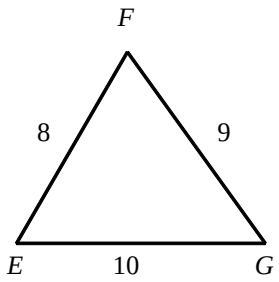
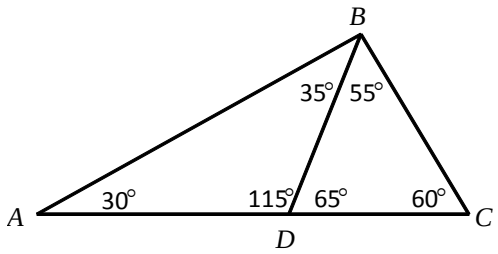
Geometry Chapter 4 Test Review Name:_____
Congruent Triangles Date:_____Period:_____

1. Classify ΔEFG.



2. Name an acute triangle.



3. How many acute angles can an isosceles triangle have? Explain.

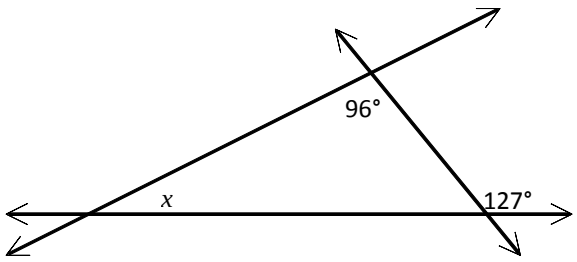
4. Draw and identify a triangle with

a) Angle measures of 50°, 65° and 65°

b) Angle measures of 80°, 75° and 45°

5. How many obtuse angles can a triangle have? Explain.

6. Find the value of *x*.



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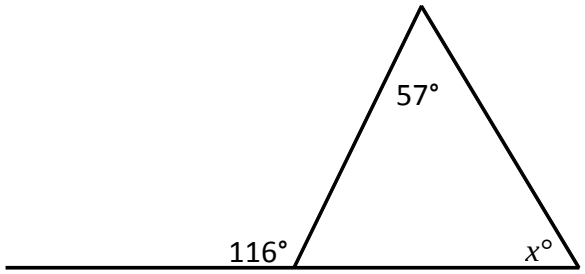
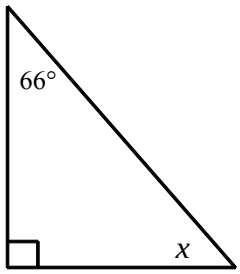
7. Find the value of *x*.

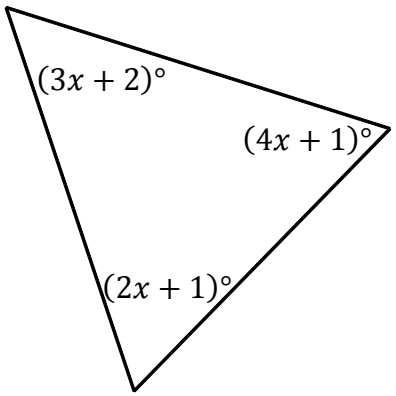


[A] 116 [B] 237 [C] 57 [D] 59

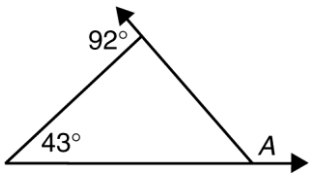
8. Find the value of *x*.



9. Find the measure of the interior angles to the nearest tenth. (Drawing is not to scale.)



10. Find the measure of $\measuredangle A$ below.



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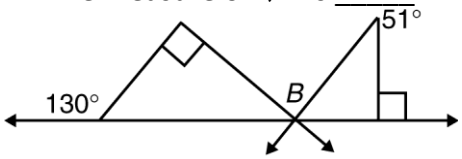
11. The measure of $\measuredangle B$ is _____.

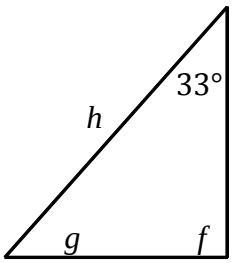


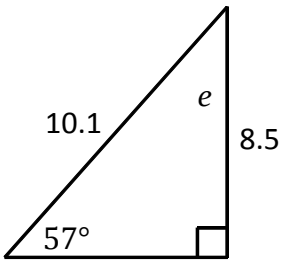
[A] $89°$ [B] $99°$ [C] $101°$ [D] $79°$

12. If $\angle P \cong \measuredangle Q$ and $m\measuredangle Q = 2x + 4$ and $m\measuredangle P = 34$, what is the value of x?.

