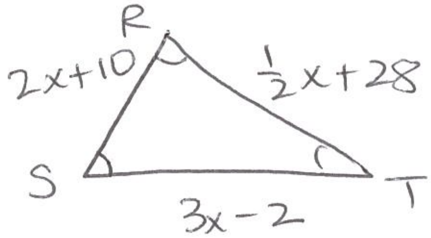
Name: Key Date: Period:

OPTIONAL Practice Test

1. In ΔRST, $RS = 2x + 10$, $ST = 3x - 2$, and $RT = \frac{1}{2}x + 28$. If ΔRST is equiangular, what is the value of x?



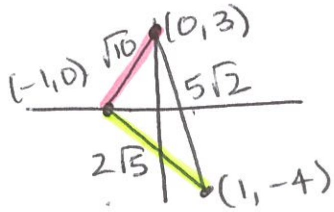
if △ → △

$2x+10 = 3x-2$

$\boxed{12 = x}$

2. Which of the following best describes a triangle with vertices having coordinates (-1, 0), (0, 3) and (1, -4)?

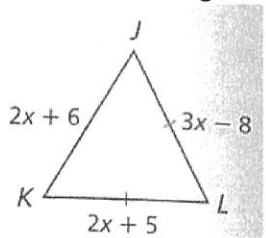
   a. ~~Equilateral~~
   b. ~~Isosceles~~
   c. ~~Right~~
   d. scalene
   e. ~~equiangular~~



$m = \frac{3-0}{0-(-1)} = \frac{3}{1} = 3$

$m = \frac{0-(-4)}{-1-1} = \frac{4}{-2} = -2$

3. Find the side lengths of ΔJKL.

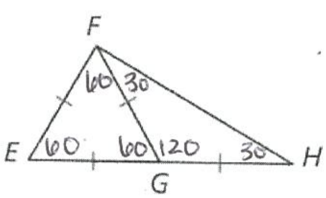


$2x+5 = 3x-8$

$13 = x$

$\boxed{KL = 31}$ $\boxed{JL = 31}$ $\boxed{JK = 32}$

4. Classify each triangle by its side lengths AND angle measures.

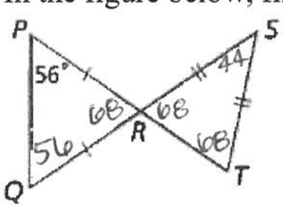


a. ΔEFG equilateral equiangular

b. ΔFGH isosceles obtuse

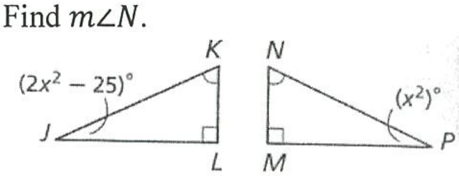
c. ΔEFH scalene right

5. In the figure below, find , $m\angle S$.



$\boxed{44°}$

6. Find $m\angle N$.

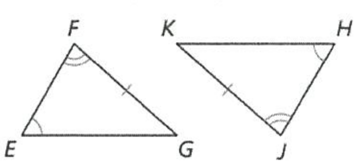


$x^2 = 2x^2 - 25$

$x^2 = 25 \rightarrow m\angle P = 25°$ so,

$\boxed{m\angle N = 65°}$

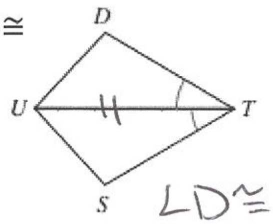
7. Write a congruency statement for the triangles.



$\Delta FGE \cong \Delta JKH$

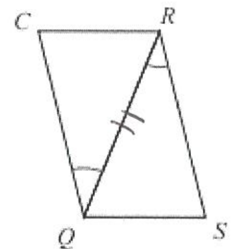
8. State the additional information that is required in order to know that the triangles are congruent for the reason given.

a. AAS≅



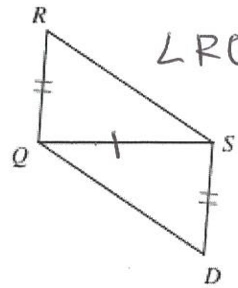
$\angle D \cong \angle S$

b. ASA≅



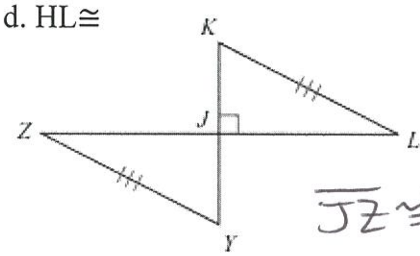
$\angle CRQ \cong \angle SQR$

c. SAS≅



$\angle RQS \cong \angle DSQ$

d. HL≅

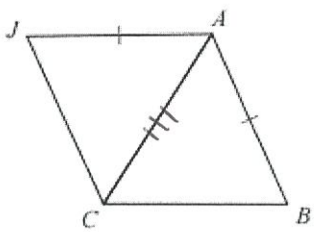


$\overline{JZ} \cong \overline{JL}$

OR

$\overline{JY} \cong \overline{JK}$

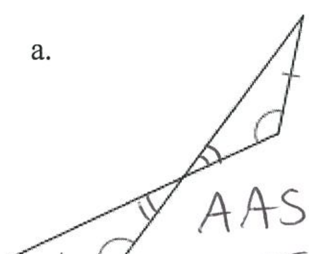
e. SSS≅



$\overline{JC} \cong \overline{BC}$

9. Determine whether you can conclude that the triangles are congruent. If you can, state the theorem used and write a congruency statement. If you cannot conclude that the triangles are congruent, say "not enough information."

