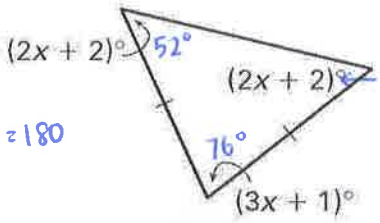
Geometry (A) Name Key Date: _____

Unit 3 (Chapter 4) Assessment Review

Section 4.1

Find the value of x. Then classify the triangle by its angles.

1.



$2x+2+2x+2+3x+1 = 180$

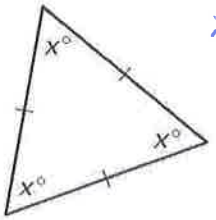
$7x+5 = 180$

$7x = 175$

$x = 25$

acute Δ

2.



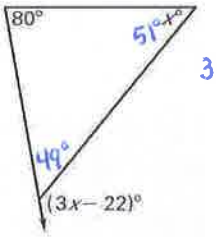
$x+x+x = 180$

$3x = 180$

$x = 60$

Equiangular Δ

3.



$3x-22 = 80+x$

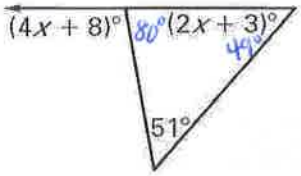
$2x-22 = 80$

$2x = 102$

$x = 51$

acute Δ

4.



$4x+8 = 2x+3+51$

$4x+8 = 2x+54$

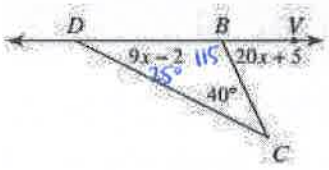
$2x+8 = 54$

$2x = 46$

$x = 23$

acute Δ

5.



$20x+5 = 9x-2+40$

$20x+5 = 9x+38$

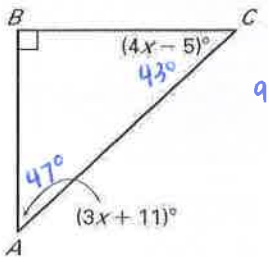
$11x+5 = 38$

$11x = 33$

$x = 3$

Obtuse Δ

6.



$90+4x-5+3x+11 = 180$

$7x+96 = 180$

$7x = 84$

$x = 12$

Right Δ

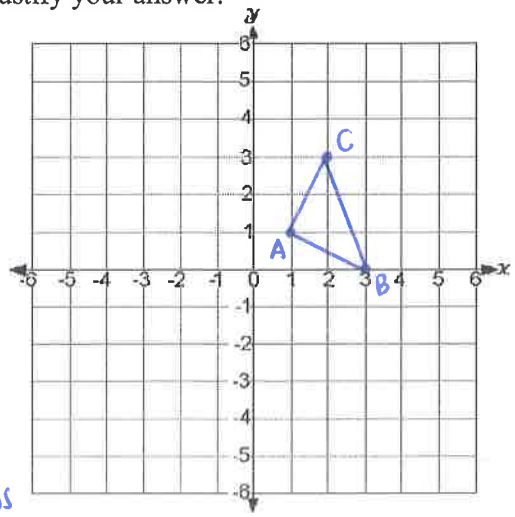
7. A triangle has vertices $A(1, 1)$, $B(3, 0)$ and $C(2, 3)$. Graph the triangle and classify it by its sides. Then determine whether it is a right triangle. Show all work. Justify your answer.

$AB = \sqrt{(3-1)^2+(0-1)^2} = \sqrt{(2)^2+(-1)^2} = \sqrt{4+1} = \sqrt{5}$

$BC = \sqrt{(2-3)^2+(3-0)^2} = \sqrt{(-1)^2+(3)^2} = \sqrt{1+9} = \sqrt{10}$

$AC = \sqrt{(2-1)^2+(3-1)^2} = \sqrt{(1)^2+(2)^2} = \sqrt{1+4} = \sqrt{5}$

Isosceles



$m_{\overline{AB}} = \frac{0-1}{3-1} = \frac{-1}{2}$

$m_{\overline{AC}} = \frac{3-1}{2-1} = \frac{2}{1}$

since the slope of the 2 shortest sides are opposite reciprocals, $\overline{AB} \perp \overline{AC}$ which means

ΔABC is a right Δ.

