

Have a go at these arithmetic calculations.

$$1. \quad \frac{1}{6} + \frac{5}{6} =$$

$$2. \quad 20.3 - 12.09 =$$

$$3. \quad 10 \times 1000 =$$

$$4. \quad \frac{2}{5} \div 2 =$$

Complete as many of these as you can in 3 minutes:

1.  $1,386 \div 9 =$



2.  $203.42 - 56.11 =$



3. Here is part of the bus timetable from Riverdale to Mott Haven.

Riverdale	10:02	10:12	10:31	10:48
Kingsbridge	10:11	10:21	10:38	10:55
Fordham	10:28	10:38	10:54	11:11
Tremont	10:36	10:44	11:00	11:17
Mott Haven	10:53	11:01	11:17	11:34

**How long** does it take for the 10:48 bus from Riverdale to reach Mott Haven?

## Learning Question:

Can I revise using negative numbers in context, and calculate intervals across zero?

## Success Criteria:

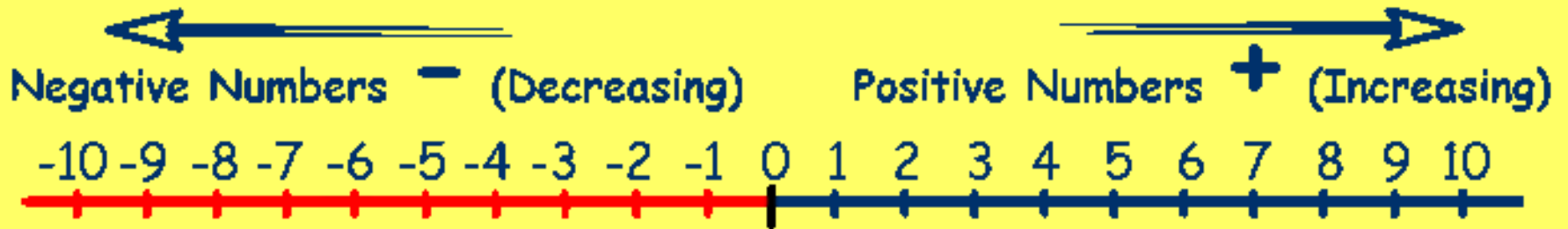
- Read a number line involving negative numbers correctly
- Understand that negative numbers are less than zero
- Understand that as negative numbers get larger, their value decreases

## Vocabulary

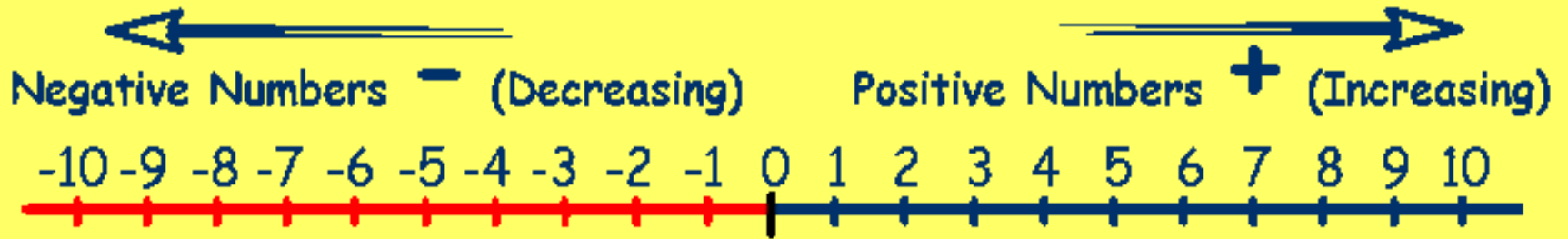
Negative  
Number  
Less than  
Zero  
Minus  
Positive  
Decrease  
Increase

Remember:

- **Positive numbers are more than zero**
- and
- **Negative numbers are less than zero**

