

Functional Skills Maths

Level 2

Understand and use positive and negative numbers of any size in practical contexts

v1.0

Functional Skills Maths:

Level 2

Skill Standard:

1

Coverage and Range:

Understand and use positive and negative numbers of any size in practical contexts.

- Read, write, order and compare positive and negative numbers of any size.
- Understand the meaning of negative numbers in a practical context, for example temperature below zero, loss in trading.¹

¹ QCA Functional Skills guidance: amplification of the standards June 2008 QCA/08/3700

Explain the Skill

Place Value

The position of a digit in a number shows its value, this is known as its place value.

To make large numbers easier to read commas or spaces are used.

For example:

1000000 = 1,000,000 = 1 000 000 or 462356 = 462,356 = 462 356

<u>1</u> ,000	one thousand
<u>10</u> ,000	ten thousand
<u>100</u> ,000	one hundred thousand
<u>1</u> ,000,000	one million
<u>1</u> ,000,000,000	one billion

The zeros in the numbers given above are known as place holders.

Large numbers can be read by considering the place value of the individual digits:

<i>Billions</i>	<i>Hundred Millions</i>	<i>Ten Millions</i>	<i>Millions</i>	<i>Hundred Thousands</i>	<i>Ten Thousands</i>	<i>Thousands</i>	<i>Hundreds</i>	<i>Tens</i>	<i>Units</i>
1 ,	8	0	6 ,	2	5	4 ,	3	1	8

1,806,254,318

one billion, eight hundred and six million, two hundred and fifty four thousand, three hundred and eighteen

Rounding

Rounding numbers is a useful way of estimating numbers, such as the total cost of shopping, and also a way of making sense of very large numbers.

The rules for rounding are as follows:

Count along to the place value number that is being rounded.

- If the next digit is 0,1,2,3 or 4, round it down.
- If the next digit is 5, 6, 7, 8 or 9, round it up.

For example, the population of America is currently 317,297,938 and if we round this to the nearest million, the answer is 317,000,000.

Practise the Skill

- 1) BBC News had 6,632,512 viewers for its evening bulletin.

What is the value of the 3? _____

- 2) Jenny asked Charlotte roughly how much she had spent, to the nearest £10 on clothes. Charlotte said £70. The receipt showed £73.97.

Was she right? Circle your answer.

Yes / No

- 3) Match up the words to the correct numbers:

Five thousand and twenty	1,000,510,000
One million five hundred and one thousand	52
Fifty one thousand and ten	1,501,000
One billion five hundred and ten thousand	51,010
Fifty two	5020

- 4) The distance from London to Manchester is 199.9 miles.
What is this to the nearest 10 miles? _____ miles
- 5) Write two million three hundred and twenty thousand five hundred and two as a number.

- 6) Last night's travel programme had viewing figures of 3,429,111.
What is the value of the 4? _____
- 7) The world's population is currently estimated at 7,125,000,000.
What is this to the nearest billion? _____ billion
- 8) Write twenty billion, 1 million thirty thousand and one as a number.

- 9) The profit from 'Pizza Quick' was £536,521.
What is the value of the 6? _____

Explain the Skill

Positive and Negative Numbers

Positive and negative numbers can be found in a variety of situations, such as temperature, bank balances, company losses and heights below sea level.

You need to be able to recognise positive and negative numbers, put them into order and compare, and be able to add and subtract them.

A positive number is greater than zero.

These are examples of positive numbers.

457 2,768,589 2,234,456,000 7654

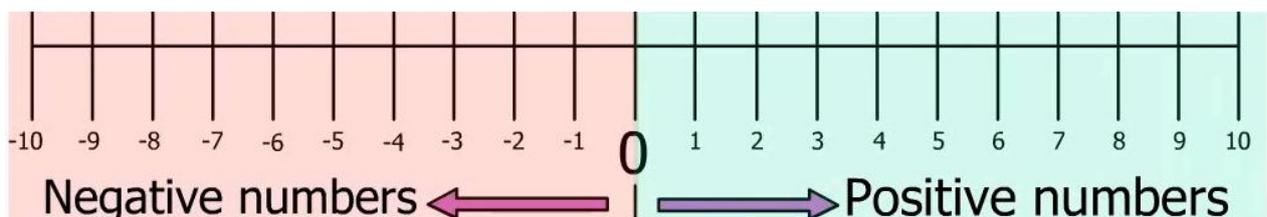
A negative number is less than zero.

