

# fs4u

## Using Negative Numbers

### ‘How To’ Booklet 5

# Using Negative Numbers

For this 'How To' booklet in addition to paper and pen you will need a calculator for a few questions.

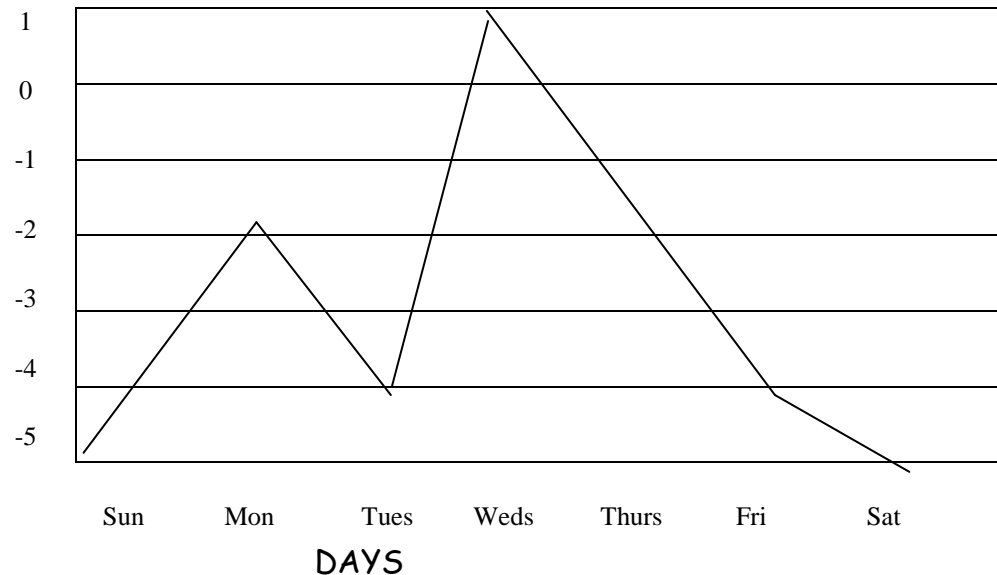
By the end of this booklet you should be able to use negative numbers to describe everyday events.

There are 3 main occasions when you might use negative numbers.

- 1 To describe temperatures that are below  $0^{\circ}C$
- 2 To describe low lying land
- 3 To describe a loss of money or debt.

# Temperatures

Temperatures in a freezer vary from day to day. This is a graph showing the temperatures over a week.

