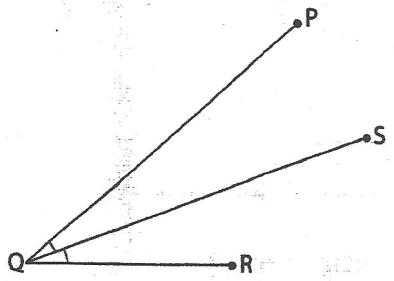
8.4 Constructing Angle Bisectors

At Home
At School

Quick Review

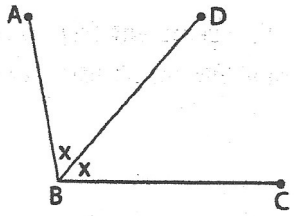
The bisector of an angle divides the angle into two equal parts.
Line segment QS is the bisector of ∠PQR because ∠PQS = ∠SQR.



Here are 2 strategies to draw the bisector of ∠ABC.

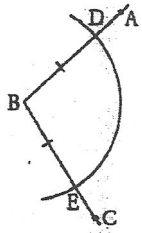
Using a Mira

Place the Mira between the arms of the angle so that the reflection of one arm lies along the other arm.
Draw line segment BD along the edge of the Mira, through the vertex of the angle.
Line segment BD is the bisector of ∠ABC.



Using a ruler and compass

i)



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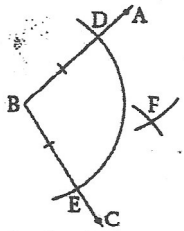

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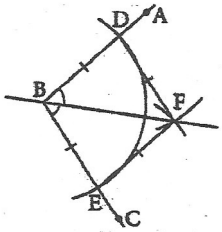


i) Place the compass point on B. Draw an arc to meet BA at D and BC at E.

ii) Place the compass point on D. Draw an arc between the arms of the angle.
Keep the distance between the compass and pencil points.
Place the compass point on E. Draw an arc to meet the previous arc at F.

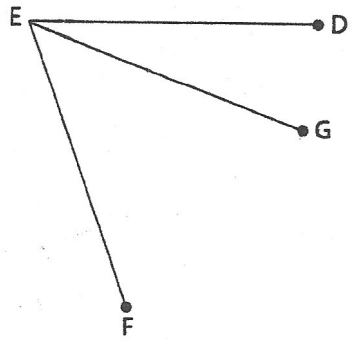
iii) Join BF.

BF is the bisector of ∠ABC.

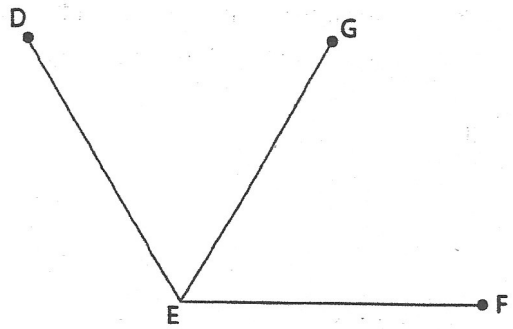
Practice

1. For each ∠DEF, is EG a bisector?

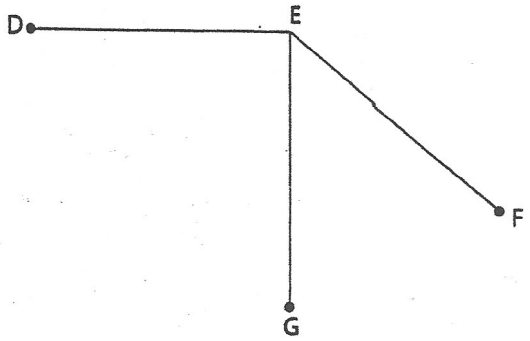
a) ___



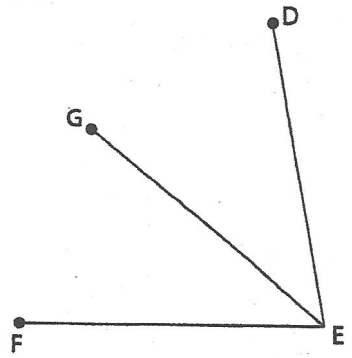
b) ___



c) ___



d) ___



2. Draw any acute ∠MNP.
Use any method you like to draw the bisector of ∠MNP.
Explain your strategy.

_____

_____

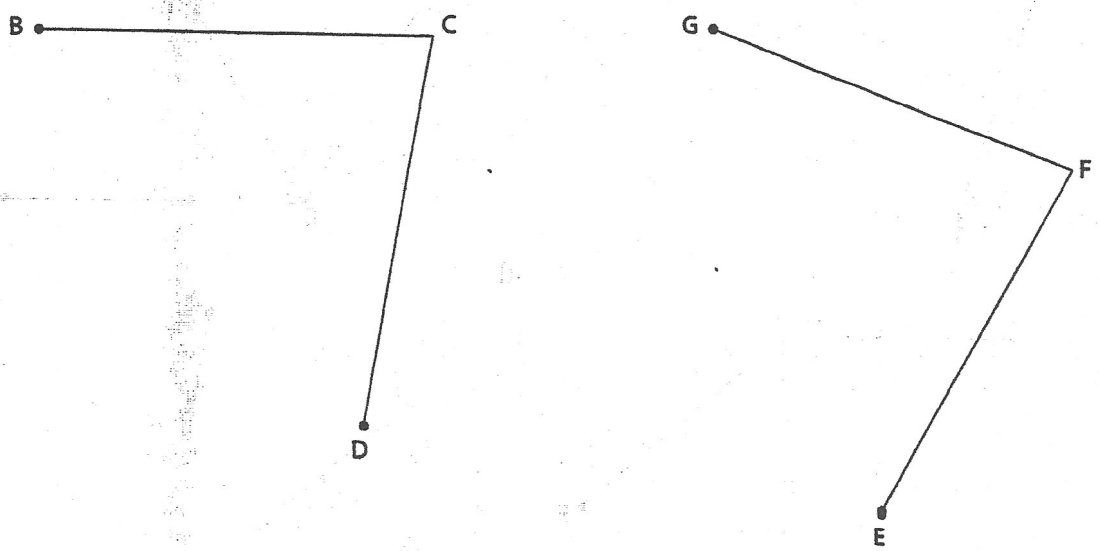
_____

3. How can you check that the bisector you drew is actually correct?

_____

_____

4. Use a plastic right triangle to bisect ∠BCD.
Use a ruler and compass to bisect ∠EFG.



Measure the two angles formed by each bisector.

a) Measures of angles formed by bisector of ∠BCD: _____

Measures of angles formed by bisector of ∠EFG: _____

b) What do your answers from part a tell you about ∠BCD and ∠EFG?

_____

5. Use a ruler and compass to draw
the bisector KB of ∠ABD.
Then draw the bisector MB of ∠DBC.
Use a protractor to measure ∠KBM.

What do you notice?

_____