GEOMETRY · CLASSWORK · ADVANCED

Apply the Angle Bisector Theorem

SCORE / 25

01 Part A · Practice

When a point is on an angle bisector, set its distances to the two sides equal (or the two half-angles equal) and solve.

EXAMPLE

P is on the bisector of $\angle ABC$. $PD = 3x + 1$ and $PE = 5x - 7$ (distances to the sides). Find PD.

1. Angle Bisector Theorem: $PD = PE$.
2. $3x + 1 = 5x - 7$, so $8 = 2x$ and $x = 4$.
3. $PD = 3(4) + 1 = 13$.

1 ●○○

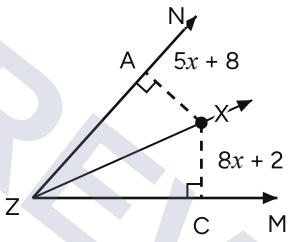
$BF = BK = 6$, where BF and BK are the distances to the sides of $\angle QJS$. $m\angle QJB = (7x - 8)^\circ$ and $m\angle BJS = (10x - 38)^\circ$. Find x and $m\angle QJS$.

2 ●○○

$\overrightarrow{NH}$ bisects $\angle SNT$. $m\angle SNH = (3x - 3)^\circ$ and $m\angle HNT = (4x - 11)^\circ$. Find $m\angle SNT$.

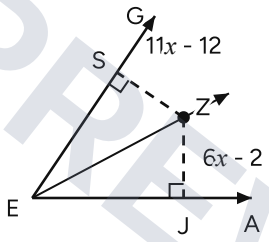
3 ●○○

X is on the bisector of $\angle NZM$. $XA = 5x + 8$ and $XC = 8x + 2$. Find x.



4 ●○○

Z is on the bisector of $\angle GEA$. $ZS = 11x - 12$ and $ZJ = 6x - 2$. Find x.



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Preview - the full worksheet and its answer key are at primeworksheet.com