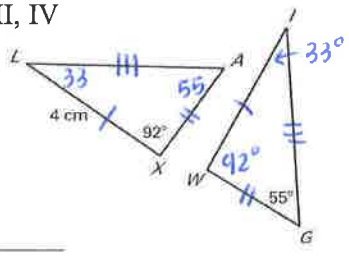
8. **MULTIPLE CHOICE:**

Which of the following triangles does not exist?

I. acute isosceles II. right scalene

III. obtuse equilateral IV. obtuse scalene

a. I only b. II only (c.) III only d. II and III e. II, III, IV



Section 4.2- In the diagram, $\Delta ALX \cong \Delta GIW$. Complete the following.

<A≅<G, <L≅<I, <X≅<W

9. $\overline{LX} \cong$ $\overline{IW}$

10. $\angle I \cong$ $\angle L$

11. $\angle A \cong$ $\angle G$

12. $\overline{WG} \cong$ $\overline{XA}$

13. $m\angle A =$ $55°$

14. $m\angle W =$ $92°$

15. $m\angle I =$ $33°$

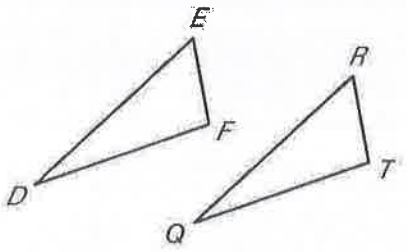
16. $m\angle L =$ $33°$

17. $IW =$ 4cm

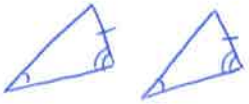
18. $\Delta LAX \cong$ ΔIGW

Sections 4.3-4.5

State the congruence that is needed to prove $\Delta DEF \cong \Delta QRT$ using the given postulate or theorem.



19. Given: $\angle D \cong \angle Q$, $\angle F \cong \angle T$ using AAS

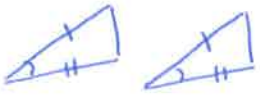


Either $\overline{EF} \cong \overline{RT}$ OR $\overline{DE} \cong \overline{QR}$

20. Given: $\angle E \cong \angle R$, $\overline{EF} \cong \overline{RT}$ using ASA

<F≅<T

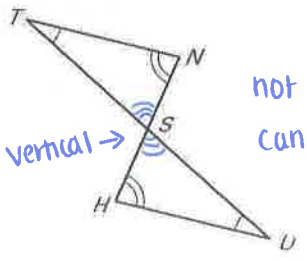
21. Given: $\overline{DE} \cong \overline{QR}$, $\angle D \cong \angle Q$ using SAS



$\overline{DF} \cong \overline{QT}$

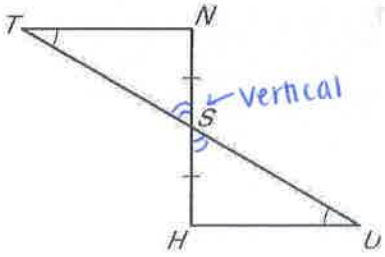
Decide whether the triangles can be proven congruent by the given postulate or theorem. Explain your answer.

