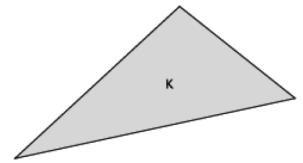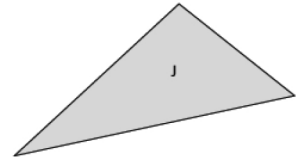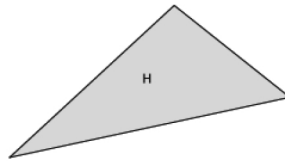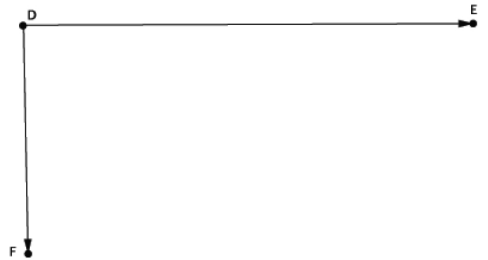Name _____   Date _____

Sequencing Translations

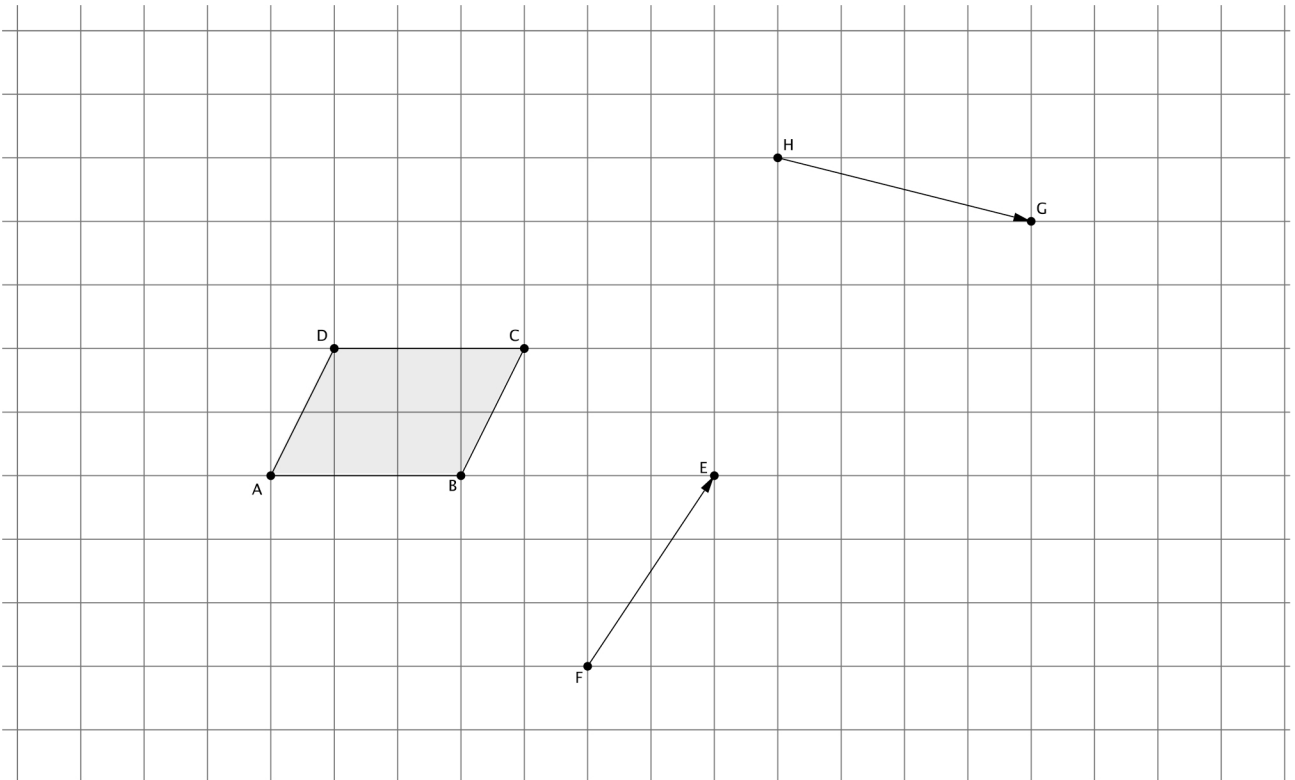Use the picture below to answer Problems 1 and 2.

1. Describe a sequence of translations that would map Figure H onto Figure K.

2. Describe a sequence of translations that would map Figure J onto itself.
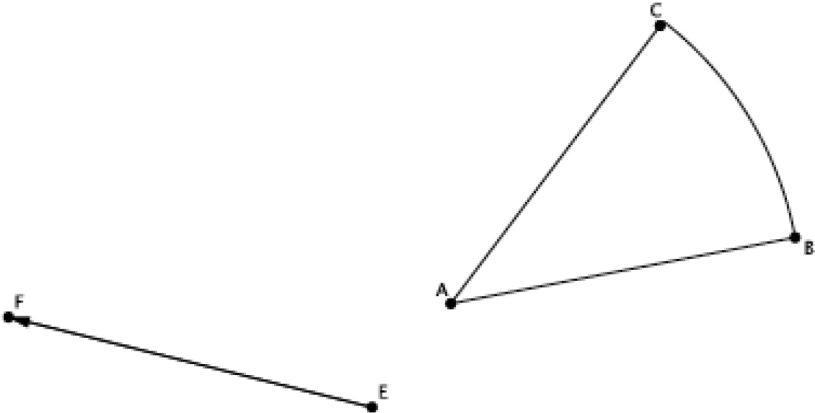
1. Sequence translations of parallelogram $ABCD$ (a quadrilateral in which both pairs of opposite sides are parallel) along vectors $\overrightarrow{HG}$ and $\overrightarrow{FE}$. Label the translated images.