These are examples of negative numbers. Negative numbers have a minus sign in front.

e.g. -6 - 12 -5 -8 - 18 -0.8

We use negative numbers in everyday life.

A number line is very useful for working out number calculations.



A bank account can be thought of as a number line.

When money is paid into the account the balance will move to the right on the number line. When money is withdrawn from the account the balance will move to the left on the number line. When you are overdrawn at the bank, you owe the bank money.

To add and subtract positive and negative numbers, it is easiest to use a calculator. There will be a +/- button to press which will give a number a negative sign.

Negative Numbers in Temperature

The Celsius scale (written in °C) has two reference points which are important to us.

0 °C freezing point of water.

100 °C boiling point of water.

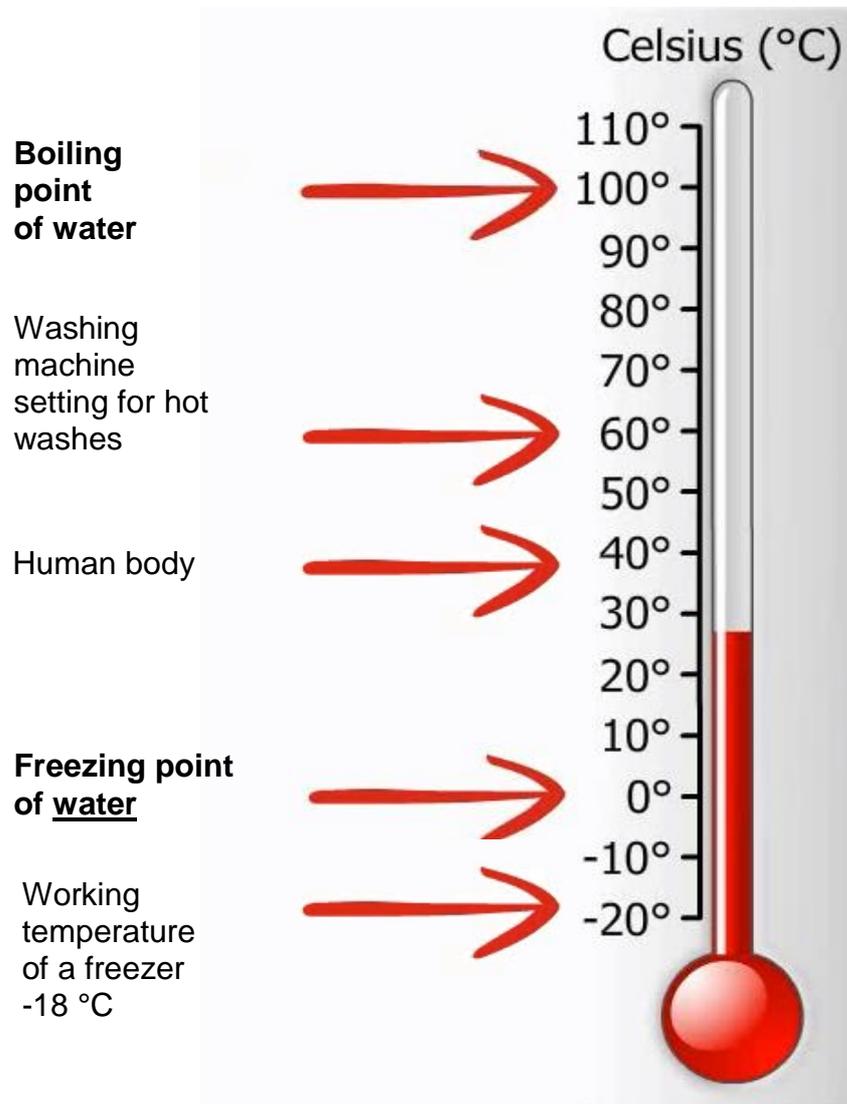
The higher the number the warmer the temperature.

5 °C is warmer than 1 °C

The lower the number the cooler the temperature.

-5 °C is colder than -1 °C

Examples



Practise the Skill

- 1) The freezer at The Beech Café must be kept below -19°C . It is currently at -17.5°C . Is it cold enough?

