

# Year 3 calculation methods

## Addition

Expanded method

$$\begin{array}{r} 374 \\ + 248 \\ \hline 12 \\ 110 \\ 500 \\ \hline 622 \end{array}$$

1. Align the columns.
2. Add the ones.
3. Add the tens.
4. Add the hundreds
5. Find the total

## Subtraction

Decomposition—expanded method

$$272 - 148 = 124$$

$$\begin{array}{r} 200 \overset{60}{\cancel{-70}} \overset{12}{\phantom{00}} \\ 100 \quad 40 \quad 8 \\ \hline 100 \quad 20 \quad 4 \end{array}$$

1. Partition the numbers and align the columns.
  2. Subtract the ones.
  3. Subtract the tens.
  4. Subtract the hundreds.
- IF YOU CAN'T SUBTRACT, EXCHANGE!

## Multiplication

Expanded method

$$237 \times 4$$

$$\begin{array}{r} 237 \\ \times \quad 4 \\ \hline 28 \\ 120 \\ 800 \\ \hline 948 \end{array}$$

1. Align the columns.
2. x the ones by the ones.
3. x the tens by the ones.
4. x the hundreds by the ones.
5. Find the total.

## Division

Knowledge of division facts

$$21 \div 3 = 7$$

$$3, 6, 9, 12, 15, 18, 21$$

7 'lots' of 3

$$23 \div 3 = 7 \text{ r}2$$

$$3, 6, 9, 12, 15, 18, 21$$

7 'lots' of 3

(closest multiple of 3 with 2 remaining)

1. Write the calculation out.
2. Underneath, count in 'lots' of the divisor until you reach your target number **or the closest multiple of the divisor**.
3. Count how many 'lots' you have made.
4. Answer the question. Anything left over include as a **remainder**

In order to challenge children with appropriate numbers, it will sometimes be necessary to encourage children to use know facts with this method.

$$\text{I.e. } 150 \div 5$$

$$\text{We know } 15 \div 5 = 3, \text{ so } 150 \div 5 = 30.$$

# Year 4 calculation methods

## Addition

Compact method

$$\begin{array}{r} 679 \\ + 146 \\ \hline 825 \\ \hline 11 \end{array}$$

1. Align the columns.
2. Add the ones.
3. Add the tens.
4. Add the hundreds
5. Find the total

## Subtraction

Compact method

$$\begin{array}{r} 6 \\ 1374 \\ - 968 \\ \hline 406 \end{array}$$

1. Align the columns.
2. Subtract the ones.
3. Subtract the tens.
4. Subtract the hundreds.

**IF YOU CAN'T SUBTRACT, EXCHANGE!**

## Multiplication

Compact method

$$\begin{array}{r} 36 \\ \times 4 \\ \hline 144 \\ \hline 2 \end{array}$$

1. Align the columns.
2. x the ones by the ones.
3. x the tens by the ones.
4. x the hundreds by the ones.
5. Find the total.

## Division

'Bus stop' method

$$\begin{array}{r} 14 \\ 7 \overline{) 928} \\ \hline 086 \\ 5 \overline{) 4432} \end{array} \text{ r}2$$

1. Place the total you are dividing inside the bus stop and the divisor on the outside.
2. Calculate how many times the number outside the bus stop goes into the first digit inside. If it doesn't put 0 and carry the number inside the bus stop to the next digit along.
3. Repeat for other all the digits in the bus stop.
4. When you get to the last number, any that are left over are remainders.

# Year 5 calculation methods

## Addition

Compact method

$$\begin{array}{r}
 23.70 \\
 + 48.56 \\
 \hline
 72.26 \\
 \hline
 11
 \end{array}$$

1. Align the columns.
2. Add the ones.
3. Add the tens.
4. Add the hundreds
5. Find the total

## Subtraction

Compact method

$$\begin{array}{r}
 712.15 \\
 - 45.7 \\
 \hline
 266.45
 \end{array}$$

1. Align the columns.
  2. Subtract the ones.
  3. Subtract the tens.
  4. Subtract the hundreds.
- IF YOU CAN'T SUBTRACT, EXCHANGE!

## Multiplication

Compact method

$$\begin{array}{r}
 36 \\
 \times 4 \\
 \hline
 144 \\
 \hline
 2
 \end{array}$$

Long multiplication

$$\begin{array}{r}
 256 \\
 \times 18 \\
 \hline
 2048 \\
 44 \\
 \hline
 2560 \\
 \hline
 4608 \\
 \hline
 1
 \end{array}$$

### Compact StS

1. Align the columns.
2. x the ones by the ones.
3. x the tens by the ones.
4. x the hundreds by the ones.
5. Find the total.

### Long multiplication StS

1. Align the columns.
2. x all of the top number by the ones, starting with the ones.
3. x all of the top number by the tens, starting with the ones.
4. Find the total.

## Division

Short 'Bus stop' method

$$\begin{array}{r}
 14 \\
 7 \overline{) 98}
 \end{array}$$

Long division

$$\begin{array}{r}
 5664 \div 16 \\
 16 \overline{) 5664} \\
 \begin{array}{cccc}
 0 & 3 & 5 & 4 \\
 \hline
 5 & 6 & 6 & 4
 \end{array}
 \end{array}$$

1. Place the total you are dividing inside the bus stop and the divisor on the outside.
2. Calculate how many times the number outside the bus stop goes into the first digit inside. If it doesn't, put 0 and carry the number inside the bus stop to the next digit along.
3. Repeat for other all the digits in the bus stop.
4. When you get to the last number, any that are left over are remainders.

# Year 6 calculation methods

## Addition

Compact method

$$\begin{array}{r}
 23.70 \\
 + 48.56 \\
 \hline
 72.26 \\
 \hline
 11
 \end{array}$$

1. Align the columns.
2. Add the ones.
3. Add the tens.
4. Add the hundreds
5. Find the total

## Subtraction

Compact method

$$\begin{array}{r}
 712.15 \\
 - 45.7 \\
 \hline
 266.8
 \end{array}$$

1. Align the columns.
  2. Subtract the ones.
  3. Subtract the tens.
  4. Subtract the hundreds.
- IF YOU CAN'T SUBTRACT, EXCHANGE!

## Multiplication

Compact method

$$\begin{array}{r}
 36 \\
 \times 4 \\
 \hline
 144 \\
 \hline
 2
 \end{array}$$

Long multiplication

$$\begin{array}{r}
 256 \\
 \times 18 \\
 \hline
 2048 \\
 44 \\
 \hline
 2560 \\
 \hline
 4608 \\
 \hline
 1
 \end{array}$$

### Compact Steps to Success

1. Align the columns.
2. x the ones by the ones.
3. x the tens by the ones.
4. x the hundreds by the ones.
5. Find the total.

### Long Multiplication Steps to Success

1. Align the columns.
2. x all of the top number by the ones, starting with the ones.
3. x all of the top number by the tens, starting with the ones.
4. Find the total.

## Division

Short 'Bus stop' method

$$\begin{array}{r}
 14 \\
 7 \overline{) 98} \\
 \underline{70} \\
 28
 \end{array}$$

Long division

$$\begin{array}{r}
 5664 \div 16 \\
 16 \overline{) 5664} \\
 \underline{0354} \\
 \underline{5686} \\
 \underline{664}
 \end{array}$$

1. Place the total you are dividing inside the bus stop and the divisor on the outside.
2. Calculate how many times the number outside the bus stop goes into the first digit inside. If it doesn't, put 0 and carry the number inside the bus stop to the next digit along.
3. Repeat for other all the digits in the bus stop.
4. When you get to the last number, any that are left over are remainders.