



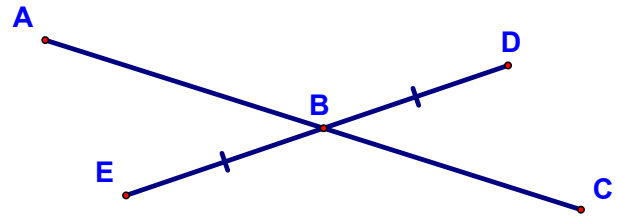
## Deductive Structure- Lesson 1-7

Here's the warmup!

Is this proof valid? If not, what could you do to make it valid?

Given:  $\overline{EB} \cong \overline{BD}$

Prove: B is the midpoint of  $\overline{ED}$ .



Statements	Reasons
<ol style="list-style-type: none"> <li>1. <math>\overline{EB} \cong \overline{BD}</math></li> <li>2. B is the midpoint of <math>\overline{ED}</math>.</li> </ol>	<ol style="list-style-type: none"> <li>1. Given</li> <li>2. If a point is the midpoint of a segment, it divides the segment into two <math>\cong</math> segments.</li> </ol>

Today, we'll start by defining a *deductive structure*:

**Geometry is based on a *deductive structure* - a system of thought in which conclusions are justified by means of previously assumed or proved statements. Every deductive structure contains the following four elements:**

1. Undefined terms
2. Assumptions known as *postulates*
3. Definitions
4. Theorems or other conclusions

**A *postulate* is an unproved assumption.**

Next, we'll talk about definitions, theorems, and postulates and noted some differences between them:

**Definitions are always reversible. In other words, a definition can be stated as if p, then q ( $p \Rightarrow q$ ) or if q, then p ( $q \Rightarrow p$ ).**

**e.g. If a point is the midpoint of a segment, then the point divides the segment into two congruent segments.**

**If a point divides a segment into two congruent segments, then the point is the midpoint of the segment.**

**Theorems and postulates are NOT always reversible.**

**e.g. If two angles are right angles, then they are congruent. TRUE**

**If two angles are congruent, then they are right angles. FALSE**

That's it...finally a quick lesson!!