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Negative Numbers

Study Development Factsheet

A negative number is a number that is less than zero. They are written as a number with a minus sign before it, like -4 for example. The number part is how far away from zero the number is (e.g. - 2 is 2 away from zero, and -5 is 5 away from zero). Negative numbers are often seen on bank statements to represent money leaving the account. If more money has been spent than there was in the account, then the overall balance will be a negative number.

Putting negative numbers in size order

Negative numbers go the other way on a number line to positive numbers, meaning that the 'larger' the number part is, the lower its value when it's negative. Think of temperatures: -10°C is a lower and colder temperature than -1°C, so if we were asked to put them in order from lowest temperature to highest, we would put -10°C first.

Example

Put these numbers in order from lowest to highest: 3, -1, -5, -1.2, 2

Answer

-5, -1.2, -1, 2, 3

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Adding

a + -b = a - b

Adding a negative number is like subtracting that number. For example, 3 + -2 is the same as 3 - -2

2 = 1.

Subtracting

a - -b = a + b

Subtracting a negative number is the same as adding it. For example, 10 - 4 = 10 + 4 = 14.

This can be thought of as removing a debt. If you were to take away a debt from a bank account,

you have added money to the account.

Multiplying and dividing

A general rule for both multiplying and dividing is:

- If the signs match (i.e. if both numbers are positive or both numbers are negative) then the answer will be positive.
- If the signs don't match (i.e. there is one positive and one negative number) then the answer will be negative.

$$-a \times -b = ab$$
$$a \times -b = -ab$$
$$-a \div -b = a \div b$$
$$-a \div b = -(a \div b)$$
$$a \div -b = -(a \div b)$$

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Learning Services For example, $12 \div -4 = -3$.



These rules can be extended when multiplying or dividing more numbers. For example, $3 \times -2 \times -4$ can be broken down into $(3 \times -2) \times -4 = -6 \times -4 = 24$.

This can be more easily remembered if we see multiplying or dividing by a negative as "changing the direction" of the other number. So, multiplying a positive by a negative changes the answer to a negative. Multiplying a negative by a negative flips it back around into being a positive.

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