

# 1.5 Angle & Segment Division (also see samples & examples in OTB)

Name: \_\_\_\_\_

Geometry: **Worksheet 1.5:**

**IF-THEN FORM**  
**Conditional**

→ If hypothesis, then conclusion  
**Converse** - reverse these!

Complete each if-then statement.

1. **congruent angles**

Defn.



**conditional:** if 2  $\angle$ s are  $\cong$ , then they have the same measure

**converse:** if 2  $\angle$ s have the same measure, then they are congruent

2. **obtuse angle**

Defn.

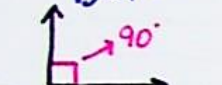


**conditional:** if an  $\angle$  is obtuse, then its measure is greater than  $90^\circ$  & less than  $180^\circ$

**converse:** if the measure of an  $\angle$  is between  $90^\circ$  and  $180^\circ$ , then the angle is obtuse

3. **right angle**

Defn.

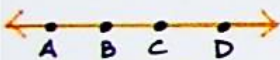


**conditional:** if an  $\angle$  is a right angle, then its measure is  $90^\circ$

**converse:** if the measure of an  $\angle$  is  $90^\circ$ , then it is a right angle

4. **collinear points**

Defn.



**conditional:** if 3 or more points are collinear, then they lie on the same line

**converse:** if 3 or more points lie on the same line, then they are collinear

5. **midpoint**

Defn.



**conditional:** if a point is a midpoint, then it divides a segment into 2  $\cong$  segs

**converse:** if a point divides a segment into 2  $\cong$  segments, then it is a midpoint

6. **angle bisector**

Defn.



**conditional:** if a ray bisects an  $\angle$ , then it divides the angle into 2  $\cong$   $\angle$ s

**converse:** if a ray divides an  $\angle$  into 2  $\cong$   $\angle$ s, then it bisects the angle

7. **angle trisector**

Defn.



**conditional:** if 2 rays trisect an  $\angle$ , then they divide the angle into 3  $\cong$   $\angle$ s

**converse:** if 2 rays divide an  $\angle$  into 3  $\cong$   $\angle$ s, then the rays trisect the angle

8. **theorem 1**

**conditional:** if 2  $\angle$ s are right angles, then they are congruent

~~**converse:** if 2  $\angle$ s are  $\cong$ , then they have the same measure~~

not all theorems are reversible!

# Using the "givens", what can you conclude?

GIVE "REASON"  
... why?

Complete each 2-step proof:

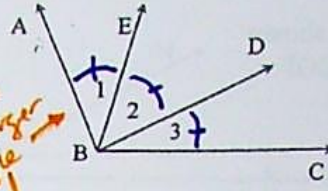
1.



Given 2  $\cong$  segments both with point M

Statements	Reasons
1. $\overline{AM} \cong \overline{MB}$	1. Given
2. M mdpt. $\overline{AB}$	2. If a seg. has been $\div$ into 2 $\cong$ segs by a pt., then mdpt.

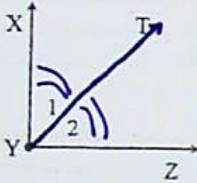
4.



Given 3  $\cong$  angles inside larger angle

Statements	Reasons
1. $\angle 1 \cong \angle 2 \cong \angle 3$	1. Given
2. $\overline{BD}$ and $\overline{BE}$ trisect $\angle ABC$	2. If an $\angle$ has been $\div$ into 3 $\cong$ $\angle$ 's, then tris. by 2 rays

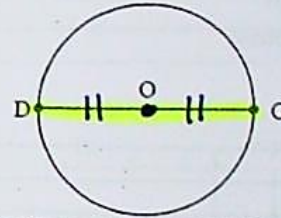
2.



Given an angle bisected by a ray

Statements	Reasons
1. $\overline{YT}$ bisect $\angle XYZ$	1. Given
2. $\angle 1 \cong \angle 2$	2. If an $\angle$ has been bis. by a ray, then $\div$ into 2 $\cong$ $\angle$ 's

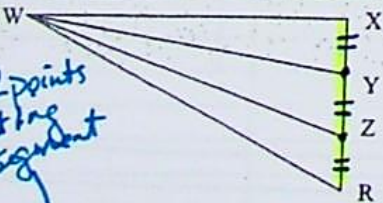
5.



Given the mdpt of a segment

Statements	Reasons
1. O mdpt. $\overline{DG}$	1. Given
2. $\overline{DO} \cong \overline{OG}$	2. If a seg. has a mdpt, then the pt. $\div$ it into 2 $\cong$ segs

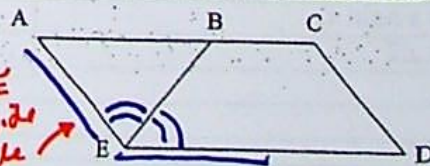
3.



Given 2 points trisecting a segment

Statements	Reasons
1. Y and Z trisect $\overline{XR}$	1. Given
2. $\overline{XY} \cong \overline{YZ} \cong \overline{ZR}$	2. If a segment is trisect. by 2 pts, then $\div$ into 3 $\cong$ segs

6.



Given 2  $\cong$  angles inside larger angle

Statements	Reasons
1. $\angle AEB \cong \angle BED$	1. Given
2. $\overline{EB}$ bisect $\angle AED$	2. If an $\angle$ is $\div$ into 2 $\cong$ $\angle$ 's, then it was bisected by a ray