

20.  $p \rightarrow q, q \rightarrow r$   
 $p \rightarrow r$

0-8+

9-12v

13v-

## 2.4 Biconditional statements

statement that can be written in the form "p if and only if q"

- it means  $p \rightarrow q$  and  $q \rightarrow p$ .

- other notations:  $p \leftrightarrow q$ ,  
 $p \text{ iff } q$

Ex: Write the conditional + the converse of:

An angle is right iff it is  $90^\circ$

conditional: if angle is right then it is  $90^\circ$

converse: If an angle is  $90^\circ$ , then it is right.

Write the converse + biconditional  
for:

if  $5x - 8 = 37$ , then  $x = 9$ .

converse: if  $x = 9$ , then  $5x - 8 = 37$

biconditional:  $5x - 8 = 37$  iff  $x = 9$

Find the truth value of:

2  $\angle$ 's are  $\cong$  iff they have = measures

cond: if 2  $\angle$ 's are  $\cong$  then they have equal measures.  $\textcircled{T}$

conv: if 2  $\angle$ 's have = measures then they are  $\cong$ .  $\textcircled{T}$

$\textcircled{\text{True}}$

Ex:  $x = 5 \leftrightarrow y^2 = 25$ .

cond.: if  $y = 5$  then  $y^2 = 25$  (T)

conv. if  $y^2 = 25$ , then  $y = 5$ . (F)

False

Definition : has to be reversible  
- needs to be written as an if  
and only if statement.

A pen is a item that writes.

· an item is a pen iff it writes.

cond: If an item is a pen  
then it writes. (T)

conv. If an item writes, then its  
a pen. (F)

