Geometry (A)   Name_____   Date: _____
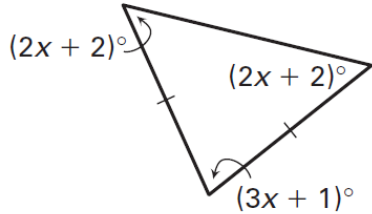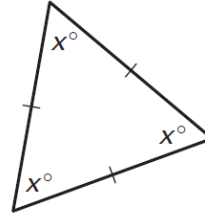
Unit 3 (Chapter 4) Assessment Review

Section 4.1

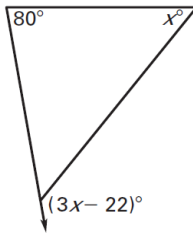Find the value of x. Then classify the triangle by its angles.

1.

$(2x + 2)°$

$(2x + 2)°$

$(3x + 1)°$

2.

$x°$

$x°$

$x°$

3.

$80°$ $x°$

$(3x- 22)°$

4.

$(4x + 8)°$ $(2x + 3)°$

$51°$

5.

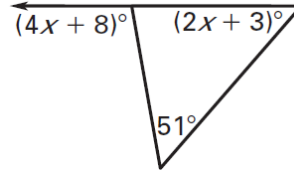D B V

$9x - 2$ $20x + 5$
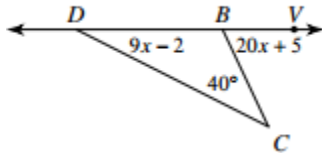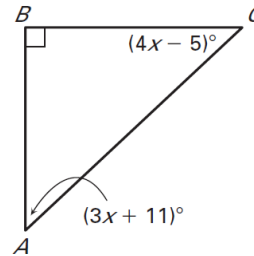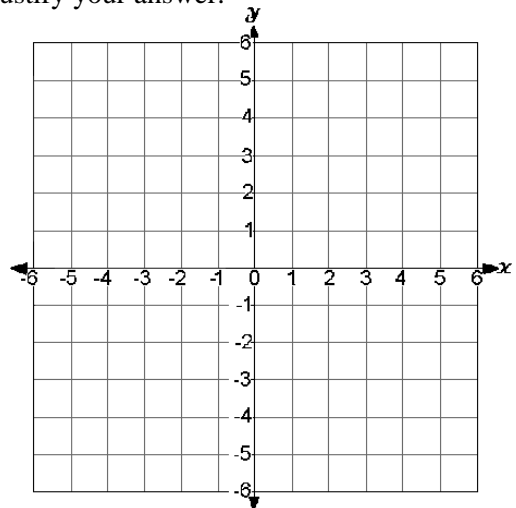
$40°$

C

6.

B C

$(4x - 5)°$

$(3x + 11)°$

A

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.
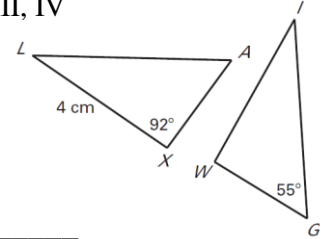
8. **MULTIPLE CHOICE:**

Which of the following triangles does not exist?

  I. acute isosceles   II. right scalene
  III. obtuse equilateral   IV. obtuse scalene

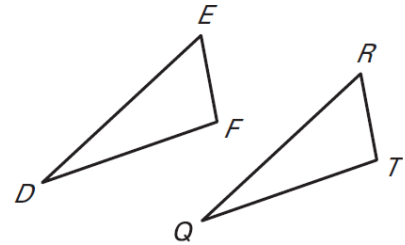 a. I only   b. II only   c. III only   d. II and III   e. II, III, IV

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

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

10. $\angle I \cong$ _____

11. $\angle A \cong$ _____

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

13. $m\angle A =$ _____

14. $m\angle W =$ _____

15. $m\angle I =$ _____

16. $m\angle L =$ _____

17. $IW =$ _____

18. $\triangle LAX \cong$ _____

Sections 4.3-4.5

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

19.   Given: $\angle D \cong \angle Q, \quad \angle F \cong \angle T$ using AAS
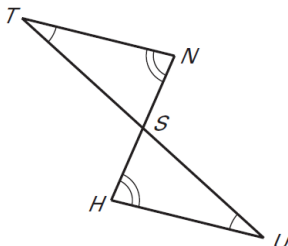
20.   Given: $\angle E \cong \angle R, \quad \overline{EF} \cong \overline{RT}$ using ASA
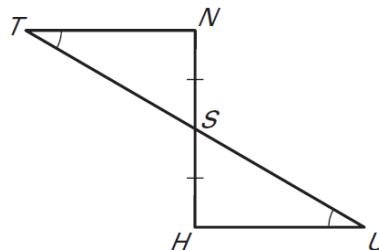
21.   Given: $\overline{DE} \cong \overline{QR}, \quad \angle D \cong \angle Q$ using SAS

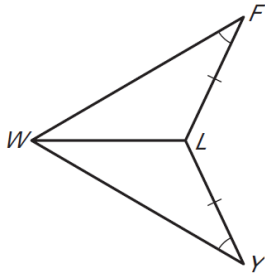Decide whether the triangles can be proven congruent by the given postulate or theorem. Explain your answer.

