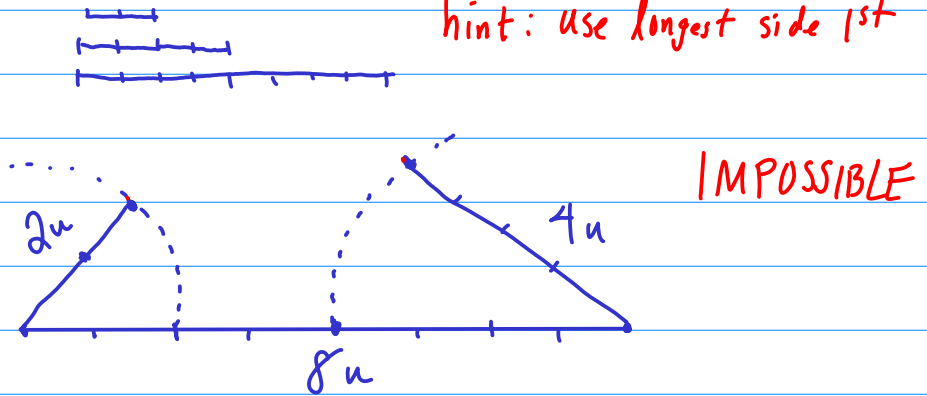


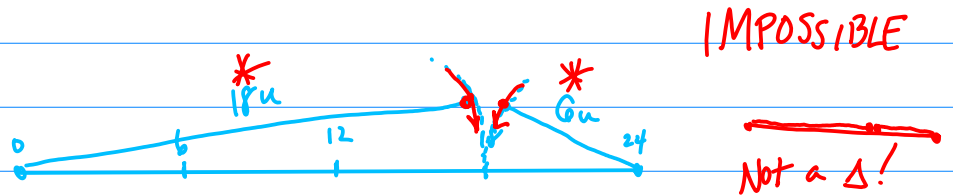
§4.3: △ Inequality Conjecture

For each set of sides, state whether \triangle is POSSIBLE or IMPOSSIBLE.

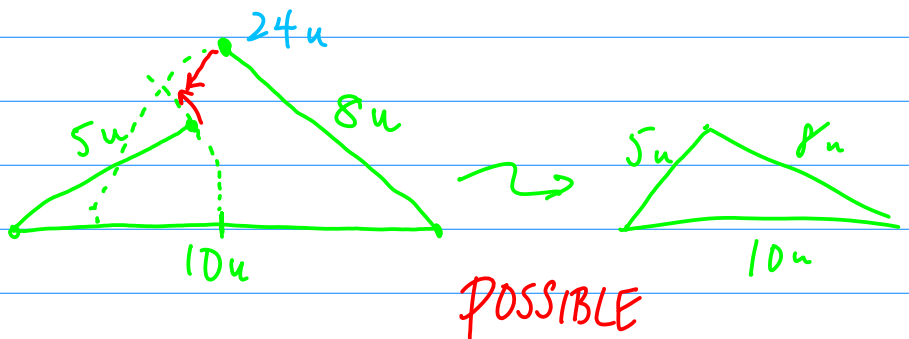
(a) 8, 2, 4
6 hint: use longest side 1st



(b) ↙ SHORTER SIDES
 24, 18, 6
24



(c) 5, 8 10
13



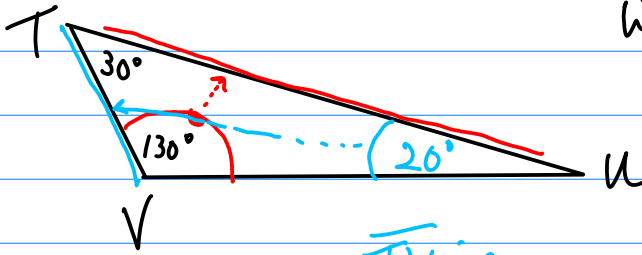
* △ Inequality Conjecture: The sum of the lengths of the shorter sides of a \triangle must be ^{"greater than"} $>$ the length of the longest side.

Ex:
 11, 4, 18 IMPOSSIBLE
↙
 15 $\not>$ 18

Ex:
 2, 1, 3 IMPOSSIBLE
↙
 3 $\not>$ 3

Ex:
 9, 3, 7 POSSIBLE
↙ ↘
 10 $>$ 9

• Relating Δ 's Sides & \angle 's :



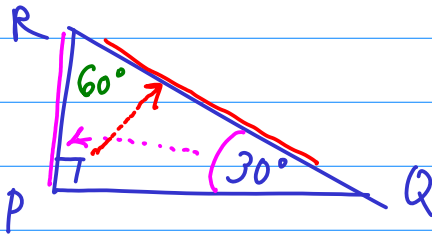
Which side is longest?

\overline{TU}

* largest \angle
"faces"
longest side

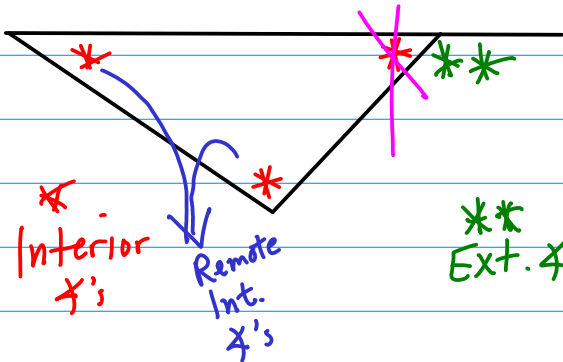
\overline{TV} is shortest side since $\angle U$ is smallest \angle .

Ex: Arrange the side lengths from least to greatest:
 ΔPQR w/ $m\angle Q = 30^\circ$ and $\angle P$ is a rt. \angle



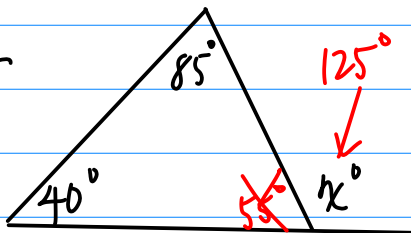
\overline{PR} , \overline{PQ} , \overline{RQ}
least, , greatest

* Δ Exterior \angle 's Conjecture:



$$\left(\begin{array}{c} \text{Measure of} \\ \text{Ext.} \\ \angle \end{array} \right) = \left(\begin{array}{c} \text{Sum of the} \\ \text{measures of the} \\ \text{REMOTE INTERIOR} \\ \angle \text{'s} \end{array} \right)$$

Ex:



$$\begin{aligned} x^\circ &= 40^\circ + 85^\circ \\ x^\circ &= 125^\circ \end{aligned}$$