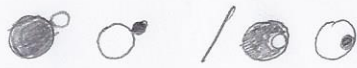


# Except / Unless



These ideas are similar but "except" has a sense of "outside the group".

$\forall x \in A, x \neq a \rightarrow P(x)$  (Except)

$\forall x \in A, x \neq a \rightarrow P(x)$  John.

No one in the class understood the problem except John.

$\forall p \in \text{planets}, p \neq \text{Venus} \rightarrow \text{spin counter-clockwise}$ . Except Venus, all planets spin counterclockwise.  
 $\forall t \in \text{TV}, t \neq \text{rare} \rightarrow \text{I don't watch TV}$ . With only rare exceptions, I don't watch TV.  
 $\forall c \in \text{car}, c \neq \text{gas} \rightarrow \text{ready for trip}$ . Except for putting gas in the car, we are all ready for the trip.

$\forall m \in \text{hiking}, m \neq \text{rain} \rightarrow \text{I will go hiking}$ . I will go hiking unless it rains.

$\forall r \in \text{reason}, r \neq \text{good} \rightarrow \text{I think we should buy a new table}$ .

Unless you know a good reason not to, I think we should buy a new table.

$\forall p \in \text{planets}, p \neq \text{Venus} \rightarrow \text{spin counter-clockwise}$  "unless",  $\forall t \in \text{TV}, t \neq \text{rare} \rightarrow \text{I don't watch TV}$ .  
 $\forall c \in \text{car}, c \neq \text{gas} \rightarrow \text{ready for trip}$ .

I actually had a hard time creating a good id for "unless", I think because the idea was not consciously clear to me. But now that I have a good id for it, the idea shines with definite clarity.

NOTE:  $\lceil$  ready  $\lceil$  order  $\lceil$  begin/end : in order at the beginning