# Translation (Predicates)

Translation works a lot like when we just had propositions.
Let's try it…

$x$ is prime or $x^2$ is odd or $x = 2$.

$\texttt{Prime}(x) \vee \texttt{Odd}(x^2) \vee \texttt{Equals}(x, 2)$

# Translations (Quantifiers)

Domain of Discourse: all integers

"For every $x$, if $x$ is even, then $x = 2$."

"There are $\mathrm{x}, y$ such that $\mathrm{x} < y$."

$\exists x\ (\texttt{Odd}(x) \wedge \texttt{LessThan}(x, 5))$

$\forall y\ (\text{Even}(y) \wedge \text{Odd}(y))$

# More Practice with answers

Let your domain of discourse be fruits. Translate these

There is a fruit that is tasty and ripe.

$$\exists x(\texttt{Tasty}(x) \land \texttt{Ripe}(x))$$

For every fruit, if it is not ripe then it is not tasty.

$$\forall x(\neg\texttt{Ripe}(x) \rightarrow \neg\texttt{Tasty}(x))$$

There is a fruit that is sliced and diced.

$$\exists x(\texttt{Sliced}(x) \land \texttt{Diced}(x))$$

# Negation

Let your Domain of Discourse be integers; translate into predicate notation and negate.

There are integers $x, y$ such that $xy = 0$.

Every integer is even.