

1. See section 5.5 or your class notes.
2.
 - a. Use Law of Cosines. Answer is $\angle B \approx 46.57^\circ$.
 - b. Call the angle bisector segment AD. Use Law of Sines on $\triangle ABD$. Answer is $AD \approx 2.94$.
 - c. See Feb. 7 homework problem 3 for a hint. Answer is $r \approx 1.29$.
3. One triangle: $\angle X \approx 58.77^\circ$, $\angle Z \approx 101.23^\circ$, $z \approx 11.47$.

Another triangle: $\angle X \approx 121.23^\circ$, $\angle Z \approx 38.77^\circ$, $z \approx 7.32$.

Scoring note: If your pictures of the triangles were extremely unrealistic (e.g., obtuse measures drawn as acute angles), I gave a “4” instead of a “5.”

4. Given quadrilateral PQRS with these side lengths and angle measures:
 $PQ = 5$, $\angle Q = 50^\circ$, $QR = 7$, $\angle R = 110^\circ$, and $RS = 6$.
 - a. Use Law of Cosines on $\triangle QRS$ to get $QS \approx 10.66$.
 - b. Use “SAS” triangle area formulas to find two triangle areas, then add.
This way is easiest because you already know QS:
Area $\triangle QRS \approx 19.73$.
Area $\triangle SPQ \approx 8.28$.
Area PQRS ≈ 28.01 .