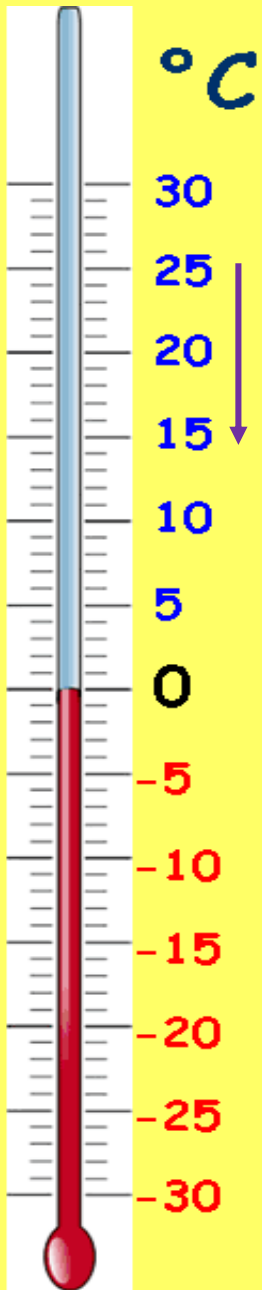


Examples of negative numbers: -2, -5, -19  
(the negative symbol – goes before the number)



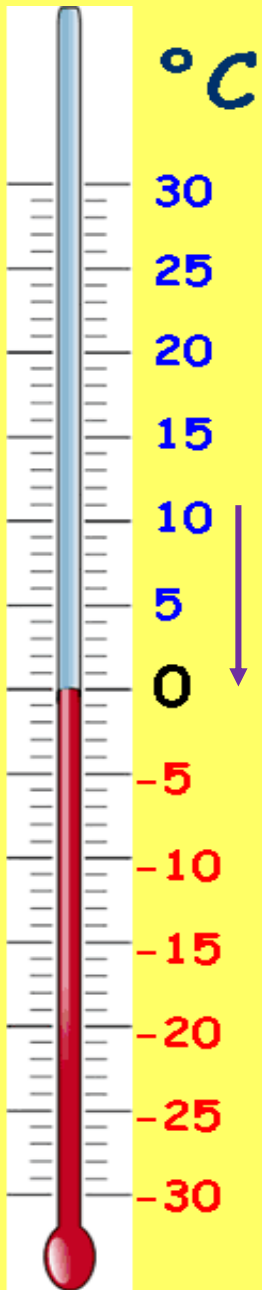
As positive numbers get larger, their value increases. Eg, 6 is larger than 3

But, as negative numbers get larger, their value *decreases*, eg. -9 is less than -5.

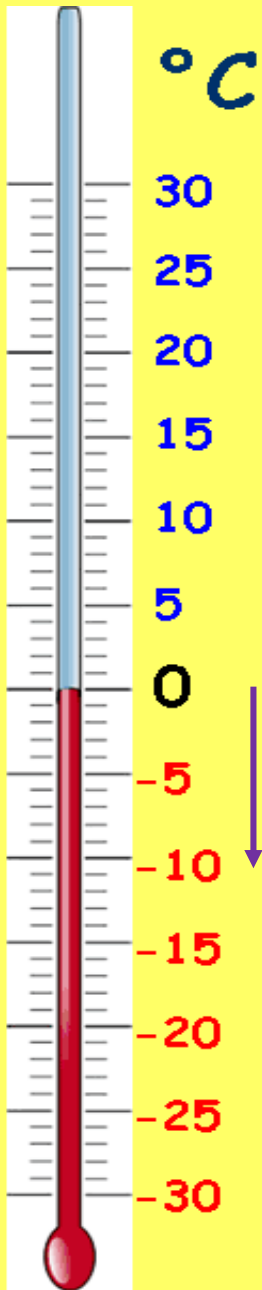


It is sometimes easier to understand negative numbers by relating them to temperature:

- On a hot summer day, the temperature might be  $25^{\circ}\text{C}$  and at night the temperature might fall to  $15^{\circ}\text{C}$ .
- As the temperature decreases, the numbers decrease (because so far the numbers have all been positive).



