## Unit 1 Lesson 20: Transformations, Transversals, and Proof

### 1 Math Talk: Angle Relationships (Warm up)

#### Student Task Statement

Lines $ℓ$ and $m$ are parallel. Mentally evaluate the measure $x$ in each figure.

Figure A



Figure B



Figure C



Figure D



### 2 Make a Mark? Give a Reason.

#### Student Task Statement

Here are intersecting lines $AE$ and $CD$:



1. Translate lines $AE$ and $CD$ by the directed line segment from $B$ to $C$. Label the images of $A,B,C,D,E$ as $A^{′},B^{′},C^{′},D^{′},E^{′}$.
2. What is true about lines $AE$ and $A^{′}E^{′}$? Explain your reasoning.
3. Take turns with your partner to identify congruent angles.
	1. For each pair of congruent angles that you find, explain to your partner how you know the angles are congruent.
	2. For each match that your partner finds, listen carefully to their explanation. If you disagree, discuss your thinking and work to reach an agreement.

### 3 An Alternate Explanation

#### Images for Launch



#### Student Task Statement

Here are intersecting lines $AE$ and $CD$:



1. Rotate line $AE$ by 180 degrees around point $C$. Label the images of $A,B,C,D,E$ as $A^{′},B^{′},C^{′},D^{′},E^{′}$.
2. What is true about lines $AB$ and $A^{′}B^{′}$? Explain your reasoning.
3. Take turns with your partner to identify congruent angles.
	1. For each pair of congruent angles that you find, explain to your partner how you know the angles are congruent.
	2. For each match that your partner finds, listen carefully to their explanation. If you disagree, discuss your thinking and work to reach an agreement.

#### Images for Activity Synthesis









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