22. $\Delta TNS \cong \Delta UHS$ by ASA



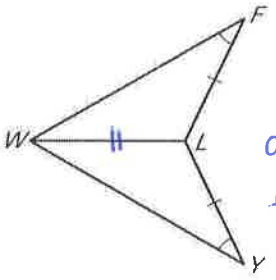
not enough info; you can only say that all three angles are congruent

23. $\Delta TNS \cong \Delta UHS$ by AAS



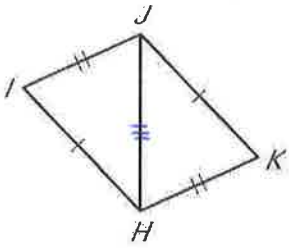
Yes, since <TSN≅<USH by VAT, then ΔTNS≅ΔUHS by AAS

24. $\Delta FLW \cong \Delta YLW$ by SAS



no, the marked angle is not where the 2 marked angles meet.

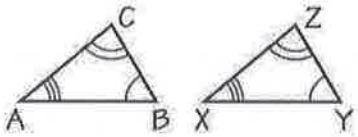
25. $\Delta IJH \cong \Delta KHJ$ by SSS



Yes, since $\overline{JH} \cong \overline{JH}$ by the reflexive prop, $\Delta IJH \cong \Delta KHJ$ by SSS

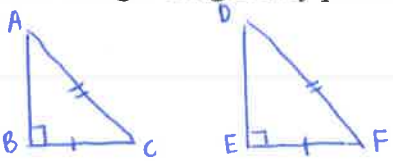
26. Describe the error.

By AAA, $\Delta ABC \cong \Delta XYZ$.



There is no AAA to prove triangles are congruent. A side would have to be marked.

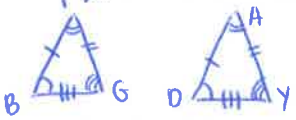
27. In ΔABC and ΔDEF, $\overline{AB} \perp \overline{BC}$, $\overline{DE} \perp \overline{EF}$, $\overline{CB} \cong \overline{EF}$, and $\overline{AC} \cong \overline{DF}$. $\Delta ABC \cong \Delta DEF$ by which triangle congruency postulate? (HINT: It may be helpful to draw a picture!)



Yes, since there are 2 right $\angle$'s ($\angle B$ and $\angle E$)
there are a pair of legs ($\overline{BC}$ and $\overline{EF}$)
there are a pair of hypotenuse ($\overline{AC}$ and $\overline{DF}$)
$\Delta ABC \cong \Delta DEF$ by HL

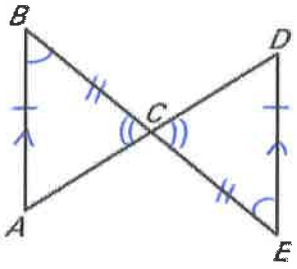
28. If $\Delta BIG \cong \Delta DAY$, all of the following are true EXCEPT:

A. $\Delta DYA \cong \Delta BGI$ B. $\Delta GIB \cong \Delta YAD$ C. $\overline{YD} \cong \overline{GB}$ (D.) $\angle IGB \cong \angle YAD$ E. $\overline{GI} \cong \overline{YA}$



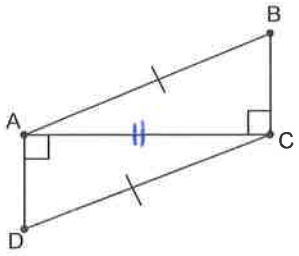
Section 4.6

29. Given: $\overline{AB} \parallel \overline{DE}$, $\overline{AB} \cong \overline{DE}$
Prove: C is midpoint of $\overline{BE}$



Statements	Reasons
1. $\overline{AB} \parallel \overline{DE}$	1. Given
2. $\angle B \cong \angle E$	2. Alt Int Angles Thm
3. $\overline{AB} \cong \overline{DE}$	3. Given
4. $\angle BCA \cong \angle ECD$	4. VAT
5. $\Delta ABC \cong \Delta DEC$	5. AAS
6. $\overline{BC} \cong \overline{EC}$	6. CPCTC
7. C is the midpoint of $\overline{BE}$	7. Def of midpoint