a.

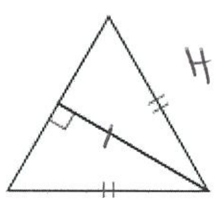


AAS≅

or

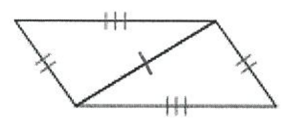
ASA≅

b.



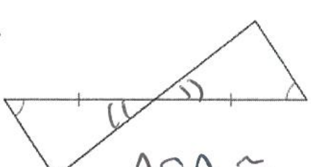
HL≅

c.



SSS≅

d.

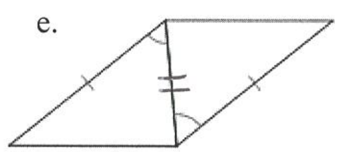


ASA≅

or

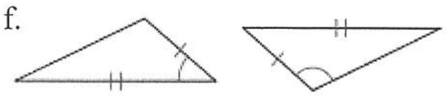
AAS≅

e.



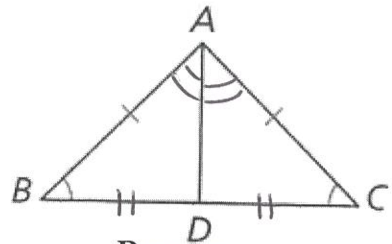
SAS≅

f.



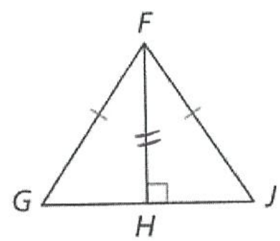
not enough info

10. **Given**: $\angle B \cong \angle C$, $\overline{AB} \cong \overline{AC}$ and $\overline{AD}$ is the bisector of $\angle BAC$
Prove: D is the midpoint of $\overline{BC}$



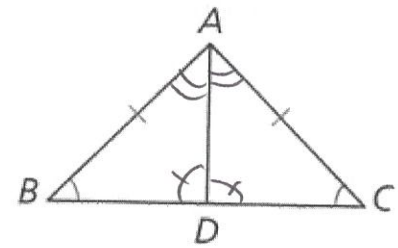
Statements	Reasons
① $\angle B \cong \angle C$, $\overline{AB} \cong \overline{AC}$ $\overline{AD}$ is bisector of $\angle BAC$	① given
② $\angle BAD \cong \angle CAD$	② def. of an $\angle$ bisector
③ $\Delta BAD \cong \Delta CAD$	③ ASA $\cong$ (1, 1, 2)
④ $\overline{BD} \cong \overline{CD}$	④ CPCTC
⑤ D is the midpoint of $\overline{BC}$	⑤ def. of a midpoint

11. **Given**: $\overline{FG} \cong \overline{FJ}$ and $\overline{FH} \perp \overline{GJ}$
Prove: $\Delta FGH \cong \Delta FJH$



Statements	Reasons
① $\overline{FG} \cong \overline{FJ}$, $\overline{FH} \perp \overline{GJ}$	① given
② $\angle FHJ$ and $\angle FHG$ are right $\angle$s	② $\perp \rightarrow$ right $\angle$s
③ ΔFHJ and ΔFGH are right Δs	③ def. of a right Δ
④ $\overline{FH} \cong \overline{FH}$	④ reflex. prop. $\cong$
⑤ $\Delta FGH \cong \Delta FJH$	⑤ HL $\cong$ (1, 4)

12. **Given**: $\angle B \cong \angle C$, $\overline{AB} \cong \overline{AC}$ and $\overline{AD}$ is the bisector of $\angle BAC$
Prove: $\overline{AD} \perp \overline{BC}$



Statements	**Reasons**
① $\angle B \cong \angle C$, $\overline{AB} \cong \overline{AC}$ $\overline{AD}$ is bisector of $\angle BAC$	① given
② $\angle BAD \cong \angle CAD$	② def. of an $\angle$ bisector
③ $\angle BDA \cong \angle CDA$	③ 3rd $\angle$s Thm
④ $\overline{AD} \perp \overline{BC}$	④ Linear Pair $\perp$ Thm (see notes from ch. 3!)