

# Year 6 maths

## Arithmetic

### 4 operations

#### Addition:

$$43,976 + 33,824 = 77,800$$

$$\begin{array}{r} 43976 \\ + 33824 \\ \hline 77800 \end{array}$$

#### Subtraction:

$$126,973 - 42,384 = 84,589$$

$$\begin{array}{r} 126973 \\ - 42384 \\ \hline 84589 \end{array}$$

#### Multiplication:

$$4,376 \times 34 = 148,784$$

$$\begin{array}{r} 4376 \\ \times 34 \\ \hline 17504 \quad (4376 \times 4) \\ 13120 \quad (4376 \times 30) \\ \hline 148784 \end{array}$$

#### Division:

##### Short:

$$1,256 \div 5 = 251.2$$

$$\begin{array}{r} 0251.2 \\ 5 \overline{) 1256.0} \\ \underline{5} \phantom{0} \\ 7 \phantom{0} \\ \underline{7} \phantom{0} \\ 0 \phantom{0} \\ \underline{0} \phantom{0} \\ 0 \phantom{0} \\ \underline{0} \phantom{0} \\ 0 \phantom{0} \end{array}$$

*r 1/5 / 0.2*  
*add zero in 10<sup>th</sup> column & exchange as normal.*

##### Long:

$$563 \div 17 = 33 \frac{2}{17}$$

$$\begin{array}{r} 33 \text{ r } 2 \\ 17 \overline{) 563} \\ \underline{51} \phantom{0} \\ 053 \\ \underline{51} \phantom{0} \\ 02 \end{array}$$

Remainder as decimal where possible.  
 If not, should be as a fraction or correct for context of question.

### Fractions

#### Adding/subtracting:

$$\frac{2^{\times 3}}{4^{\times 3}} + \frac{5^{\times 2}}{6^{\times 2}} = 1 \frac{1}{3}$$

$$\frac{6}{12} + \frac{10}{12} = \frac{16}{12} = 1 \frac{4}{12} = 1 \frac{1}{3}$$

*lowest common multiple of 4 & 6*  
*improper to mixed*  
*simplify*

#### Multiplying:

##### Fraction x whole no.:

$$\frac{2}{3} \times 6 = \frac{2 \times 6}{3} = \frac{12}{3} = 4$$

*x whole number by numerator*  
*denominator stays the same*

##### Fraction x fraction:

$$\frac{2}{3} \times \frac{1}{4} = \frac{2 \times 1}{3 \times 4} = \frac{2}{12} = \frac{1}{6}$$

*simplify*

#### Dividing:

$$\frac{1}{8} \div 5 = \frac{1}{40}$$

#### Simplifying:

$$\frac{21 \div 7}{49 \div 7} = \frac{3}{7}$$

Find the highest common factor and  $\div$  numerator & denominator

#### Converting:

##### Mixed number to improper fraction:

$$1 \frac{3}{8} = \frac{11}{8}$$

*x = 8*

##### Improper fraction to mixed number:

$$\frac{27}{5} = 5 \frac{2}{5}$$

$$= 27 \div 5 = 5 \text{ r } 2$$

# Fractions contd

Subtracting - breaking the whole:

$$3\frac{1}{5} - 2\frac{3}{5} = \frac{3}{5}$$

convert to improper:

$$\frac{16}{5} - \frac{13}{5} = \frac{3}{5}$$

Convert first number:

$$3\frac{1}{5} = 2\frac{6}{5}$$

$$2\frac{6}{5} - 2\frac{3}{5} = \frac{3}{5}$$

Of amounts:

$$\frac{3}{7} \text{ of } 42 = 18$$

$42 \div 7 = 6$   
 $6 \times 3 = 18$

# Order of operations

Brackets    Division    Addition  
**B O D M A S**  
 Orders (2 & √)    Multiplication    Subtraction

$$\begin{aligned} (4 + 3) \times 6 - 4 &= 38 \\ = 7 \times 6 - 4 \\ = 42 - 4 \\ = 38 \end{aligned}$$

# Multiplying and Dividing by 10, 100 and 1,000

$$3.7 \times 100 = 3,700$$

digits move 2 places to left

Tip! Move the digits the same number of places as the amount as zeros

$$3.7 \div 100 = 0.037$$

digits move 2 places to right

100s	10s	1s	10 <sup>th</sup>	100 <sup>th</sup>	1000 <sup>th</sup>
		3	7		
	0	0	3	7	

use a place value grid if you need to.  
 don't forget to hold place value with 0

# % of amounts

$$15\% \text{ of } 360 = 54$$

$$\div \text{ by } 10 \leftarrow 10\% = \frac{1}{10} \times 360 = 36$$

$$\frac{1}{2} 10\% \leftarrow 5\% = \frac{1}{2} \times 36 = 18$$

$$5\% + 10\% \leftarrow 15\% = 36 + 18 = 54$$

For any other %, or when using more difficult numbers, use the following method:

1%	=	÷ 100
10%	=	÷ 10
20%	=	÷ 5
25%	=	÷ 4
50%	=	÷ 2

OK ÷ 10, × 2

$$27\% \text{ of } 426 = 115.02$$

$$\begin{array}{r} 426 \\ \times 27 \\ \hline 2982 \\ + 8520 \\ \hline 11502 \end{array}$$

÷ 100 (digits move 2x →)