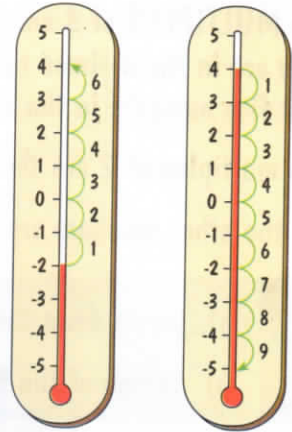


ADDING AND SUBTRACTING ON THE NUMBER LINE

On a cold morning, the temperature at 8 o'clock was -2°C . But as the sun came up, the temperature rose by 6°C . Counting up on the thermometer, the temperature went up to 4°C . This can be written as $-2 + 6 = 4^{\circ}\text{C}$.

As the sun went down in the evening, the temperature went down by 9°C . Counting down on the thermometer, the temperature went down to -5°C . This can be written as $4 - 9 = -5^{\circ}\text{C}$.

Make a copy of one of the thermometers opposite and use it to help you answer these questions:



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What is the new temperature if:

- a) It starts at -3°C and goes up by 5°C .
- b) It starts at -4°C and goes up by 7°C .
- c) It starts at -5°C and goes up by 3°C .
- d) It starts at 1°C and goes down by 2°C .
- e) It starts at 5°C and goes down by 10°C .
- f) It starts at -1°C and goes down by 3°C .

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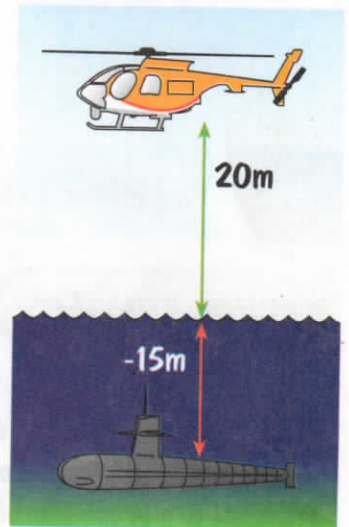
- a) The temperature rises from -2°C to 5°C . By how much has it gone up?
- b) The temperature falls from 4°C to -1°C . By how much has it gone down?

NEGATIVE NUMBERS can be used for things other than temperature.

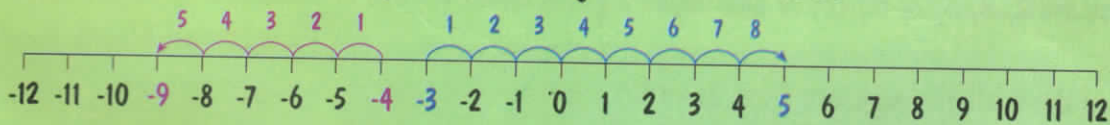
If you have $-\text{£}5$, you owe $\text{£}5$. If a height of 20m above sea level is written 20m, then -15m means 15m below sea level. Whatever the meaning of the negative numbers, we need to be able to add or subtract with them.

It is helpful to think about moving along the number line.

When **ADDING**, count to the **RIGHT**, when **SUBTRACTING** count to the **LEFT**.



For $-3 + 8$ at start at -3 and count 8 places to the right. The answer is 5.



For $-4 - 5$ start at -4 and count 5 places to the left. The answer is -9 .

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Workout: a) $10 - 12$ b) $-5 + 11$ c) $2 - 8$ d) $-7 + 4$ e) $-3 - 7$

If you try calculating $3 - 8$ on your calculator, it should give the answer as -5 . Sometimes the $-$ sign appears after the 5 as $5-$, and sometimes it appears at the beginning of the display. Try this on your calculator and make sure you know where the $-$ sign appears.