30. Given: $\overline{DA} \perp \overline{AC}$ and $\overline{BC} \perp \overline{AC}$
Prove: $\angle D \cong \angle B$

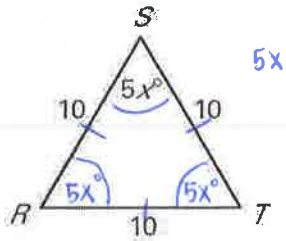


Statements	Reasons
1. $\overline{DA} \perp \overline{AC}$, $\overline{BC} \perp \overline{AC}$	1. Given
2. $\angle DAC$ and $\angle BCA$ are right $\angle$'s	2. Def. of Perpendicular Lines
3. $\triangle DAC$ and $\triangle BCA$ are right $\triangle$'s	3. Def of Right $\triangle$'s
4. $\overline{AC} \cong \overline{AC}$	4. Reflexive Prop
5. $\triangle ABC \cong \triangle CDA$	5. HL
6. $\angle D \cong \angle B$	6. CPCTC

Section 4.7

Find the value of x. Classify by sides.

31.



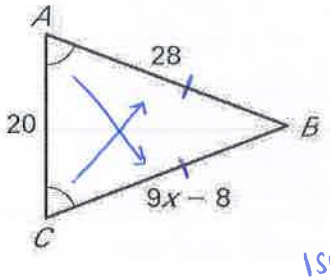
$5x+5x+5x=180$

$15x=180$

$x=12$

Equilateral $\triangle$

32.



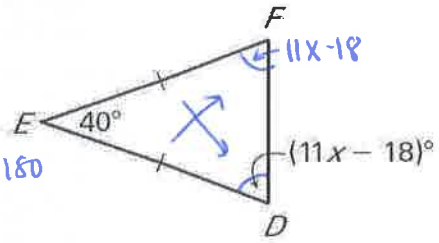
$28=9x-8$

$36=9x$

$x=4$

Isosceles $\triangle$

33.



$40+11x-18+11x-18=180$

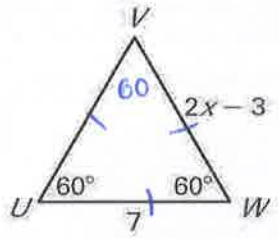
$22x+4=180$

$22x=176$

$x=8$

Isosceles $\triangle$

34.



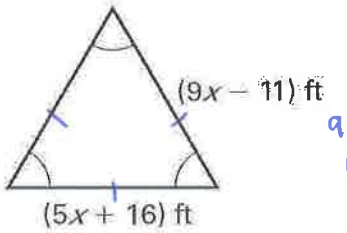
$2x-3=7$

$2x=10$

$x=5$

Equilateral $\triangle$

35.



$9x-11=5x+16$

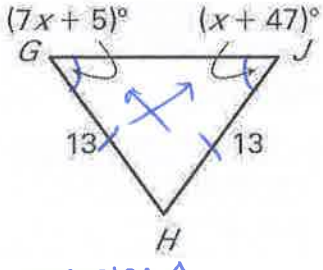
$4x-11=16$

$4x=27$

$x=6.75$

Equilateral $\triangle$

36.



$7x+5=x+47$

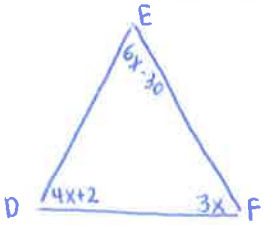
$6x+5=47$

$6x=42$

$x=7$

Isosceles $\triangle$

37. In triangle DEF, $m\angle D = (4x + 2)°$, $m\angle E = (6x - 30)°$, and $m\angle F = 3x°$. Classify the triangle by angles and sides. Explain your reasoning.



$6x-30+3x+4x+2=180$

$13x-28=180$

$13x=208$

$x=16$

$m\angle D = 4(16)+2 = 66°$

$m\angle E = 6(16)-30 = 66°$

$m\angle F = 3(16) = 48°$

Acute Isosceles