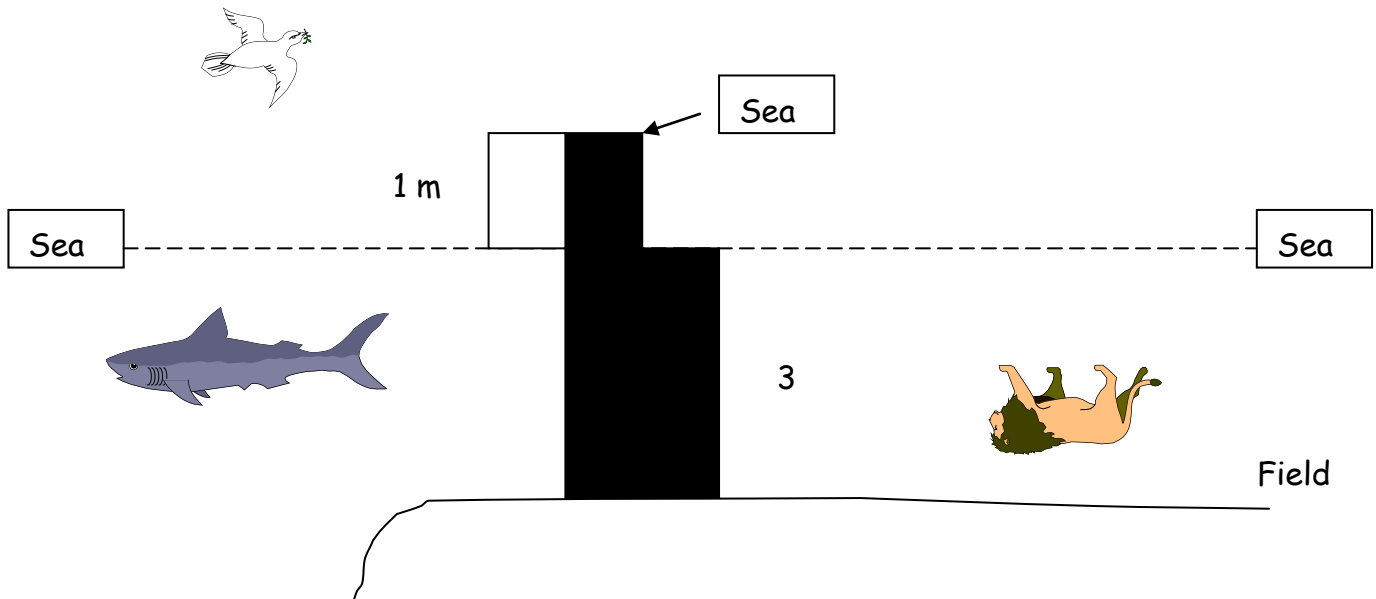


- 1 On which day was the temperature above  $0^{\circ}\text{C}$
- 2 By how many degrees did the temperature rise between Tuesday and Wednesday? (Just Count)
- 3 What happened to the temperature between Wednesday and Saturday?
- 4 On which 2 days was the temperature the same?
- 5 Why are all the temperatures but one, below  $0^{\circ}\text{C}$ ?
- 6 It is  $0^{\circ}\text{C}$  on Monday. Overnight the temperature falls by  $10^{\circ}\text{C}$ . What is the temperature then?

Here are some more questions involving other temperatures.

- 7 At 2pm it is  $20^{\circ}\text{C}$ , then it rises by another  $20^{\circ}\text{C}$ . What temperature is reached?
- 8 How many degrees are there between  $-20^{\circ}$  and  $40^{\circ}\text{C}$
- 9 How many degrees are there between  $-10^{\circ}$  and  $20^{\circ}\text{C}$
- 10 How many degrees are there between  $15^{\circ}$  and  $-5^{\circ}\text{C}$ ?

# Low Lying Land



It is possible to have land lower than sea level. The fields illustrated above are 3 metres **BELOW** sea level, or -3 metres. The sea wall is one metre **ABOVE** sea level or one metre.

Use negative signs where necessary to replace the words 'below sea level'.

e.g. 10m 'below sea level' is -10m.

- 11 5 m below sea level
- 12 5 m above sea level
- 13 17 m above sea level
- 14 20 m below sea level
- 15 3 cm below sea level
- 16 2 feet above sea level
- 17 2 feet below sea level
- 18 10 feet below sea level

# Owing Money

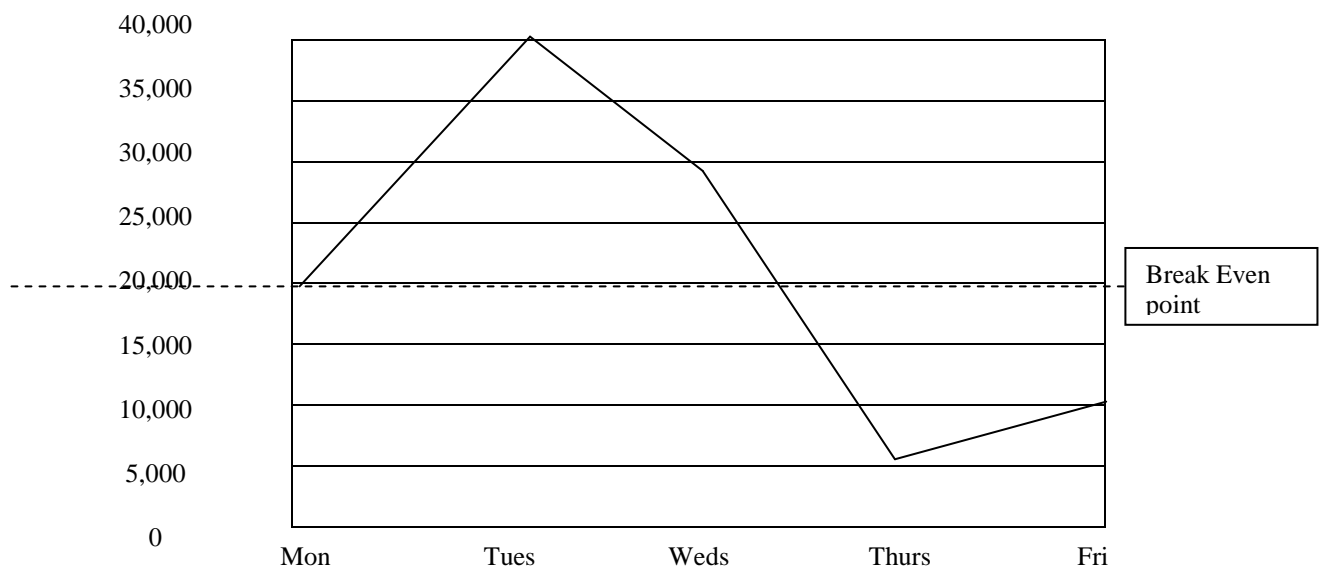
If your bank statement is -£15 it means you are £15 overdrawn, or you own the bank £15.