Circle your answer.

Yes / No

- 2) Sam has $-\pounds 20.22$ in his bank account, Tom has $\pounds 29.04$ and Tina has $-\pounds 101.50$. Who has the most money in their account?

Circle your answer.

Sam / Tom / Tina

- 3) Order these temperatures from hottest to coldest:

16°C -25°C 2°C -33°C -6°C 11°C 25°C

Hottest $\underline{\hspace{1cm}}^{\circ}\text{C}$ $\underline{\hspace{1cm}}^{\circ}\text{C}$ $\underline{\hspace{1cm}}^{\circ}\text{C}$ $\underline{\hspace{1cm}}^{\circ}\text{C}$ $\underline{\hspace{1cm}}^{\circ}\text{C}$ $\underline{\hspace{1cm}}^{\circ}\text{C}$ $\underline{\hspace{1cm}}^{\circ}\text{C}$

- 4) Susan and Gina go shopping. Susan has $\pounds 50$ in her purse. She sees a dress for $\pounds 45.99$ and a cardigan for $\pounds 26.99$. Gina says she will lend Susan the difference.

How much will Susan owe Gina?

£ $\underline{\hspace{2cm}}$

- 5) The weatherman says that in the countryside it will be -3°C tonight, but in the city it will be 2°C warmer.

What temperature will it be in the city?

$\underline{\hspace{2cm}}$ $^{\circ}\text{C}$

- 6) Tonight, the temperature in Oslo is predicted to be -10°C . In Stockholm, -13°C and in Copenhagen, -4°C .

Where is it going to be colder? Circle your answer.

Oslo / Stockholm / Copenhagen

- 7) Stan has £560.32 in his bank account. If he spends £599.99 on a new flatscreen TV, what will his new bank balance be?

£ _____

- 8) The average daytime temperature in Aberdeen in January is 5°C , and the night time temperature is -4°C .

What is the difference in temperature?

_____ $^{\circ}\text{C}$

Apply the Skill

- 1) Mohan and Eve have recently got married and decided to merge their finances. Mohan has 2 current accounts, the first has a balance of £101.46 and the second has -£21.21. Eve's current account balance is -£45.91.

a) Which account has the lowest balance?

Circle your answer.

Mohan's first account / Mohan's second account / Eve's account

b) When they merge their accounts, what will their total balance be?

£ _____

- 2) Eve has a savings account with £231.56 in it. She wants to buy a new coat at £75.00. She calculates that she will have £156.56 remaining.

Which sum represents a check of this calculation?

Circle your answer.

£156.56 - £75 / £156.56 + £75 / £156.56 + 231.56

- 3) Mohan and Eve have both been paid and the balance in their new joint account is £1,601.01.

They have a number of direct debit payments:

- Mortgage £900.60
- Council Tax £151.30
- Phone, Internet and TV £45.00
- Gas and Electricity £65.00
- Car insurance of £512.99

What is their new bank balance after all direct debits have been taken from their bank account?

£ _____

- 4) Mohan had estimated the cost of the monthly shopping to be £240. He spent £67.51 in the first week of the month, £82.31 in the second week, £54.13 in the third week and £41.97 in the last week of the month.

Is his estimate rounded to the nearest £10 correct?

Circle your answer.

Yes / No

- 5) They have a freezer and have noticed that sometimes the food does not seem very frozen. They check the temperature; it says -1°C . The manufacturer recommends a temperature of -18°C .

By how many degrees must the temperature fall?

_____ $^{\circ}\text{C}$

- 6) They decide to buy a new freezer. They have £100 in savings and £121.50 in their bank account. They see a freezer for £285.99.

What will their bank balance be if they buy it?

£ _____

- 7) The freezer shop offered them interest free credit to buy the freezer. On their application form it asked for an estimate of their monthly outgoings to the nearest £100.

- Mortgage £900.60
- Council Tax £151.30
- Phone, Internet and TV £45.00
- Gas and Electricity £65.00
- £240 food

What is the sum of their monthly outgoings to the nearest £100?

£ _____

- 8) Mohan and Eve go to an auction to buy a dining table and chairs. They are successful with their bid and write a cheque for £435.00. The following day they go to pick up the table and chairs. They receive a cheque for £18 as an overpayment.

How much were the table and chairs?

£ _____