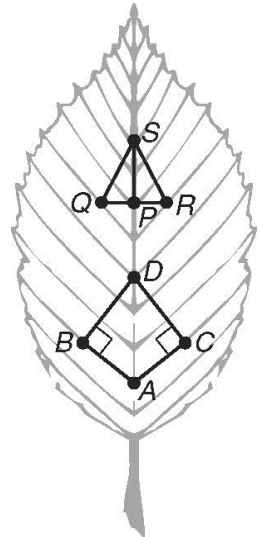# Lesson 5.1 - Practice A

Perpendicular and Angle Bisectors

1. If a point is the same _____ from two or more objects, the point is said to be equidistant from the objects.

Many plants grow in geometric patterns. The figure shows the veins in a leaf from an alder tree. Refer to the figure for Exercises 2–5. Match the letter of each theorem to the statement that uses the theorem.

_____ 2. If $BD = CD$, then D is on the bisector of $\angle BAC$.

_____ 3. If $\angle BAD \cong \angle CAD$, then $BD = CD$.

_____ 4. If $QP = RP$ and $\overline{SP} \perp \overline{QR}$, then $QS = RS$.

_____ 5. If $QS = RS$ and $QP = RP$, then $\overline{SP} \perp \overline{QR}$.

A. Perpendicular Bisector Theorem

B. Converse of the Perpendicular Bisector Theorem

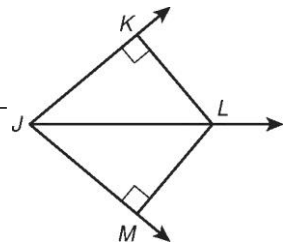C. Angle Bisector Theorem

D. Converse of the Angle Bisector Theorem

Use the figure for Exercises 6 and 7.

6. Given that line *m* is the perpendicular bisector of

   $\overline{FH}$ and $EH = 100$, find *EF*. _____

7. Given that $EF = 13$, $FH = 10$, and $EH = 13$, find *GH.* _____
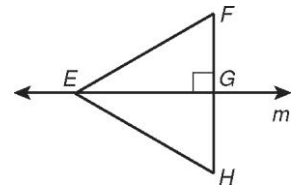
Use the figure for Exercises 8 and 9.

8. Given that $\overrightarrow{JL}$ bisects $\angle KJM$ and $KL = 42$, find *ML.* _____

9. Given that $KL = 4$ and $ML = 4$ and $m\angle MJL = 40°$, find

   $m\angle KJL.$ _____

Use the figure for Exercises 10–13.

10. Given that line *p* is the perpendicular bisector of

    $\overline{XZ}$ and $XY = 15.5$, find *ZY.* _____

11. Given that $XZ = 38$, $YX = 27$, and $YZ = 27$,

    find *ZW.* _____

12. Given that line *p* is the perpendicular bisector of $\overline{XZ}$; $XY = 4n$,

    and $YZ = 14$, find *n.* _____

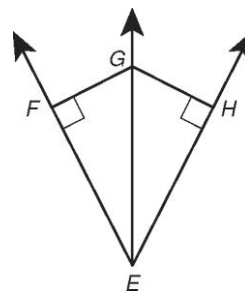13. Given that $XY = ZY$, $WX = 6x - 1$, and $XZ = 10x + 16$, find *ZW.* _____
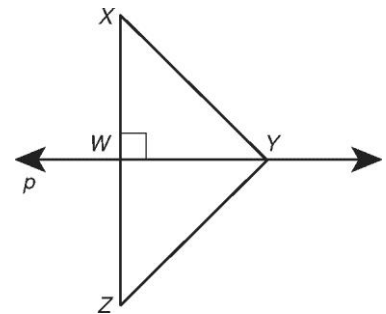
Use the figure for Exercises 14–9.

14. Given that $FG = HG$ and m$\angle FEH = 55°$, find

    m$\angle GEH$. _____

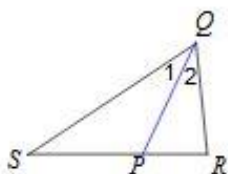15. Given that $\overrightarrow{EG}$ bisects $\angle FEH$ and $GF = \sqrt{2}$, find GH.

    _____

16.. Given that $\angle FEG \cong \angle GEH$, $FG = 10z - 30$, and

    $HG = 7z + 6$, find FG. _____

17. Given that $GF = GH$, m$\angle GEF = \dfrac{8}{3}\,a°$, and m$\angle GEH = 24°$, find a. _____

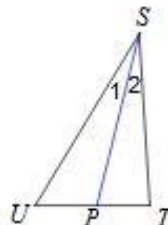## Each figure shows a triangle with one of its angle bisectors.
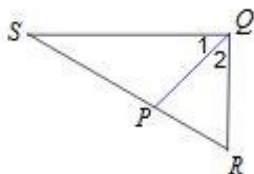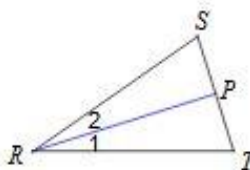
18) $m\angle SQR = 62°$. Find $m\angle 2$.

19) $m\angle 1 = 17°$. Find $m\angle UST$.

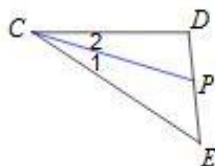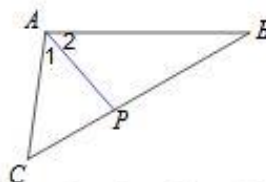20) Find $m\angle 1$ if $m\angle 2 = 44°$.

21) Find $m\angle 2$ if $m\angle 1 = 17°$.
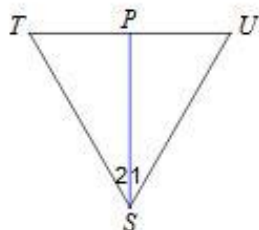
22) Find $m\angle 2$ if $m\angle 2 = 2x - 1$ and $m\angle ECD = 2x + 16$.

23) $m\angle 2 = 9x - 5$ and $m\angle 1 = 8x + 1$. Find $m\angle 2$.

24) Find $m\angle 1$ if $m\angle 1 = 6x$ and $m\angle 2 = 7x - 5$.

25) $m\angle 2 = 6x + 7$ and $m\angle 1 = 8x - 5$. Find $m\angle ECD$.