Name: Key Date: Copy Yellow Proof Reasons Sheet!

Geometry Notes Into to Geo Proofs - 3: Definitions and Drawing Conclusions

Definitions (Review)

In math, a precise definition should work "both ways." (It is a biconditional.)

Ex: A triangle is a polygon with exactly three sides.

1. If a polygon is a triangle, then it has exactly three sides. True
2. If a polygon has exactly three sides, then it's a triangle. True

} Good Def of a Δ

Ex: A square is a polygon with exactly four sides.

1. If a polygon is a square, then it has exactly four sides. True
2. If a polygon has exactly four sides, then it's a square. false

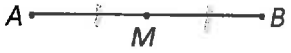
} Not a Good Def of a square

* parallelogram
* rhombus
* Trap

Drawing simple conclusions

We can use definitions to draw simple conclusions.

1. Given: M is the midpoint of $\overline{AB}$.

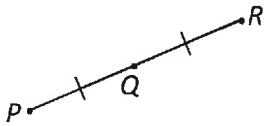


Conclusion: $\overline{AM} \cong \overline{MB}$

Reason: A midpt cuts a segment into 2 ≅ segments

Note: Remember, in proofs, a "given" is *assumed to be true*.

2. Given: $\overline{PQR}$ and $\overline{PQ} \cong \overline{QR}$.



Conclusion: Q is the midpoint of $\overline{PR}$

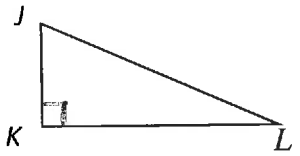
Reason: The point that divides a segment into 2 ≅ segments is the midpt

3. Given: $m\angle ABC + m\angle XYZ = 180°$

Conclusion: $\angle ABC$ and $\angle XYZ$ are supplementary

Reason: Supplementary $\angle$s add to 180°

4. Given: $\angle JKL$ is a right angle.



Conclusion: $\angle K$ is a right $\angle$

Reason: Same angle

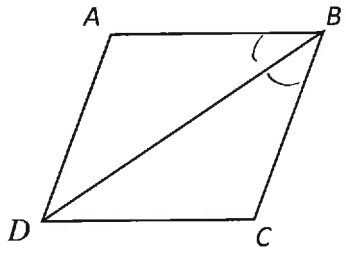
Conclusion: $\triangle JKL$ is a right $\triangle$

Reason: A $\triangle$ with a right $\angle$ is a right $\triangle$

Conclusion: $\overline{JK} \perp \overline{KL}$

Reason: Perpendicular lines meet to form right $\angle$s

5. Given: $\overline{BD}$ bisects $\angle ABC$



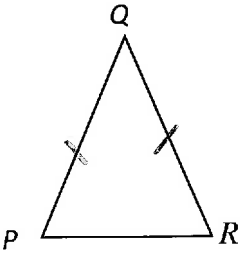
Conclusion: $\angle ABC \cong \angle DBC$

Reason: A bisector cuts an $\angle$ into 2 $\cong$ angles

Not: When you bisect an $\angle$ you get 2 new $\angle$s not segments

Not:

6. Given: $\overline{PQ} \cong \overline{QR}$



Conclusion: $\triangle PQR$ is isosceles

Reason: $\triangle$ w/ 2 $\cong$ sides is isosceles

Name _____

$\angle P \cong \angle R \rightarrow$ angles opp $\cong$ sides are $\cong$