13. If $\Delta RPQ \cong \Delta JKL$, then $\bar{LJ} \cong$_____ . Draw a diagram to support your claim.

14. The two triangle-shaped gardens are congruent. Find the missing side lengths and angle measures.





d=_____

e=_____

f=_____

g=_____

h=_____

15. Sketch the following, if possible. If not possible, state why.

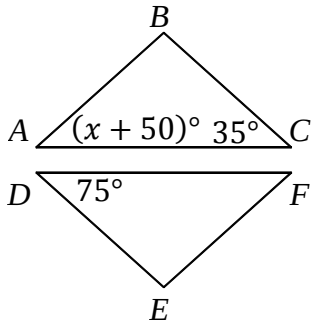
A. Right isosceles triangle

B. Acute triangle with two obtuse angles

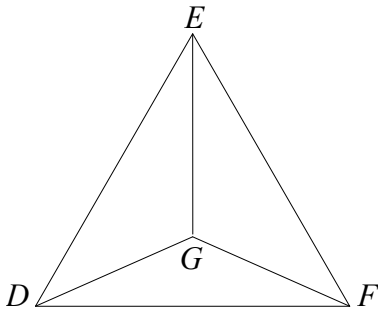
C. A triangle with an exterior angle of 45°

D. A triangle with two acute angles and one obtuse angle

16. In the diagram, $\measuredangle B \cong \measuredangle E$ and $\measuredangle C \cong \measuredangle F$. Find the value of *x*.



17. Refer to the figure below. Which of the following statements is true?



$\triangle DEF$ is equilateral $\overline{DG} \cong \overline{FG}$

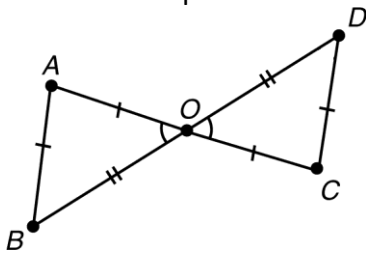
[A] $\Delta DGE \cong \Delta FGE$ by SSS

[B] $\Delta DIG \cong \Delta FIG$ by SAS

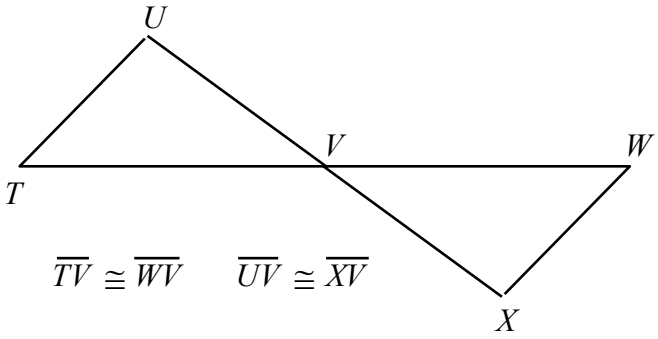
[C] $\Delta DFG \cong \Delta GED$ by SSS

[D] There are no congruent triangles.

18. State two postulates or theorems that can be used to conclude that $\Delta AOB \cong \Delta COD$.



19. Refer to the figure shown. Which of the following statements is true?



$\overline{TV} \cong \overline{WV}$ $\overline{UV} \cong \overline{XV}$

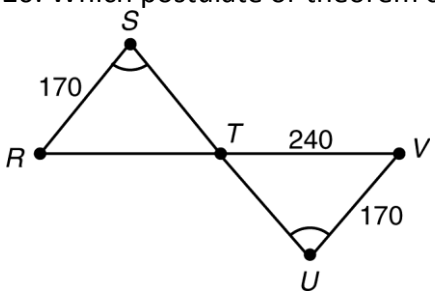
[A] $\Delta TUV \cong \Delta VWX$ by SAS

[B] $\Delta TUV \cong \Delta WXV$ by SAS

[C] $\Delta TUV \cong \Delta XWV$ by ASA

[D] $\Delta TUV \cong \Delta WXV$ by ASA

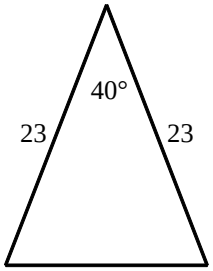
20. Which postulate or theorem can be used to determine the measure of $\overline{RT}$?



21. Given:$\measuredangle B \cong \measuredangle E$ and $\measuredangle C \cong \measuredangle F$. What other piece of information is needed to show $\Delta ABC \cong \Delta DEF$ by ASA Congruence Postulate?

