WelTec Mathematics Series

General Mathematics - Number and Place Value

All trades based jobs will require you to use mathematics to a certain extent. You will probably need to be able to add, subtract, multiply and divide fairly accurately to make sure you're able to do what work you need to do.

In order to be able to add, subtract, multiply and divide well, you'll need to understand the place value of the digits that make up a number.

Place Value

The number system we use is based on 10 digits. These are 0, 1, 2, 3, 4, 5, 6, 7, 8, 9. You can make any number using these digits. The value of each digit depends on where it is in the number, i.e. its place value.
For example the number 2,452,678,932 can be put in a table with the place value above it.

Billions	Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Units
2	4	5	2	6	7	8	9	3	2

Example 1

Write down the place value of the underlined digit in the following numbers.

a) 34,**5**89 b) **1**56,398

Solution

a) 34,**5**89
The 5 is in the third column, so this would be hundreds.
b) **1**56,398
The 1 is in the sixth column, so this would be hundred thousands.

Question 1

Write down the place value of the underlined digit in each number.

a) 23,**1**64
b) 52**3**
c) **1**43,892
d) 8**9**,874,726
e) 7,623

Answers
a) Hundreds
b) Units
c) Hundred Thousands
d) Millions
e) Tens

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Expanding Whole Numbers

You can expand any number using the place values of each digit.

Example 2

Write the number 382 in expanded form.

Solution 2

382 = 3 hundreds plus 8 tens plus 2 ones
= 3 hundreds + 8 tens + 2 ones
= (3 x 100) + (8 x 10) + (2 x 1)

Question 2

Write each number below in expanded form

a) 7028
b) 52
c) 734
d) 86,279
e) 345

Answers

a) (7x1000) + (0 x100) + (2 x 10) + (8 x 1)
b) (5 x 10) + (2 x 1)
c) (7 x 100) + (3 x 10) + (4 x 1)
d) (8 x 10,000) + (6 x 1000) + (2 x 100) + (7 x 10) + (9 x 1)
e) (3 x 100) + (4 x 10) + (5 x 1)

Estimating

For many on the job applications, there are times when you don't need to work out an exact answer. Often a rough mental calculation is all you need. Making a rough calculation is called estimating. Estimating the answer to a problem is a good way of checking the exact value you work out is correct.

You can estimate by rounding numbers.

Example 3

Round 612 to the nearest hundred.

Solution 3

Since the 1 in the tens column is less than 5, then the 6 stays the same. So the answer is 600.

Example 4

Round 873 to the nearest 100

Solution 4

Since 7 is greater than 5, change 8 to 9. So the answer is 900.

Question 3

Round the following numbers to the amount asked for.

a) 63 to the nearest 10
b) 540 to the nearest 100
c) 766 to the nearest 100
d) 2587 to the nearest thousand
e) 8480 to the nearest thousand
f) 32,403 to the nearest ten thousand
g) 46,820 to the nearest thousand
h) 466,973 to the nearest ten thousand
i) 949,500 to the nearest hundred thousand

Answers

a) 60
b) 500
c) 800
d) 3000
e) 8000
f) 32,000
g) 47,000
h) 470,000
i) 900,000

Rounding to the Even

Many technical trades use a method called **rounding to the even**. This is used to help reduce bias where several numbers are added together. When you use rounding to the even. The only change is that you don't round if the number is even, but you do if it's odd.

Example 5

a) Round 4250 to the nearest hundred.
b) Round 673,500 to the nearest 1000.

Solution 5

a) Since 2 is an even number, it remains the same. So the answer is 4200
b) Since 3 is an odd number, change the 3 to a 4. So the answer is 674,000.

Question 4

Use rounding to the even to round the following numbers to the amount asked for

a) 785 to the nearest ten
b) 675 to the nearest ten
c) 1350 to the nearest hundred
d) 5450 to the nearest hundred
e) 31,500 to the nearest thousand
f) 24,520 to the nearest thousand
g) 26,455 to the nearest hundred
h) 26,455 to the nearest ten

Answers

a) 780
b) 680
c) 1400
d) 5400
e) 32,000
f) 24,500
g) 26,500
h) 26,460