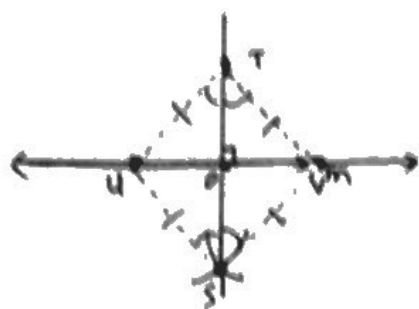


28] Follow directions.

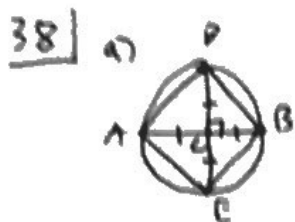
30] Have a picture like so:



Draw quadrilateral $SUTV$. Since each radius of the construction is the same, $SUTV$ is a rhombus. The diagonals of a rhombus are perpendicular, so ST is the line perpendicular to the line on through T ,

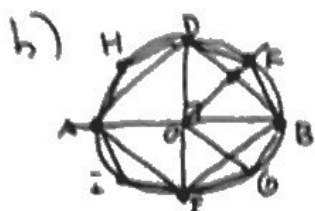
Also the marked angles at T and S are all congruent by SAS congruency and because $\triangle TVS, \triangle TUS$ are isosceles. Since the four smaller triangles ~~$\triangle TUS, \triangle TUS, \triangle TUS, \triangle TUS$~~ $\triangle TUS, \triangle TUS, \triangle TUS, \triangle TUS$

34] Use a compass & straightedge to draw arcs of radius \overline{JK} at J and K . The point where these meet, M , is equidistant from J and K , so drawing JM, KM forms an equilateral triangle with side lengths equal to the length of \overline{JK} .



$ADBE$ is a square because:

- 1) by SAS congruency $\triangle ACD \cong \triangle ACB \cong \triangle BCE \cong \triangle BCD$, since the indicated angles are 45° and the sides are all radii. So the sides $AD, DB, BE,$ and AB are the same length.
- 2) Each smaller triangle is isosceles right, so its angles are $45^\circ-45^\circ-90^\circ$. So each angle of the rhombus $ADBE$ is a 90° , so $ADBE$ is a square.



Follow directions from text on handout to bisect \overline{DB} .

c) Repeat the argument from a). First, $\triangle DOF \cong \triangle BOF$ by SAS similarity since the perpendicular bisector DF also bisects $\angle DOB$. So $DF = BF$ and similarly for the other 8 sides.

Then each angle like $\angle DFO, \angle OFB, \angle BFO, \angle OFG, \dots$ is equal since the small \triangle s are isosceles. So each angle of the octagon is equal, hence it is regular.

d) Draw a circle centered at a point C . Draw a diameter of the circle and call its end points A and B . Construct the perpendicular bisector of AB and label the points where it meets the circle D and E . Draw $DB, BE, EA,$ and AD and construct their perpendicular bisectors. Mark the points where those bisectors meet the circle F, G, H, I . Then $A B F D H A I E G$ is an regular octagon.