Translating Phrases into Algebraic Expressions

When translating phrases into algebraic expressions, you need to identify keywords and phrases which specifically refer to a mathematical operation (addition, subtraction, multiplication, and division). Usually, you can write out the algebraic expression of the verbal description in the order that it is said. The exceptions occur for certain verbal statements made in regards to subtraction and division. These exceptions are bolded in the examples below.

Keywords and phrases	*Verbal Description*	*Algebraic Expression*
Addition:		
Sum, plus, greater, increased by, more than, exceeds, total of, combined together, added to…	Six more than the input value →	$6+x$
	The input value increased by five →	$x+5$
Subtraction:		
Difference between/of, minus, **less than**, decreased by, subtracted from, reduced by, **fewer than**, the remainder between….	**Four less than the input value** →	$x-4$
	The difference between the input value and seven →	$x-7$
Multiplication:		
Product of, multiplied by, times, of, increased/decreased by a factor of *(this type can involve both addition or subtraction **and** multiplication)*	The product of the input and three →	$3x$
	Negative six times the input →	$-6x$
Division:		
Quotient of, divided by, ratio, per, a, out of, Percent (divide by 100)…	**The ratio of the input and two** →	$\frac{x}{2}$
	The quotient of one and the input →	$\frac{1}{x}$

Examples:

Three increased by 12 times a number
$3 + 12x$

The difference between 3 times a number and 12
$3x - 12$

Ten times the sum of a number and 4
$10(x+4)$

Seven more than five times a number
$7 + 5x$

Three times the difference of a number and 12
$3(x - 12)$

A number divided by 3
$\frac{x}{3}$

The square of a number increased by two
$x^2 + 2$

Twice the cube of a number, increased by one
$2x^3 + 1$