## Unit 1 Lesson 14: Alternate Interior Angles

## 1 Angle Pairs (Warm up)

## Student Task Statement

1. Find the measure of angle $J G H$. Explain or show your reasoning.

2. Find and label a second $30^{\circ}$ degree angle in the diagram. Find and label an angle congruent to angle $J G H$.

## 2 Cutting Parallel Lines with a Transversal

Images for Launch


## Student Task Statement

Lines $A C$ and $D F$ are parallel. They are cut by transversal $H J$.


1. With your partner, find the seven unknown angle measures in the diagram. Explain your reasoning.
2. What do you notice about the angles with vertex $B$ and the angles with vertex $E$ ?
3. Using what you noticed, find the measures of the four angles at point $B$ in the second diagram. Lines $A C$ and $D F$ are parallel.

4. The next diagram resembles the first one, but the lines form slightly different angles. Work with your partner to find the six unknown angles with vertices at points $B$ and $E$.

5. What do you notice about the angles in this diagram as compared to the earlier diagram? How are the two diagrams different? How are they the same?

## 3 Alternate Interior Angles Are Congruent

## Student Task Statement

1. Lines $\ell$ and $k$ are parallel and $t$ is a transversal. Point $M$ is the midpoint of segment $P Q$.


Find a rigid transformation showing that angles $M P A$ and $M Q B$ are congruent.
2. In this picture, lines $\ell$ and $k$ are no longer parallel. $M$ is still the midpoint of segment $P Q$.


Images for Activity Synthesis