- On a cold winter day, the temperature might be  $10^{\circ}\text{C}$  and at night the the temperature might fall to  $0^{\circ}\text{C}$ .
- Again as the temperature decreases, the numbers decrease (because the numbers are still positive).



- On a really cold winter day, the temperature might be  $0^{\circ}\text{C}$  and at night the temperature might fall to  $-10^{\circ}\text{C}$ .
- Now as the temperature decreases, the numbers *increase* (because the numbers are now negative).



We have already thought about temperature, but what other 'real life' situations do you see negative numbers being used?



Bank Accounts  
(unfortunately!)



TV weather  
forecasts



Lifts (for those  
buildings which  
go below  
ground level)

# Bank Accounts

How do you think bank accounts use negative numbers?

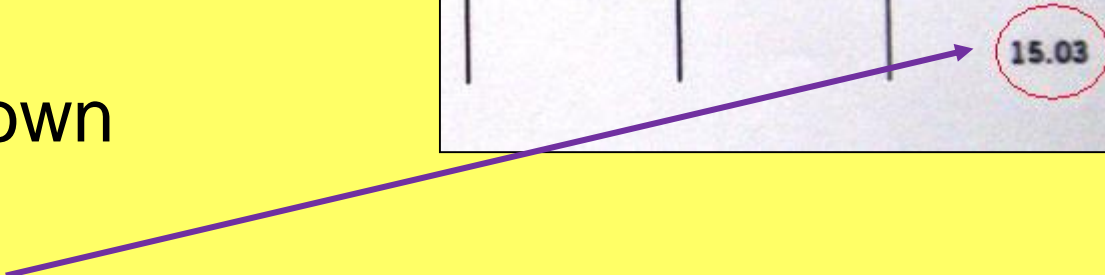


*Other banks are available!*

# Bank Accounts

If somebody has money in their bank account, their account balance is shown as a regular number.

<i>Paid out (£)</i>	<i>Paid in (£)</i>	<i>Balance (£)</i>
		<b>20.03</b>
	80.00	100.03
20.00		80.03
25.00		55.03
40.00		15.03
		<b>15.03</b>



# Bank Accounts

<i>Paid out (£)</i>	<i>Paid in (£)</i>	<i>Balance (£)</i>
		<b>20.03</b>
	80.00	100.03
20.00		80.03
25.00		55.03
40.00		15.03
		<b>15.03</b>

Now, just because you don't have money in your account, doesn't mean you can't spend money. Banks can have an arrangement with customers that gives them an *overdraft* which means they can spend more than they have – **but they often have to pay more for this facility.**

