

Lesson 2-4

Objective – To determine the validity of biconditional statements.

Biconditional Statement

$p \rightarrow q$ and $q \rightarrow p$ means $p \leftrightarrow q$
 “If p then q” “if q then p” “p if and only if q”

A parallelogram is a rectangle if and only if it has right angles. **True!**

Conditional: If it is a parallelogram with right angles, then it is a rectangle. **True!**

Converse: If it is a rectangle, then it is a parallelogram with right angles. **True!**



Determine the validity of the biconditional statement.

1) $x = 5$ if and only if $x^2 = 25$ **False!**

Conditional: If $x = 5$, then $x^2 = 25$ **True!**

Converse: If $x^2 = 25$, then $x = 5$. **False!**

2) A square has an area of 64 un^2 if and only if its side measures 8 un. **True!**

Conditional: If a square has an area = 64 un^2 , then its side = 8 un. **True!**

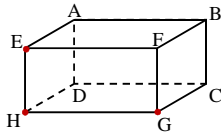
Converse: If a square's side = 8 un., then its area = 64 un^2 . **True!**

Determine the validity of the biconditional statement.

3) Three points are collinear if and only if they are coplanar. **False!**

Conditional: If 3 points are collinear, then they are coplanar. **True!**

Converse: If 3 points are coplanar, then they are collinear. **False!**



Determine the validity of the biconditional statement.

4) A rectangle has an area of 20 un^2 if and only if its width = 4 un. and length = 5 un. **False!**

Conditional: If a rectangle's area = 20 un^2 , then its width = 4 un. and length = 5 un. **False!**

Converse: If a rectangle's width = 4 un., and length = 5 un., then its area = 20 un^2 . **True!**

Determine the validity of the biconditional statement.

5) M is the midpoint of \overline{XY} if and only if $XM = MY$. **False!**

Conditional: If M is the midpoint of \overline{XY} , then $XM = MY$. **True!**

Converse: If $XM = MY$, then M is the midpoint of \overline{XY} . **False!**

