

**2.4 More Practice** (Please put your work on the same sheet as your homework. NOT HERE.)

What can you conclude:

- valid**
1. Conclusion: IF weasels walk wisely, then the horses head for home.
- a. If weasels walk wisely, then cougars call their cubs.
  - b. If goats go to graze, then horses head for home.
  - c. If cougars call their cubs, then goats go to graze.
  - d. If bobcats begin to browse, then weasels walk wisely.

$\checkmark a \rightarrow b$       $a \rightarrow b$   
 $\checkmark c \rightarrow e$       $b \rightarrow c$   
 $\checkmark b \rightarrow c$       $c \rightarrow e$   
 $d \rightarrow a$   
 $\sim a \rightarrow \sim d$

- Invalid**
2. Conclusion: IF the line is long, then the line is not long.
- a. If the line is long, then Quincy will go home.
  - b. If it is morning, then Quincy will not go home.
  - c. If the line is long, then it is morning.

Cannot include  
 $\checkmark a \rightarrow b$       $a \rightarrow b$   
 $\checkmark c \rightarrow \sim b$       $b \rightarrow \sim c$   
 $\checkmark a \rightarrow c$       $\sim c \rightarrow \sim a$   
 $a \rightarrow \sim a$

3. Conclusion:  $g \rightarrow \sim p$  or  $p \rightarrow \sim g$

$\sim c \rightarrow \sim f$       $\checkmark g \rightarrow b$       $p \rightarrow f$       $c \rightarrow \sim b$   
 $\checkmark g \rightarrow b$       $\checkmark b \rightarrow \sim c$       $\checkmark f \rightarrow \sim p$       $\checkmark b \rightarrow \sim c$

4. Conclusion:  $d \rightarrow f$  or  $\sim d \rightarrow \sim f$

$\checkmark d \rightarrow f$       $d \rightarrow \sim c$       $\sim c \rightarrow a$       $a \rightarrow b$   
 $\checkmark d \rightarrow f$       $\checkmark b \rightarrow \sim c$       $\sim a \rightarrow c$       $b \rightarrow f$   
 $\checkmark d \rightarrow f$       $\checkmark \sim d \rightarrow \sim f$       $\sim f \rightarrow \sim b$

5. Use the chain rule to combine all the statements to create a new true statement.

**Start**  $a \rightarrow b$ ,  $c \rightarrow \sim b$ ,  $d \rightarrow c$ ,  $e \rightarrow \sim f$ , and  $\sim e \rightarrow d$

$a \rightarrow b$   
 $b \rightarrow \sim c$   
 $\sim c \rightarrow \sim d$   
 $\sim d \rightarrow e$   
 $e \rightarrow \sim f$

Conclusion:  $a \rightarrow \sim f$   
or  
 $f \rightarrow \sim a$