Year 6 - Four Operations

Long Multiplication

Written Multiplication

```
  5,853
     23 x
  ------
      9
```
↓
```
  5,853
   1 23 x
  ------
     59
```
↓
```
  5,853
  2 1 23 x
  ------
   ,559
```
↓
```
  5,853
  2 1 23 x
  ------
 17,559
```
↓
```
  5,853
  4 1 23 x
  ------
 17,559
     60
  ------
```
→
```
   5,853
   4 1 23 x
  -------
  17,559
   1 ,060
  -------
```
↑
```
   5,853
   1 1 23 x
  -------
  17,559
   1 1 7,060
  -------
```
↑
```
   5,853
   4 1 23 x
  -------
  17,559
  117,060
  -------
```
↑
```
    5,853
    4 1 23 x
  --------
   17,559
  1 1 117,060
  --------
  134,619
   1   1
```

Addition and Subtraction Written Methods

Written Addition

```
 45,853 +
 23,463
 ------
      6
```
↓
```
 45,853 +
 23,463
 ------
     16
      1
```
↓
```
 45,853 +
 23,463
 ------
   ,316
```
→
```
 45,853 +
 23,463
 ------
  9,316
```
↑
```
 45,853 +
 23,463
 ------
 69,316
  1 1
```

Written Subtraction

```
 80,134 -
 33,241
 ------
      3
```
↓
```
     0
 80,1̸34 -
 33,241
 ------
     93
```
↓
```
 7 9 10
 8̸0̸,1̸34 -
 33,241
 ------
   ,893
```
→
```
 7 9 10
 8̸0̸,1̸34 -
 33,241
 ------
  6,893
```
↑
```
 7 9 10
 8̸0̸,1̸34 -
 33,241
 ------
 46,893
```

Partial Multiples for Long Division

216 ÷ 12 =

(1) = 12
(2) = 24
(5) = 60
(10) = 120
(20) = 240
(40) = 480
(80) = 960
(160) = 1920

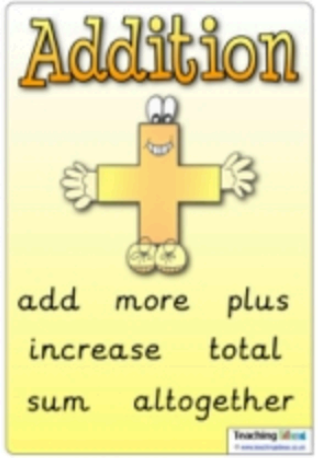
Long Division

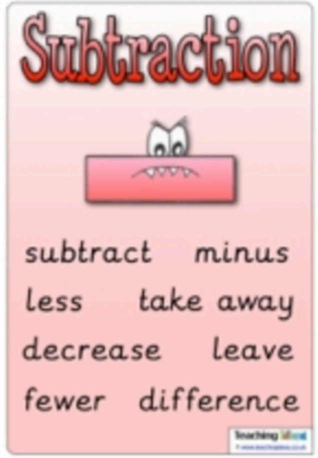
216 ÷ 12 = 18

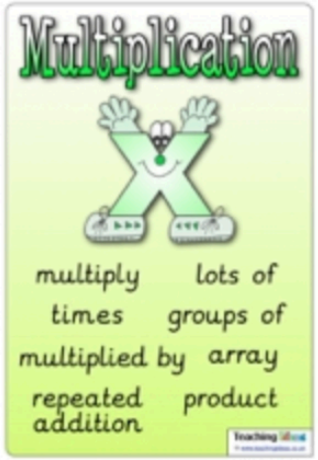
```
            ______
          12 | 2 1 6
(10 x 12) -  1 2 0
             -----
             0 9 6
(5 x 12)  -    6 0
             -----
               3 6
(3 x 12)  -    3 6
             -----
               0 0
```

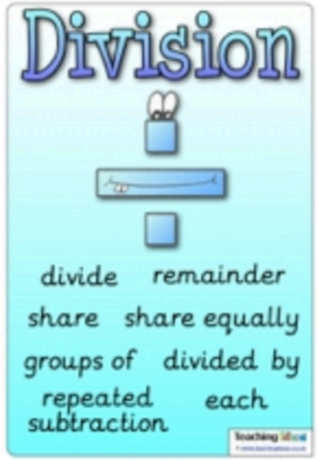
How many x12 altogether?
10 + 5 + 3 = 18

Key Vocabulary









Short Division

```
   1
8 |8,192
```
How many 8s in 8?
8÷8=1

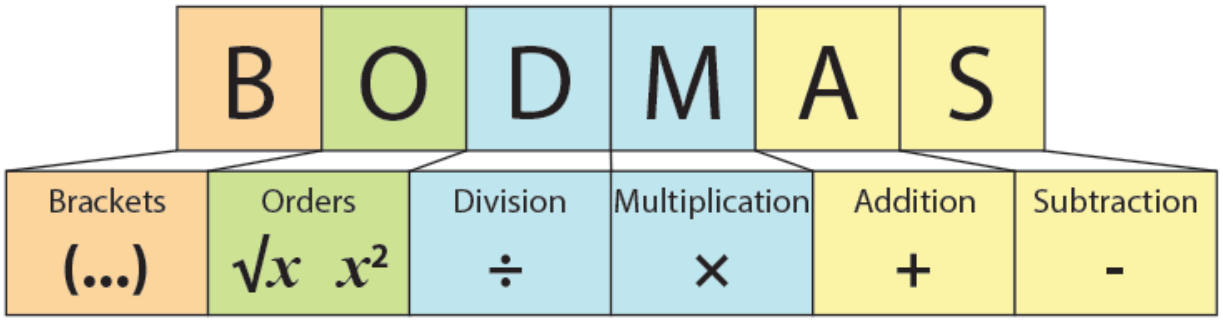
```
   1,0
8 |8,1¹92
```
How many 8s in 1?
1÷8=0 r1

```
   1,02
8 |8,1¹9³2
```
How many 8s in 19?
19÷8=2 r3

```
   1,024
8 |8,1¹9³2
```
How many 8s in 32?
32÷8=4

Year 6 - Four Operations

Key vocabulary	
Factor	a number that 'fits' into another number equally
Multiple	a number 'made' in certain times table
Prime	a number with only 2 factors - 1 and itself
Square number	a number produced by multiplying it by itself
Cubed number	a number produced by multiplying it by itself twice
Common factor	A factor that is shared by at least 2 numbers
Common multiple	A number that appears in at least 2 times tables
Root	e.g. square root, the number that is multiplied by itself to get the number
Power	How many times a number has to be multiplied by itself e.g. $5^4 = 5 \times 5 \times 5 \times 5$



Squared numbers	
1^2	1
2^2	4
3^2	9
4^2	16
5^2	25
6^2	36
7^2	49
8^2	64
9^2	81
10^2	100
11^2	121
12^2	144

Cubed numbers	
1^3	1
2^3	8
3^3	27
4^3	64
5^3	125
6^3	216
7^3	343
8^3	512
9^3	729
10^3	1000
11^3	1331
12^3	1728

Prime Numbers							
2	3	5	7	11	13	17	19
23	29	31	37	41	43	47	53
59	61	67	71	73	83	89	97

Examples of BODMAS		
4 + 6 x 7 = 46	(4 + 6) x 7 = 70	$4 + 6 \times 7^2 = 58$