**19** The company owes a bank £1,500,000; write this using a negative number.

**20** A student has £10 in the bank when he withdraws £15. Use a negative number to show his balance.

(Use a calculator to do  $£10 - £15$  if you need to )

The graph shows a company's sales - they must sell £15,000 of goods a day to cover their costs (called the break even point).



They record sales of less than £15,000 a day as a negative number. Thursday's sales would be recorded as -£10,000 because £5,000 is £10,000 less than £15,000.

Friday's would be -£5,000 (count down from £15,000)

The following are their sales for the next disastrous week.

**21** Monday £8,000

**22** Tuesday £6,000

**23** Wednesday £2,000

**24** Thursday £1,000

**25** Friday £12,000

Record these as negative numbers.

## RULE

Subtract 15,000 from each of the numbers on the previous page e.g.

Monday  $£8,000 - £15,000 = £7,000$

# Self Assessment Test

- 1 Suzie is climbing a hill.  
If +10 means 'walk 10 paces up the hill' what is the meaning of:-
  - a - 10
  - b + 50
  - c - 100
  
- 2 If +3 means I am 3 metres above the surface of the water in a swimming pool, what does -1 metre means?
  
- 3 Which is colder and by how many degrees?
  - a  $5^{\circ}\text{C}$  or  $-5^{\circ}\text{C}$
  - b  $-18^{\circ}\text{C}$  or  $-12^{\circ}\text{C}$
  - c  $-6^{\circ}\text{C}$  or  $-3^{\circ}\text{C}$

# Using Negative Numbers

To enable us to use negative numbers when discussing losses, temperatures and sea levels.

For this 'How To' booklet in addition to paper and pen you will need a calculator for a few questions.

By the end of this pack you should be able to use negative numbers to describe everyday events.

Let's deal with money first

£	
100	(a) grant cheque money chart
90	
80	
70	
60	
50	
40	
30	
20	
10	
0	
-10	
-20	
-30	
-40	
-50	

Let's plot your fortune over a term. Make a copy of the chart above.

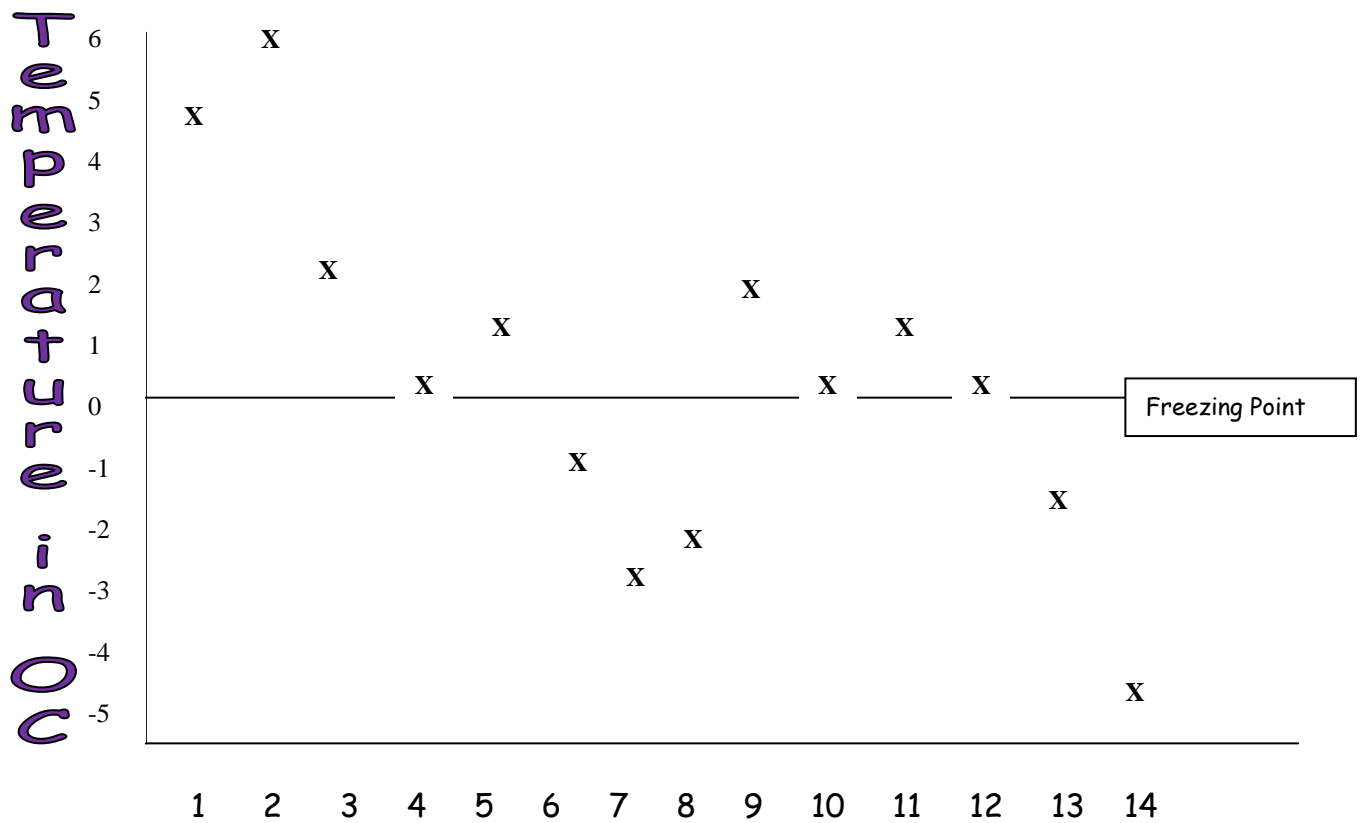
1 Now put these events onto your money chart (a) has been done for you.

