Y7 Maths Knowledge Organiser Topic 4: All 4 calculations
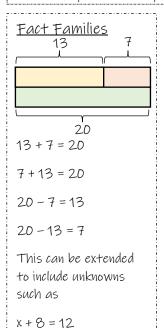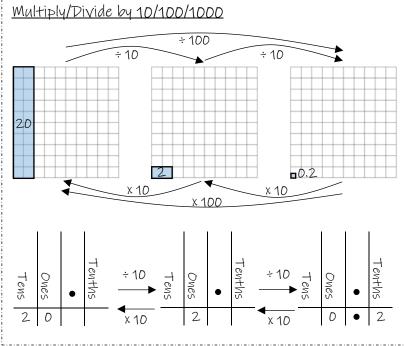
What must I be able to do?

- ☐ Multiply, and divide, any whole number by 10, 100, 1000, or 10 000.
  - ➤ Sparx M113
- ☐ Use mental strategies to do all 4 calculations.
- ☐ Add and subtract using formal methods.
  - ➤ Sparx M928, M347
- ☐ Model and solve word problems
- ☐ Extend existing mental calculation to include decimals
- ☐ Multiply and divide decimals by 10, 100, 1000, or 10 000
  - ➤ Sparx M113
- ☐ Use written methods in column format for addition and subtraction of decimals
  - ➤ Sparx M429, M152
- ☐ Solve word problems involving the addition and subtraction of money in decimal notation
- ☐ Use multiplication facts to solve mental Calculations
- ☐ Understand and use the column method to multiply integers and decimals
  - ➤ Sparx M187, M803
- ☐ Divide whole numbers and decimals by whole numbers
  - ➤ Sparx M354, M262
- ☐ Use the term 'remainder'
- ☐ Represent multiplication word problems using bar models

Key vocabulary

Addition / sum	The <u>total</u> of two or more numbers e.g. 3 + 4 = 7
Subtraction / difference	<u>Taking</u> one number <u>away</u> from another e.g. 7 − 3 = 4 or 3 − 9 = -6
Multiplication / product	<u>Repeated addition</u>, adding a particular number a specified number of times. e.g. 3 x 5 means 3 lots of 5, so 5 + 5 + 5 =15, we can say 3 x 5 = 15.
Division	<u>Sharing</u> one amount by another eg 8 ÷ 2 = 4 or 10 ÷ 4 = 2.5
Remainder	The <u>leftover</u> number when a number is <u>divided</u> by another number where the answer isn't a whole number, eg 18 ÷ 4 = 4 with 2 leftover, 2 is the remainder.

Fact Families

13 + 7 = 20

7 + 13 = 20

20 − 7 = 13

20 − 13 = 7

This can be extended to include unknowns such as

x + 8 = 12

8 + x = 12   and so on

Multiply/Divide by 10/100/1000

Long multiplication

e.g. 324 x 18

```
      3 2 4
      1 8  x
   ―――――――――
   2¹5³9 2
   3 2 4 0  +
   ―――――――――
   5 8 3 2
```

324 x 8

324 x 10

Add these two parts to form the final answer

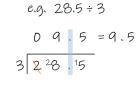Remember that the second line of working will always have a 0 on the right due to multiplying by the tens digit.

Column methods with decimals

Line up the decimal point for addition/subtraction.   Also useful for multiplication and division

e.g. 346.2 + 192.71

```
   3 4 6 . 2
   1 9 2 . 7 1 +
  ―――――――――――
   5 3 8 . 9 1
```

e.g. 263.8 − 17.3

```
   2⁵6̷3 . 8
     1 7 . 3  -
  ―――――――――――
   2 4 6 . 5
```

e.g. 34.7 x 6

```
   3 4 . 7
        6  x
  ―――――――――――
   2 0 8 . 2
```

e.g. 28.5 ÷ 3

```
      0 9 . 5  = 9.5
   3 2²8 . ¹5
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