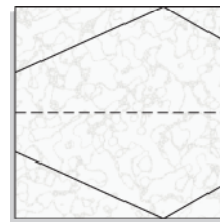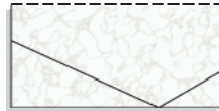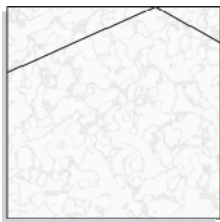**Lesson 8-2**

Example 1

PAPER FOLDING   Construct a copy of each figure.

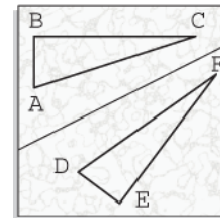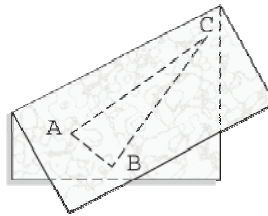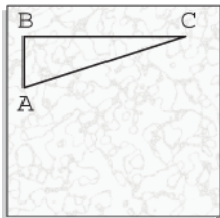**a.**   an obtuse angle   **b.**   a right triangle

Solution

a.   First, draw an angle that is greater than a right angle on paper. Fold just below or above the original angle and trace the image. The new angle is a copy of the original.

b.   First, draw $\triangle ABC$. Then make a fold just below one of the sides of the triangle and trace the image. The new triangle, $\triangle DEF$, is a copy of the original.
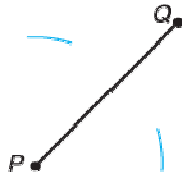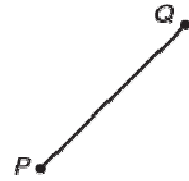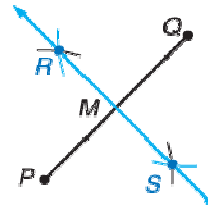
Example 2

Use a compass and straightedge to construct the perpendicular bisector of $\overline{PQ}$

Solution

Step 1   Place the point of the compass at *P*. Open the compass a little more than half the length of $\overline{PQ}$ Draw one arc above and another below $\overline{PQ}$.
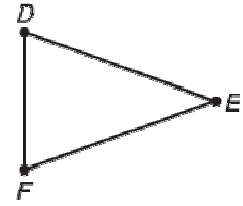
Step 2   Place the compass point at *Q*. With the setting used in Step 1, draw arcs above and below $\overline{PQ}$ Label the points of intersection *R* and *S*. Draw $\overleftrightarrow{RS}$ Label the midpoint of $\overline{PQ}$ as *M*.
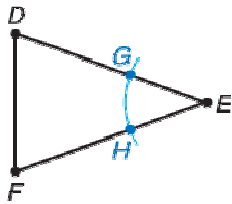
Example 3

SPORTS A pennant for a college basketball team has the shape of an isosceles triangle.

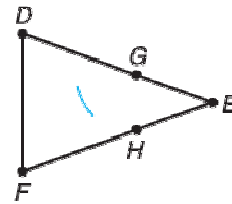Use a compass and straightedge to construct the angle bisector of ∠DEF, which is a 40° angle.
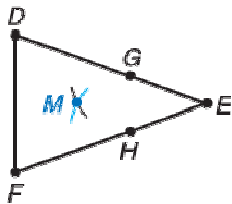

Solution

Step 1   With the compass point at *E*, draw an arc that intersects $\overline{ED}$ and $\overline{EF}$. Label the intersection points *G* and *H*.
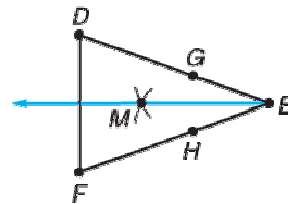
Step 2   With compass point at *G*, adjust the compass so that the opening is a little greater than half the length of $\overline{GH}$, Draw an arc inside ∠DEF.

Step 3   Place the compass point at *H*. With the setting used in Step 2, draw an arc that intersects the first arc at *M*.
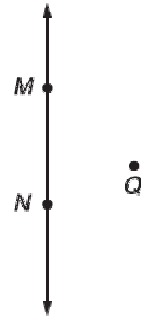
Step 4   Draw $\overrightarrow{EM}$, the angle bisector.

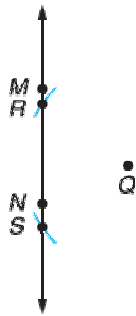Checking with a protractor reveals that ∠DEM and ∠FEM are both 20° angles.

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Example 4

Construct a line perpendicular to $\overleftrightarrow{MN}$ through point Q.

M •

N •

• Q

Solution

Step 1   With the compass point at Q, draw an arc that intersects $\overleftrightarrow{MN}$ at R and S.

Step 2   With the compass point at R, open the compass a little more than half the length of $\overline{RS}$ Draw an arc to the left of $\overleftrightarrow{MN}$
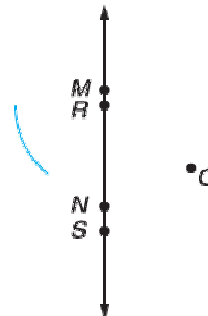
Step 3   Place the compass point at S. With the setting used in Step 2, draw an arc to the left of $\overleftrightarrow{MN}$ that intersects the first arc. Label the point of intersection T.
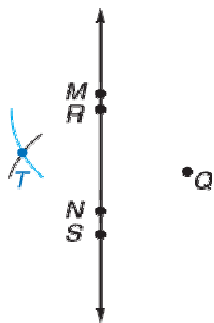
Step 4   Draw $\overleftrightarrow{QT}$, which will be perpendicular to $\overleftrightarrow{MN}$