Calculation Mat

Working towards Year 5

Calculating

Use rounding to check answers to calculations

Round these numbers to the nearest 100 to check: 7683 – 5847 = 2336

7700 – 5900 = 1800 so 2336 is incorrect

Identify multiples and factors, including finding all factor pairs of a numbers less than 20, and common factors of two numbers less than 20

Factor pairs of 14 are 1 × 14, 2 × 7

Common factors of 6 and 12: 1, 2, 3 and 6

Know and use the vocabulary of prime numbers

Prime numbers have only 1 and itself as factors.

Recall prime numbers up to 19

Prime numbers: 2, 3, 5, 7, 11, 13, 17, 19.

Multiply and divide whole numbers and those involving decimals by 10 and 100

234 × 10 = 2340

341 ÷ 10 = 34.1

185 × 100 = 18 500

1609 ÷ 100 = 16.09

Solve Problems

Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why

One Y5 class has 14 boys and 15 girls. On Tuesday, 25 children are in class. How many children are absent?

4

Methods

Add and subtract numbers up to 3 digits mentally

562 + 240 = 802

720 – 457 = 263

Add and subtract whole numbers with more than 3 digits, including using formal written methods (columnar addition and subtraction)

$$\begin{array}{r} 6\ 8\ 1 \\ +\ \ 9\ 0\ 7 \\ \hline \mathbf{1\ 5\ 8\ 8} \end{array} \qquad \begin{array}{r} {}^{7}\not{8}\,{}^{1}2\ 7 \\ -\ \ 6\ 4\ 3 \\ \hline \mathbf{1\ 8\ 4} \end{array}$$

Methods

Multiply numbers up to 3 digits by a one-digit number using a formal written method

$$\begin{array}{r} {}^{5}4\,{}^{4}6\ 5 \\ \times\ \ 8 \\ \hline \mathbf{3\ 3\ 2\ 0} \end{array}$$

Multiply and divide numbers mentally drawing upon known facts

485 × 8 =

500 × 8 = 4000, 15 × 8 = 120

485 × 8 = 4000 – 120 = 3880

Divide numbers up to 3 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context

$$\begin{array}{r} \mathbf{4\ 7} \\ 6 \overline{)\,2\,{}^{2}8\,{}^{4}2} \end{array}$$

Calculation Mat

Expected Year 5

Calculating

Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy

Round these numbers to the nearest 100 to check: 67 683 – 28 347 = 41 336

67 700 – 28 300 = 39 400 so 41 336 is incorrect.

Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers

Factor pairs of of 28 are 1 × 28, 2 × 14, 4 × 7

Common factors of 15 and 36: 1 and 3

Know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers

Prime numbers have only 1 and itself as factors.

Prime factors of 24 = 2 × 2 × 2 × 3, so 2 and 3.

Composite numbers are numbers that are not prime.

Establish whether a number up to 100 is prime and recall prime numbers up to 19

Is 13 prime? Only 1 and 13 are factors – yes.

Prime numbers: 2, 3, 5, 7, 11, 13, 17, 19.

Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000

234 × 1000 = 234 000 341 ÷ 100 = 3.41

Solve Problems

Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

Class A has 13 boys and 15 girls, and Class B has 16 boys and 17 girls. How many more children are in class B than class A?

5

Methods

Add and subtract numbers mentally with increasingly large numbers

3562 + 240 = 3802 4720 – 457 = 4263

Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)

$$\begin{array}{r} 4\,6\,8\,1 \\ +\ 2\,9\,0\,7 \\ \hline 7\,5\,8\,8 \\ {\scriptstyle 1\ \ \ \ } \end{array} \qquad \begin{array}{r} {\scriptstyle 2}\cancel{3}{\scriptstyle 1}\,\cancel{0}{\scriptstyle 1}\,{\scriptstyle 1}2\,7 \\ -\ \ \ 6\,4\,3 \\ \hline 2\,4\,8\,4 \end{array}$$

Methods

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

$$\begin{array}{r} 3\,6\,1\,4 \\ \times\ \ \ \ \ 7 \\ \hline 2\,5\,2\,9\,8 \\ {\scriptstyle 4\ \ 1\ \ \ } \end{array} \qquad \begin{array}{r} {\scriptstyle 1\ \ 1\ \ \ \ } \\ 4\,6\,5 \\ \times\ \ \ 2\,8 \\ \hline 3\,7\,2\,0 \\ 9\,{\scriptstyle 1}\,3\,0\,0 \\ \hline 1\,3\,0\,2\,0 \\ {\scriptstyle \ \ 1\ \ \ \ } \end{array}$$

Multiply and divide numbers mentally drawing upon known facts

2485 × 8 =

2500 × 8 = 20 000, 15 × 8 = 120

2485 × 8 = 20 000 – 120 = 19 880

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

$$\begin{array}{r} 8\,9\,7 \\ 6\overline{)\,5\,{\scriptstyle 5}3\,{\scriptstyle 5}8\,{\scriptstyle 4}2} \end{array}$$

17 children need to travel by car to a school event. Four children can travel in each car. How many cars are needed?

17 ÷ 4 = 4 r1, so 5 cars are needed

Calculation Mat

Greater Depth Year 5

Calculating

Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy

Round these numbers to check:

67 683 – 28 347 = 41 336

Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers

The factor pairs of 56 are:

Common factors of 24 and 76:

Know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers

A prime number is a number...

The prime factors of 24 are:

Composite numbers are...

Establish whether a number up to 100 is prime and recall prime numbers up to 19

Explain why 13 is a prime number and 14 is not:

Prime numbers to 19 are:

Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000

Explain the effect of multiplying or dividing by 10, 100 or 1000.

Solve Problems

Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

Write an addition and subtraction word problem that uses more than two steps.

Methods

Add and subtract numbers mentally with increasingly large numbers

3562 + 380 5060 – 438 =

Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)

Explain how to use a formal columnar method to solve these equations:

6196 + 3677 =

7082 – 3439 =

Methods

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

Explain how the formal long multiplication method provides the answer.

Multiply and divide numbers mentally drawing upon known facts

Explain two different mental methods for calculating: 2485 × 8 =

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

Explain how the formal written method of division provides the answer.

Write two different word problems to explain the two different ways that the remainder can be used.

1. The remainder is not used because it is not a complete set or group.
2. The remainder needs to be used, although the final group or set is incomplete.