2. What do you know about AD and BC compared with $A'D'$ and $B'C'$? Explain.

3. Are $A'B'$ and $A''B''$ equal in length? How do you know?

4. Translate the curved shape ABC along the given vector. Label the image.

5. What vector would map the shape $A'B'C'$ back onto ABC?

Use the picture below to answer Problems 1 and 2.

1. **Describe a sequence of translations that would map Figure H onto Figure K.**

   Translate Figure H along vector $\overrightarrow{DE}$, and then translate the image along vector $\overrightarrow{DF}$.

2. **Describe a sequence of translations that would map Figure J onto itself.**

   Translate Figure J along vector $\overrightarrow{DE}$, and then translate the image along vector $\overrightarrow{ED}$.

   Translate Figure J along vector $\overrightarrow{DF}$, and then translate the image along vector $\overrightarrow{FD}$.
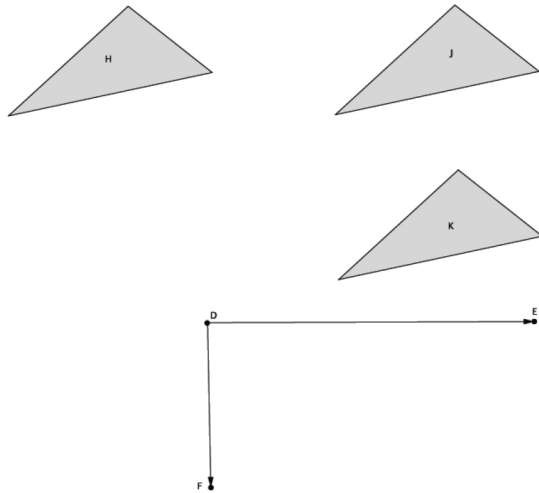
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1. **Sequence translations of parallelogram $ABCD$ (a quadrilateral in which both pairs of opposite sides are parallel) along vectors $\overrightarrow{HG}$ and $\overrightarrow{FE}$. Label the translated images.**
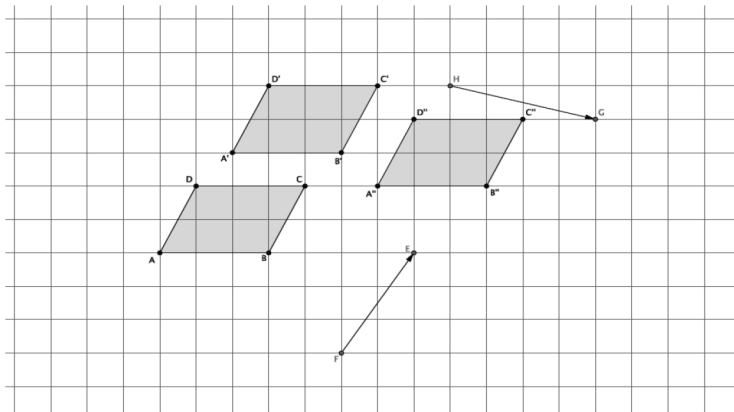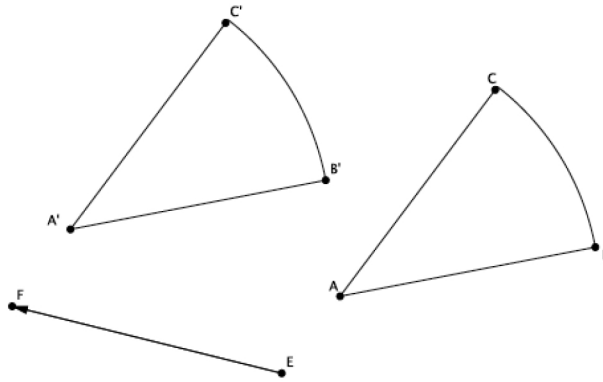
2. **What do you know about AD and BC compared with $A'D'$ and $B'C'$? Explain.**

   By the definition of a parallelogram, $AD \parallel BC$. Since translations map parallel lines to parallel lines, I know that $A'D' \parallel B'C'$.

3. **Are $A'B'$ and $A''B''$ equal in length? How do you know?**

   Yes, $|A'B'| = |A''B''|$. Translations preserve lengths of segments.

4. Translate the curved shape ABC along the given vector. Label the image.

5. What vector would map the shape $A'B'C'$ back onto ABC?

Translating the image along vector $\overrightarrow{FE}$ would map the image back onto its original position.