Lesson 1 – Column Methods

Starter

1) Find 30% of 62
2) Find $\frac{2}{5}$ of 35
3) Write down a number that has 34 hundredths
4) Convert 0.12 to a fraction in its simplest form
5) Change 2% to a decimal

Starter Answers

1) 18.6 2) 14 3) 0.34 4) $\frac{4}{25}$ 5) 0.02

When we add or subtract numbers, we can use a column method to make the calculation easier.

Example 1

Work out 259 + 178

First write one above the other, lining up each place value column:

$$\begin{array}{r} 2\,5\,9 \\ +\,1\,7\,8 \\ \hline \end{array}$$

Then start with the column on the right: 9 + 8 = 17
Because this is bigger than 10, we write the 7 down in the units column and carry over a ten

$$\begin{array}{r} {\scriptstyle 1} \\ 2\,5\,9 \\ +\,1\,7\,8 \\ \hline 7 \end{array}$$

Then add the tens column: 5 + 7 + 1 = 13. Write the 3 in the tens column and carry over the hundred

$$\begin{array}{r} {\scriptstyle 1\,1} \\ 2\,5\,9 \\ +\,1\,7\,8 \\ \hline 3\,7 \end{array}$$

Then add the hundreds column: 2 + 1 + 1 = 4

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

The answer is 487

We can also do the same for **decimals**.

Example 2
Work out 4.378 + 1.25

```
  4 . 3 7 8
+ 1 . 2 5 0
```

Add a zero in any gaps

First add the thousandths column: 8 + 0 = 8

```
  4 . 3 7 8
+ 1 . 2 5 0
        8
```

Then add the hundredths column: 7 + 5 = 12
Write the 2 in the hundredths column and carry over the 1 tenth

```
    1
  4 . 3 7 8
+ 1 . 2 5 0
      2 8
```

Then add the tenths column: 3 + 2 + 1 = 6

```
    1
  4 . 3 7 8
+ 1 . 2 5 0
    . 6 2 8
```

Remember to put the decimal point in!

Then add the units column: 4 + 1 = 5

```
    1
  4 . 3 7 8
+ 1 . 2 5 0
  5 . 6 2 8
```

The answer is 5.628

Your go
1) 3.45 + 7.82
2) 0.0062 + 34.567
3) 6.782 + 1.2
4) 23.5743 + 1.02738

Answers
1) 11.27
2) 34.5732
3) 7/982
4) 24.60168

We can also use a column method for **subtraction**.

Example 3
Work out 346 – 179

$$\begin{array}{r} 3\,4\,6 \\ -\,1\,7\,9 \\ \hline \end{array}$$

Start with the units.
If we did 6 – 9, this would give us a negative number. So we borrow from the tens column:

$$\begin{array}{r} 3\,\overset{3}{\cancel{4}}^{1}\,6 \\ -\,1\,7\,9 \\ \hline \end{array}$$

We now do 16 – 9 instead which is 7

$$\begin{array}{r} 3\,\overset{3}{\cancel{4}}^{1}\,6 \\ -\,1\,7\,9 \\ \hline \quad\quad 7 \end{array}$$

Now look at the tens column. 3 – 7 would be negative, so we borrow from the hundreds column. We then do 13 – 7 = 6

$$\begin{array}{r} \overset{2}{\cancel{3}}^{1}\,\overset{3}{\cancel{4}}^{1}\,6 \\ -\,1\,7\,9 \\ \hline \quad\quad 6\,7 \end{array}$$

Now we look at the hundreds column and do 2 – 1 = 1

$$\begin{array}{r} \overset{2}{\cancel{3}}^{1}\,\overset{3}{\cancel{4}}^{1}\,6 \\ -\,1\,7\,9 \\ \hline 1\,6\,7 \end{array}$$

The answer is 167

Example 2
Work out 1.84 – 0.67

$$\begin{array}{r} 1\,.\,8\,4 \\ -\,0\,.\,6\,7 \\ \hline \end{array}$$

First look at the hundredths column. 4 – 7 would be negative so we borrow from the tenths column. Then we do 14 – 7 = 7.

$$\begin{array}{r} {}^{7}\not{8}\,{}^{1}4 \\ -\,0.67 \\ \hline 7 \end{array}$$

Then we look at the tenths column. 7 – 6 = 1

$$\begin{array}{r} {}^{7}\not{8}\,{}^{1}4 \\ -\,0.67 \\ \hline .17 \end{array}$$

Remember to put the decimal point in!

Then we look at the units column. 1 – 0 = 1

$$\begin{array}{r} {}^{7}\not{8}\,{}^{1}4 \\ -\,0.67 \\ \hline 1.17 \end{array}$$

The answer is 1.17

Your go

1) 3.87 – 1.92
2) 4.56 – 2.84
3) 2.3 – 1.567
4) 0.7463 – 0.004633

Answers

1) 1.95
2) 1.72
3) 0.733
4) 0.741667