Refresh Negative numbers

Calculating with signed numbers

Often a calculation involves a mixture of positive and negative numbers. Below is a summary of the rules which govern the arithmetic of signed (positive or negative) numbers.

Adding a negative number is equivalent to subtracting the corresponding positive number, e.g. \(4 + (-2) = 4 - 2\).

Subtracting a negative number is equivalent to adding the corresponding positive number, e.g. \(4 - (-2) = 4 + 2\).

Multiplying or dividing two numbers with the same sign gives a positive answer, e.g. \((-4) \times (-2) = 4 \times 2\), \((-4) \div (-2) = 4 \div 2\).

Multiplying or dividing two numbers with opposite signs gives a negative answer, e.g. \((+4) \times (-2) = -(4 \times 2) = -8\), \((+4) \div (-2) = -(4 \div 2) = -\left(\frac{4}{2}\right) = -2\).

This is often described as ‘two minuses make a plus’.

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Example 1

Evaluate each of the following.

(a) \(5 + (-8)\)
(b) \((-5) + (-8)\)
(c) \(5 - (-8)\)
(d) \((-5) - (-8)\)
(e) \((-7) \times (-3)\)
(f) \((-7) \times 3\)
(g) \((-12) \div 4\)
(h) \((-12) \div (-4)\)

Solution

(a) \(5 + (-8) = 5 - 8 = -3\)
(b) \((-5) + (-8) = (-5) - 8 = -13\)
(c) \(5 - (-8) = 5 + 8 = 13\)
(d) \((-5) - (-8) = (-5) + 8 = 3\)
(e) \((-7) \times (-3) = + (7 \times 3) = 7 \times 3 = 21\)
(f) \((-7) \times 3 = -(7 \times 3) = -21\)
(g) \((-12) \div 4 = -(12 \div 4) = -3\)
(h) \((-12) \div (-4) = +(12 \div 4) = 3\).