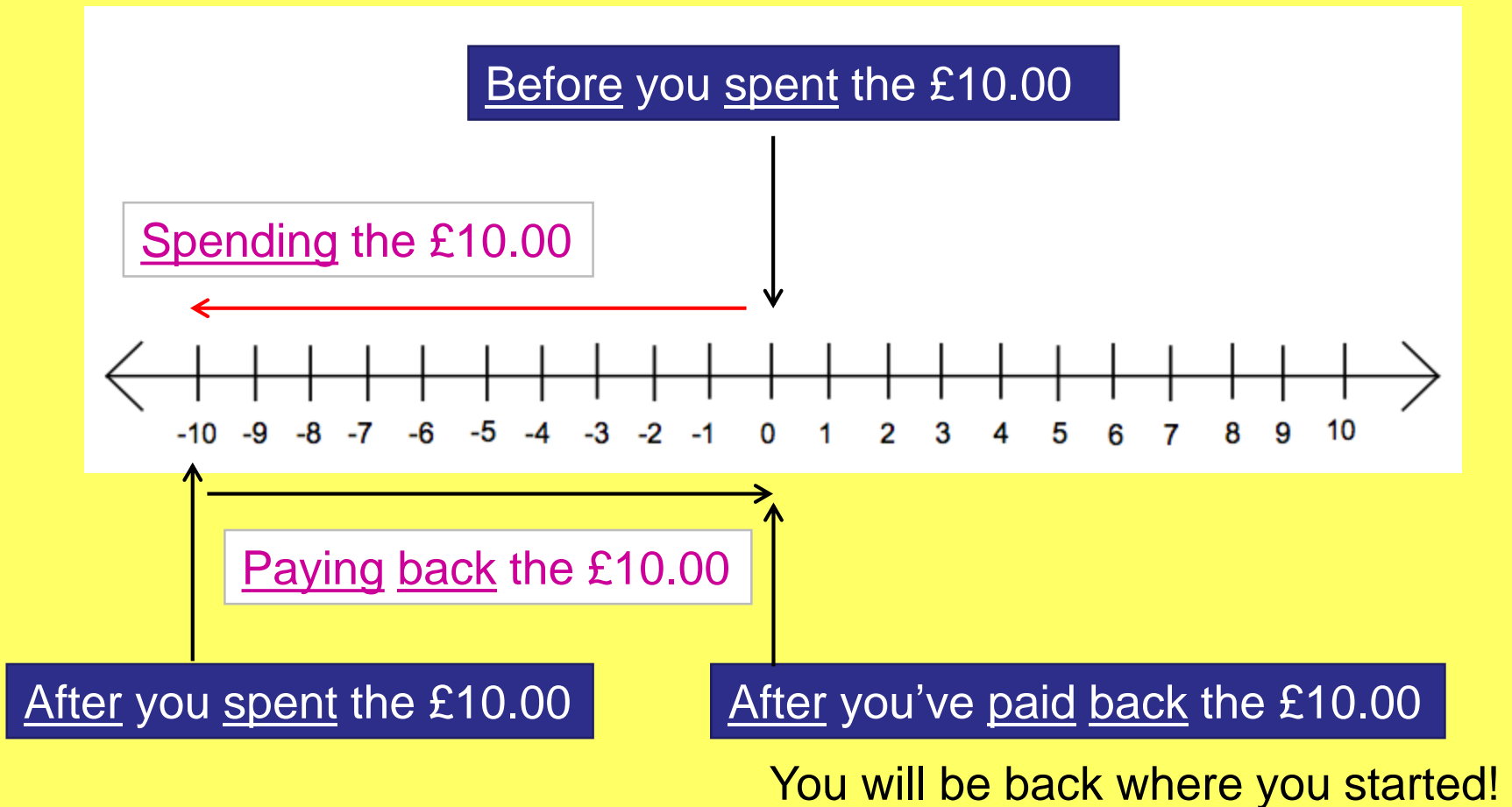
Any money you spend that you don't have (less than £0.00) you are borrowing from the bank. This is what the 'overdraft' is and it is represented on your bank account with negative numbers.

So, if you have no money in your account and then buy something for £10.00, your account would show -£10.00.

Then, if you pay the £10.00 back to the bank, that will take your bank account balance (total) back to £0.00 again.

# Bank Accounts

This diagram should help to explain this:



Now try these negative number problems:

- Fill in the missing numbers.

152, 102, 52, 2, \_\_\_\_\_, \_\_\_\_\_

Answer on next page...



- Fill in the missing numbers.

152, 102, 52, 2, -48, - 98

You are subtracting 50 each time.

As you subtract 50 your numbers decrease, but remember, once you get past zero, the value of your numbers will increase again.

