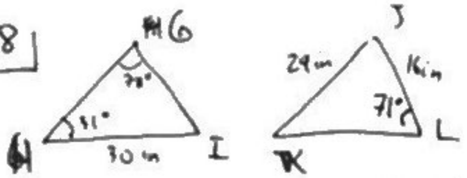
MA 202 HW 12 Solutions | 13.1: # 8, 12, 14, 20, 21, 28

13.1.8



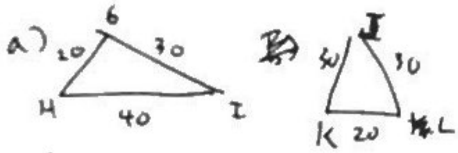
$\triangle GHI \cong \triangle JKL$

a) $\overline{GH} \cong \overline{JK} = 29$ in b) $\overline{GI} \cong \overline{JL} = 16$ in c) $\overline{KL} \cong \overline{HI} = 30$ in.

d) $\angle J \cong \angle G = 78°$ e) $\angle K \cong \angle H = 31°$ f) $\angle I \cong \angle L = 71°$

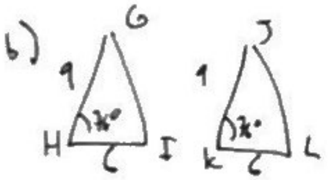
13.1.12

a)



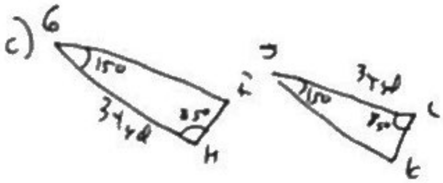
These triangles are not congruent: $\triangle GHI$ has a side of length 40 mm while $\triangle JKL$ does not.

b)



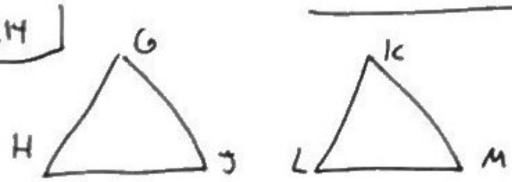
$\triangle GHI \cong \triangle JKL$ by SAS congruency since $GH \cong JK$, $HI \cong KL$, $\angle H \cong \angle I$.

c)



$\triangle GHI \cong \triangle JLK$ by ASA congruency since $GH \cong JL$, $\angle G \cong \angle J$, $\angle H \cong \angle L$.
(note ordering)

13.1.14

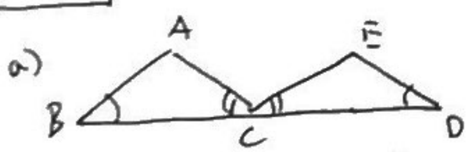


a) One possible set is: $\angle G \cong \angle K$, $\angle H \cong \angle L$, $GH \cong KL$

b) One possible set is $\angle G = \angle K$, $GH \cong LK$, $GJ \cong KM$

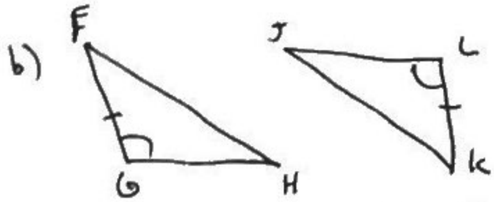
13.1.20

a)



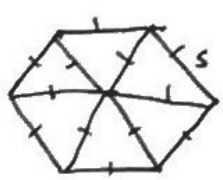
One possibility is: $BC \cong CD$. Then we have $\triangle ABC \cong \triangle EDC$ by ASA congruence.

b)



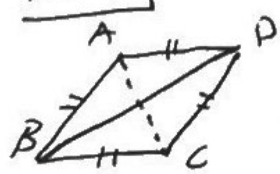
One possibility is: $GH \cong JL$. Then we have $\triangle FGH \cong \triangle KLJ$ by SAS congruence.

13.1.21 One possibility is:



The triangles are congruent by SSS congruency since each has all of its sides length s.

13.1.28



Using the solid blue diagonal, +1
We have $AB = BC$, $AD = DC$, $BD = BD$, so $\triangle ABD \cong \triangle CBD$ by SSS congruence. +1
Therefore $\angle A \cong \angle C$.

Similarly, using the dashed green diagonal, we have $AB = AD$, $BC = CD$, $AC = AC$, so +1
$\triangle ABC \cong \triangle ADC$ by SSS congruence. Therefore $\angle B \cong \angle D$. +1