Translating and Evaluating Expressions

A mathematical relationship that contains an _____ is called an _____.

A constant, variable, or any combination of constants, variables, and arithmetic symbols that describes a calculation is called an _____.

For example, $N = R - C$ is an equation, but $R - C$ by itself is an expression.

(Equations make complete sentences; expressions don't.)

Ex 1.
Equation or expression?
$E = mc^2$

$23 - 2\left(9 + \sqrt{20}\right)$

$\frac{\sqrt{b^2-4ac}}{2a}$

$y - y_1 = m(x - x_1)$

Evaluating Expressions

Ex 2.
Evaluate $x^2 - 2y^2 + 3xy$ when $x = -1$ and $y = 2$.

Ex 3.

Evaluate $3\sqrt{j+k}+4jk$ when $j=-5$ and $k=1$. What happens and what does it mean?

Ex 4.

Evaluate $\frac{3x}{(x+2)(x-2)}$ at $x=-1$.

Now evaluate $\frac{3x}{(x+2)(x-2)}$ at $x=-2$. What happens and what does it mean?

What are all values for x that cause $\frac{3x}{(x+2)(x-2)}$ to be undefined?

Translating Phrases into Math Expressions

Addition

Words	Expression
the sum of x and 4	$x + 4$
x plus y	$x + y$
3 added to n	$n + 3$
2 more than a number	$n + 2$
t increased by 10	$t + 10$

Subtraction

Words	Expression
the difference of x and 4	$x - 4$
x minus y	$x - y$
3 subtracted from n	$\boldsymbol{n - 3}$
2 less than a number	$\boldsymbol{n - 2}$
t decreased by 10	$t - 10$

Multiplication

Words	Expression
the product of 4 and x	$4x$
7 times y	$7y$
5 multiplied by n	$5n$
twice a number	$2n$
triple the number	$3n$

Division

Words	Expression
the quotient of x and 4	$x \div 4$
x divided by y	$x \div y$
x divided *into* y	$y \div x$

Exponents and Roots

Words	Expression
c squared	c^2
the square of b	b^2
k cubed	k^3
the cube of b	b^3
n to the fourth power	n^4
y raised to the fifth power	y^5
the square root of x	$\sqrt{x}$

Ex 5.

Translate the following into variable expressions.

seven added to the product of four and x

ten subtracted from the quotient of some number and three

twelve less than the square of some number

nine divided into the square root of some number

four times the sum of y and five

the product of negative six and the difference of some number and two