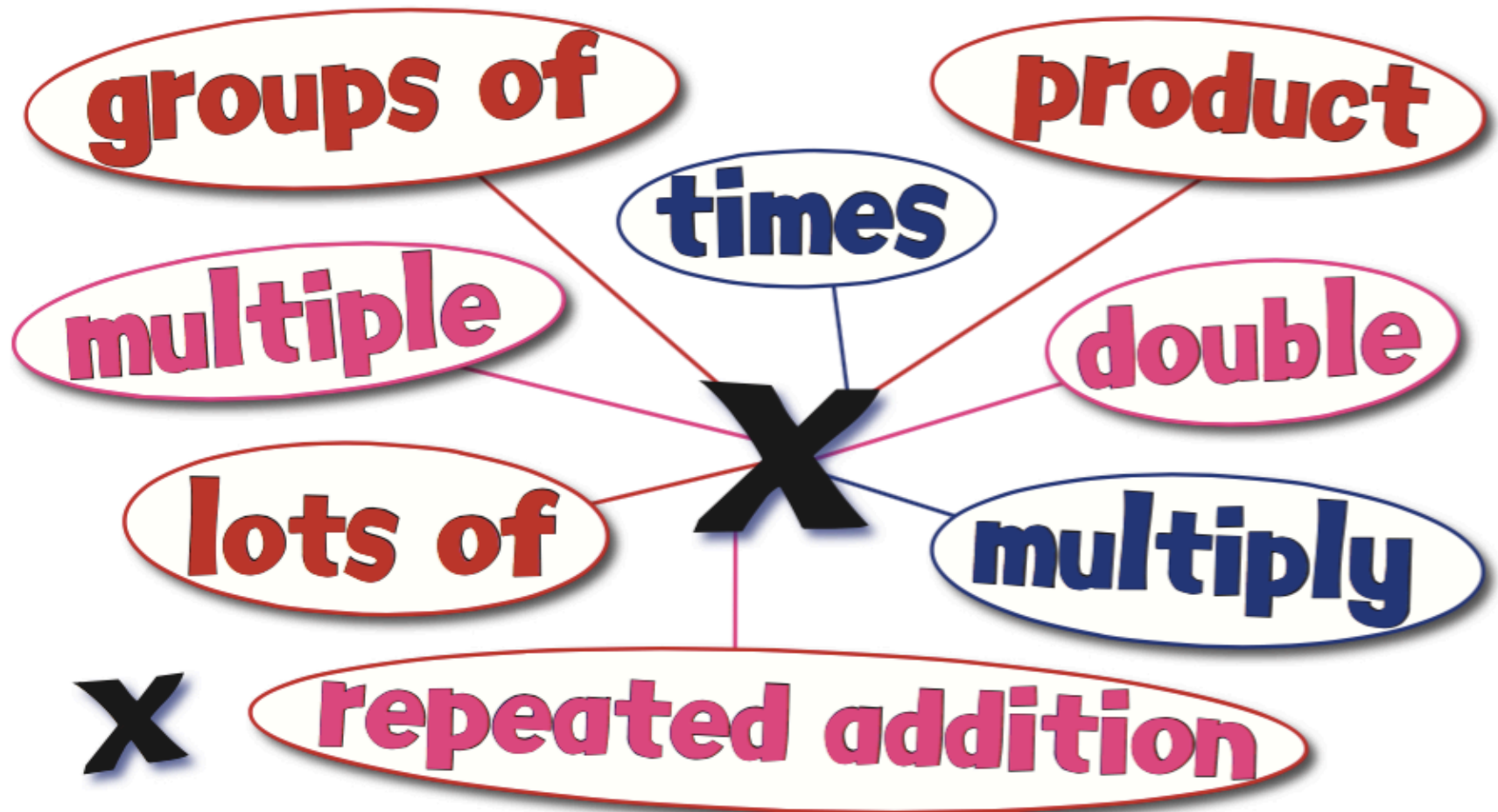
Multiply two-digit and three-digit numbers by a one-digit number using a formal written layout.

I can multiply two digit and three digit numbers by a one digit number using a formal written method.

Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit numbers, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.

I can solve problems involving multiplication and addition, including using the distributive law e.g. $3 \times (12 + 14) = 3 \times 12 + 3 \times 14$.

Multiplication Vocabulary



The School Run Glossary



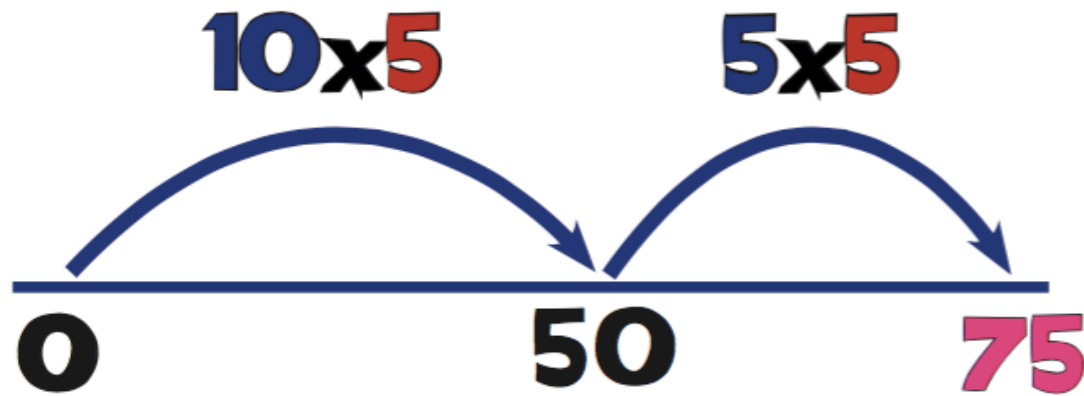
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Method 1: Multi-boing!