- a Open a bank account with a £100 cheque
- b Buy stationery for your course costing £10. Put (b) on the money chart to show how much you have left.
- c Pay your board money of £70. Put (c) to show how much is left
- d Buy a pair of jeans costing £30. Put (d) to show how much is left
- e Win £50 on the lottery and put it in the bank. Put (e) as your new total.
- f You treat yourself to a night out costing £60. Well, you did win the lottery! Put (f) as the new total.

2 What is special about (d) and (f)?



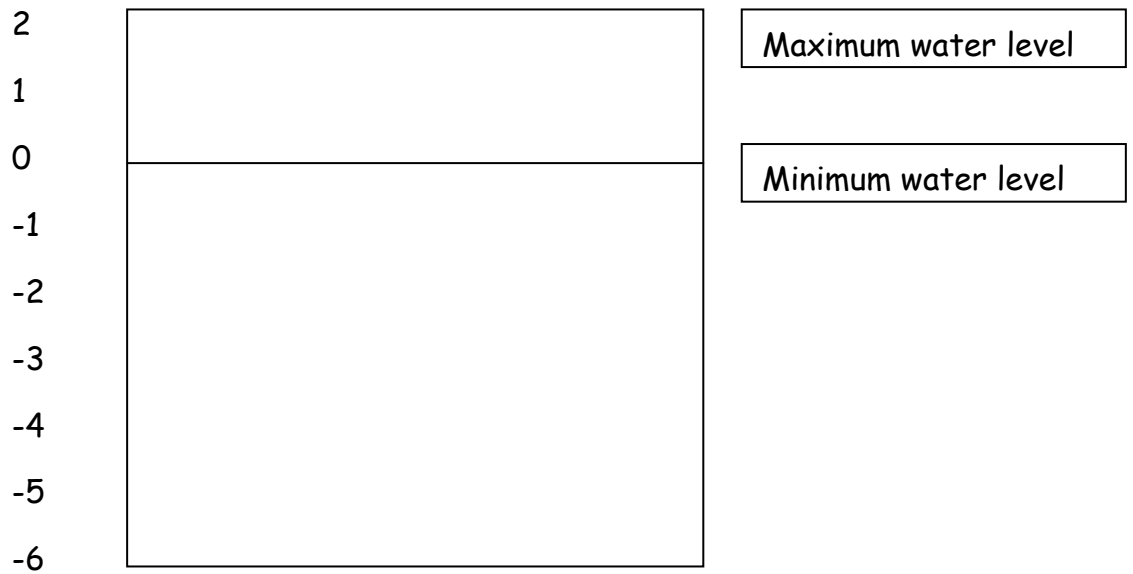
This is a temperature chart for a fortnight in January.



3

- Which day had the lowest temperature?
- Which day had the highest temperature?
- Which day was the temperature BELOW zero?

Now let us look at swimming pool levels.



- 4 If the water is at the minimum level and two metres of water evaporated. What is the new water level?
- 5 If 3 metres of water are then added. What is the new water level?
- 6 What does a water level of -6 metres mean?
- 7 What is the maximum water level?

## Assessment Test

- 1 What do negative numbers mean in bank accounts?
- 2 What do negative numbers mean in temperatures?