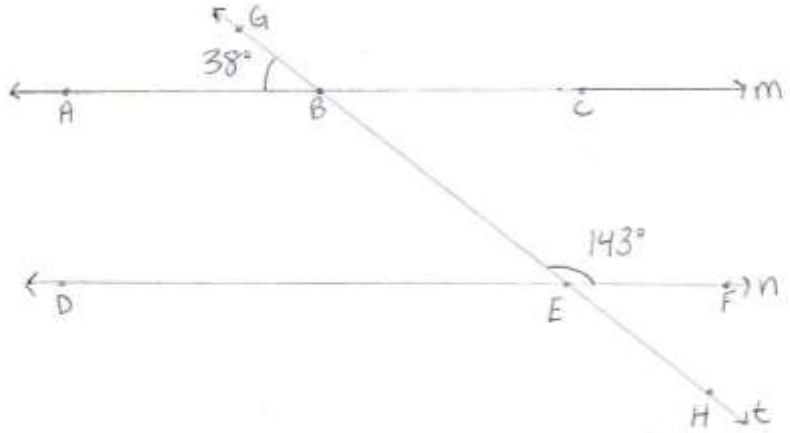
Given:



Prove: line m ∥ line n.

Proof: We will prove by contradiction. Given that lines m, n, and t exist, assume lines m and n are parallel. It is given that the measure of angle ABG is 38°. By the definition of a straight angle,

$$m\angle ABC = 180°$$
$$m\angle DEF = 180°.$$

By the definition of a linear pair,

$$m\angle ABG + m\angle GBC = 180°$$
$$m\angle DEB + m\angle BEF = 180°.$$

Thus by Substitution,

$$38° + m\angle GBC = 180°$$

and by the Subtraction axiom,

$$m\angle GBC = 142°.$$

We also know from the transitive property,

$$m\angle ABG + m\angle GBC = m\angle DEB + m\angle BEF.$$

From the vertical Angles Theorem, we can state

$$m\angle ABG = m\angle CBE.$$

Then by Alternate Interior Angles Theorem,

$$\angle CBE \cong \angle BED$$

or equivalently

$$m\angle CBE = m\angle BED.$$

Therefore by the definition of a linear pair,

$$m\angle GBC = m\angle BEF.$$

By substitution we obtain

$$142° = m\angle BEF,$$

However it is given that

$$m\angle BEF = 143°.$$

Since by the reflexive property

$$m\angle BEF = m\angle BEF,$$

but by equality we have

$$142° \neq 143°;$$

this is a contradiction, meaning our assumption is incorrect. Therefore line m and line n are not parallel.