M4: Multi Boing!

3



$$\begin{array}{r} 10 \times 5 = 50 \\ 5 \times 5 = 25 \\ \hline 75 \end{array}$$

$$15 \times 5 = 75$$

$$18 \times 6$$



Method 2: Partitioning

M4a: Partitioning

3

$$15 \times 5 = 75$$

$$10 \times 5 = 50$$

$$5 \times 5 = 25$$

$$50 + 25 = 75$$

$$13 \times 7$$



Method 3: Grid Method – short multiplication

M5: Grid Method

3

Short Multiplication

$$15 \times 5 = 75$$

x	10	5
5	50	25

$$50 + 25 = 75$$

M5: Grid Method

4

Short Multiplication

$$43 \times 6 = 258$$

x	40	3
6	240	18

$$240 + 18 = 258$$

M5b: Grid Method

4

Short Multiplication

$$147 \times 4 = 588$$

x	100	40	7
4	400	160	28

$$400 + 160 + 28 = 588$$

$$236 \times 3$$



Method 4: Expanded Column

3 Additional

$$\begin{array}{r}
 \begin{array}{cc} 10 & 1 \end{array} \\
 \begin{array}{r} 15 \\ 5 \end{array} \\
 \times \\
 \hline
 \begin{array}{r} 25 \\ 50 \end{array} \\
 \hline
 75
 \end{array}$$

(M6: Expanded Column)

4 Additional a

$$\begin{array}{r}
 \begin{array}{c} 100 \quad 10 \quad 1 \\ 43 \\ \times 6 \\ \hline 18 \\ 240 \\ \hline 258 \end{array}
 \end{array}$$

(6×3)
 (6×40)

M6: Expanded Column

4

$$\begin{array}{r} \text{100} \quad \text{10} \quad \text{1} \\ 147 \\ \times \quad \quad 4 \\ \hline \end{array}$$

28

(4 x 7)

160

(4 x 40)

400

(4 x 100)

588

$$352 \times 6$$



Method 5: Column Multiplication

(M7: Column Multiplication)

3 Additional

$$\begin{array}{r} \text{10} \quad \text{1} \\ 15 \\ \times \quad 5 \\ \hline 75 \\ \hline 2 \end{array}$$

Column Multiplication)

$$\begin{array}{r} \text{100} \quad \text{10} \quad \text{1} \\ 43 \\ \times \quad 6 \\ \hline 258 \\ \hline 1 \end{array}$$

M7: Column Multiplication

4

$$\begin{array}{r} \text{100} \quad \text{10} \quad \text{1} \\ 147 \\ \times \quad 4 \\ \hline 588 \\ \hline 1 \quad 2 \end{array}$$

$$4567 \times 3$$

M7: Column Multiplication

4

$$\begin{array}{r} 3647 \\ \times \quad 4 \\ \hline 14588 \\ \hline 2 \quad 1 \quad 2 \end{array}$$



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Developing greater depth in Maths

Reasoning



Missing Numbers

$$24 = \square \times \square$$

Which pairs of numbers could be written in the boxes?



Making links

Cards come in packs of 4.
How many packs do I need to
buy to get 32 cards?



Prove it

What goes in the missing box?

x		
4	80	12



More methods for mental subtraction

MM1a: Jump!

x1000

63400

x100

6340

x10

634

63.4

÷10

6.34

÷100

0.634

÷1000

0.0634



MM2: Re-ordering

$$(9 \times 2) \times 5$$

$$18 \times 5 = 90$$

$$(9 \times 5) \times 2$$

$$45 \times 2 = 90$$

$$(2 \times 5) \times 9$$

$$10 \times 9 = 90 \quad *$$

MM3: Partitioning

$$15 \times 5 = 75$$

$$\begin{array}{c} \text{50} \\ (10 \times 5) \end{array} + \begin{array}{c} \text{25} \\ (5 \times 5) \end{array} = 75$$


: Partitioning

$$37 \times 4 = 148$$

$$\begin{array}{c} \text{120} \\ (30 \times 4) \end{array} + \begin{array}{c} \text{28} \\ (7 \times 4) \end{array} = 148$$


MM5: Doubling

$$\text{Double } 17 = 34$$


$$20 + 14 = 34$$

ubling

$$\text{Double } 37 = 74$$


$$60 + 14 = 74$$

MM6: Doubling Table Facts

$$\begin{array}{l} 16 \times 7 = 112 \\ (8 \times 2) \end{array}$$

$$\begin{array}{l} 8 \times 7 = 56 \\ \downarrow \qquad \qquad \downarrow \times 2 \\ 16 \times 7 = 112 \end{array}$$

MM7: Doubling Up

$$17 \times 4 = 68$$

$$\text{Double } 17 = 34 \quad (17 \times 2)$$

$$\text{Double } 34 = 68 \quad (17 \times 4)$$

MM8: Mult by ^{10, 100}_{& 1000} then Halve

$$86 \times 5 = 430$$

$$86 \times 10 = 860$$

$$860 \div 2 = 430$$

MM9: Doubling & Halving

$$45 \times 14$$

$$90 \times 7 = 630$$