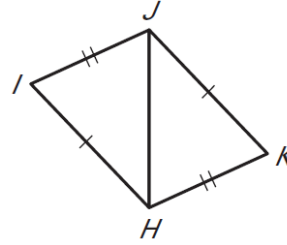22. $\triangle TNS \cong \triangle UHS$ by ASA

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

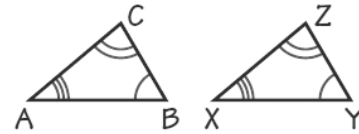24. $\triangle FLW \cong \triangle YLW$ by SAS

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

26. Describe the error.

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

27. In $\triangle ABC$ and $\triangle DEF$, $\overline{AB} \perp \overline{BC}$, $\overline{DE} \perp \overline{EF}$, $\overline{CB} \cong \overline{EF}$, and $\overline{AC} \cong \overline{DF}$. $\triangle ABC \cong \triangle DEF$ by which triangle congruency postulate? (HINT: It may be helpful to draw a picture!)
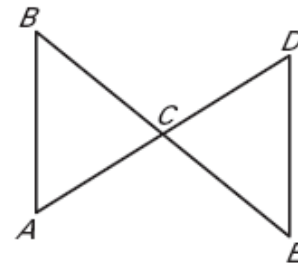
28. If $\triangle BIG \cong \triangle DAY$, all of the following are true EXCEPT:

A. $\triangle DYA \cong \triangle BGI$ B. $\triangle GIB \cong \triangle YAD$ C. $\overline{YD} \cong \overline{GB}$ D. $\angle IGB \cong \angle YAD$ E. $\overline{GI} \cong \overline{YA}$
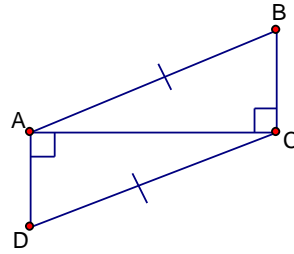
Section 4.6

29. Given: $\overline{AB} \parallel \overline{DE}$, $\overline{AB} \cong \overline{DE}$

   Prove: C is midpoint of $\overline{BE}$

Statements	Reasons
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.

30. Given: $\overline{DA} \perp \overline{AC}$ and $\overline{BC} \perp \overline{AC}$

Prove: $\angle D \cong \angle B$

Statements	Reasons
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.

Section 4.7

Find the value of x. Classify by sides.

31.

32.

33.

34.

35.

36.

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.

Answer Key

1) x=25 Isosceles
2) x=60 Equiangular
3) x=51 Acute
4) x=23 Acute
5) x=3 Obtuse
6) x=12 Right
7) Right Isosceles $AC = \sqrt{5}$ $AB = \sqrt{5}$

Slope of AC ($\frac{2}{1}$) and AB ($-\frac{1}{2}$) are opposite reciprocals (or, their product is -1), therefore it is a right triangle.

8) C
9) $\overline{IW}$
10) $\angle L$
11) $\angle G$
12) $\overline{XA}$
13) 55°
14) 92°
15) 33°
16) 33°
17) 4cm
18) $\triangle$ IGW
19) $\overline{ED} \cong \overline{QR}$ or $\overline{EF} \cong \overline{RT}$
20) $\angle F \cong \angle T$
21) $\overline{DF} \cong \overline{QT}$
22) No because the sketch is missing an included congruent side.
23) Yes, because of vertical angles.
24) No, because the given congruent angle is not the included angle.
25) Yes, because of reflexive property.
26) AAA does not prove triangles are congruent; they are similar, however.
27) HL
28) D
29)

Statements	Reasons
1. $\overline{AB} \parallel \overline{DE}$, $\overline{AB} \cong \overline{DE}$	1. Given
2. $\angle B \cong \angle D$ (or $\angle A \cong \angle D$)	2. Alternate Interior Angles Theorem
3. $\angle BCA \cong \angle ECD$	3. Vertical Angles
4. $\triangle BCA \cong \triangle ECD$	4. AAS (or ASA)
5. $\overline{BC} \cong \overline{CE}$	5. CPCTC
6. C is midpoint of $\overline{BE}$	6. Definition of Midpoint

30)

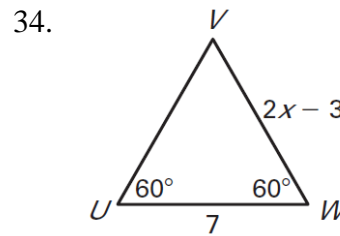| Statements	Reasons
1. $\overline{DA} \perp \overline{AC}$ and $\overline{BC} \perp \overline{AC}$	1. Given
2. $\angle$BCA and $\angle$DAC are right angles	2. Definition of Perpendicular Lines
3. $\triangle$BCA and DAC are right triangles	3. Definition of right triangles
4. $\overline{AC} \cong \overline{AC}$	4. Reflexive
5. $\triangle$BCA$\cong$ DAC	5. HL
6. $\angle D \cong \angle B$	6. CPCTC

31) x=12 Equilateral
32) x=4 Isosceles
33) x = 8 Isosceles
34) x=5 Equilateral
35) x=6.75 Equilateral
36) x=7 Isosceles
37) x=16 Acute Isosceles