# True or False?

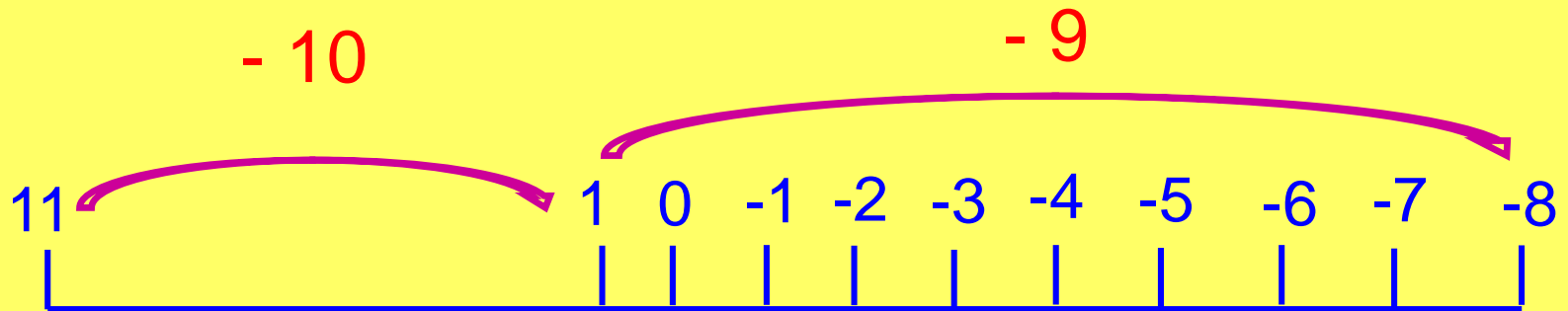
Nineteen less than eleven is minus 8.

Answer on next page...

# True!

Nineteen less than eleven is minus 8.

If you are not sure, use a number line. You could partition 19 into 10 and 9. First subtract 10 from 11. This gives you 1. Then you need to subtract the other 9. Count along your number line until you have taken away the 9.



# True or False?

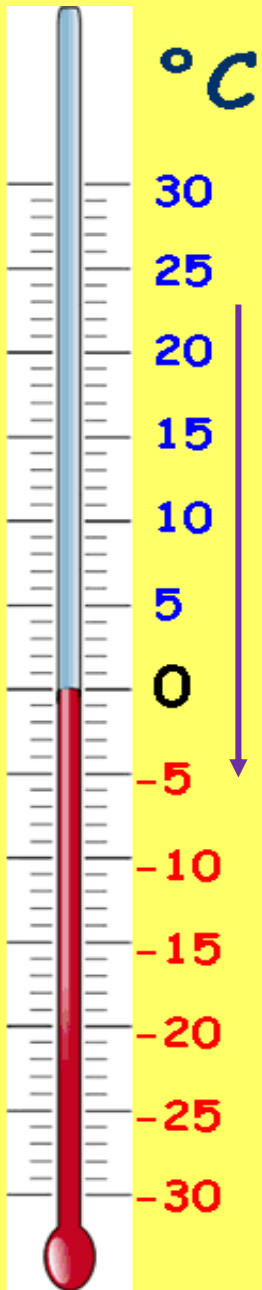
The temperature is  $-5^{\circ}\text{C}$  outside and  $23^{\circ}\text{C}$  inside. The difference is  $18^{\circ}\text{C}$ .

Answer on next page...

# False

The temperature is  $-5^{\circ}\text{C}$  outside and  $23^{\circ}\text{C}$  inside. The difference is  $18^{\circ}\text{C}$ .

Remember our thermometer?  
23 down to zero means you have already taken away 23, then you need to subtract the next 5 degrees so the difference is actually  $23 + 5 = 28$ .  
So your answer should be  $28^{\circ}\text{C}$ .



*Your activity:*

Complete the Using Negative Numbers in  
Context sheet.

*Plenary:*

Create a word problem involving negative numbers (remember to include the answer) and send it to your teacher:

Rosen: [rosen-2061@ivervillage-jun.bucks.sch.uk](mailto:rosen-2061@ivervillage-jun.bucks.sch.uk)

Rowling: [rowling-2061@ivervillage-jun.bucks.sch.uk](mailto:rowling-2061@ivervillage-jun.bucks.sch.uk)