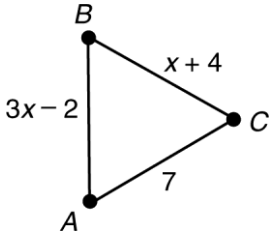
[A] $\measuredangle A \cong \measuredangle D$ [B] $\overline{BC} \cong \overline{EF}$ [C] $\measuredangle B = \measuredangle F$ [D] $\overline{EF} \cong \overline{FE}$

22. What is the measure of each base angle of an isosceles triangle if its vertex angle measures 40 degrees and its 2 congruent sides measure 23 units?



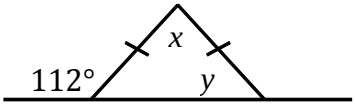
23. $\Delta ABC \cong \Delta DEF$. Also $\overline{AB} \cong \overline{EF}$. What type of triangle is ΔABC? Explain.

24. In $\Delta ABC, \overline{AB} \cong \overline{BC}$, which term does NOT describe the triangle?

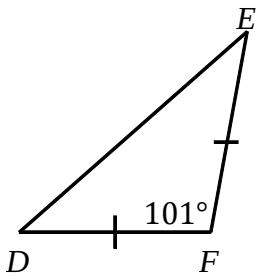


[A] Obtuse [B] Isosceles [C] Equilateral [D] Acute

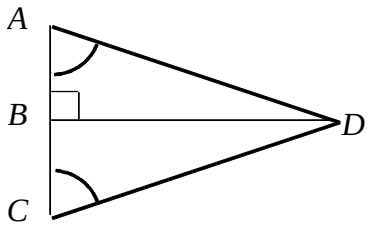
25. Find the values of *x* and *y*.



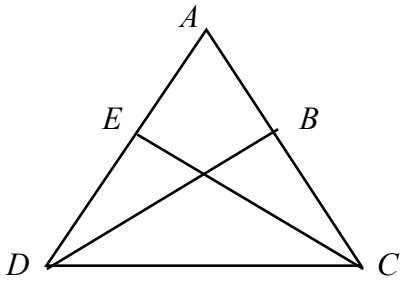
26. Use information in the figure below to find $m\measuredangle D$.



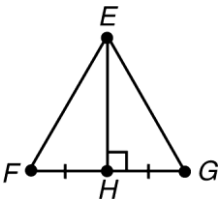
27. $\Delta ABD \cong \Delta CBD$. Name the theorem or postulate that justifies the congruence.



28. Given: $\overline{ED} \perp \overline{EC}$; $\overline{BD} \perp \overline{BC}$; $\overline{ED} \cong \overline{BC}$
Based on this information, Prove:$\Delta CED \cong \Delta DBC$



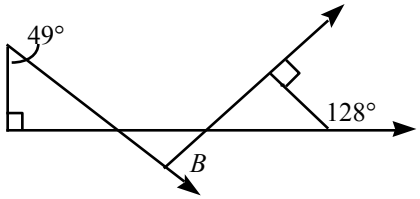
29. Refer to the figure below.



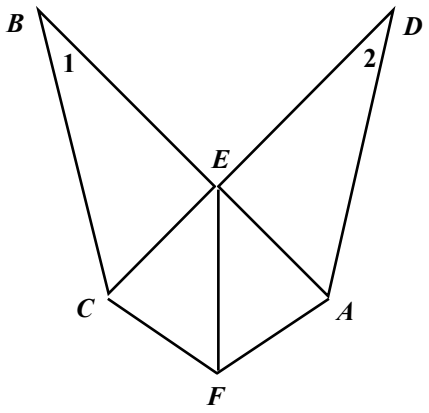
A. Is there enough information to know whether $\measuredangle FEG$ is acute, obtuse, or a right angle? Explain.

B. If $m\measuredangle F$ is less than $45°$, what type of angle is $\measuredangle FEG$? Explain.

30. Find the measure of $\measuredangle B$.

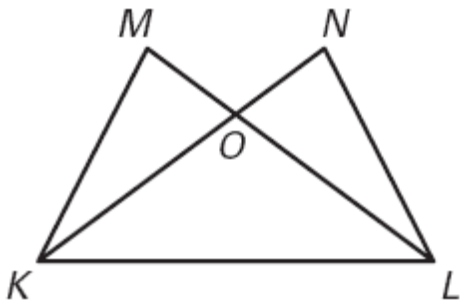


31. Given: $\overline{BC} \cong \overline{DA}$, $\measuredangle 1 \cong \measuredangle 2$, and $\overline{CF} \cong \overline{AF}$
Prove: $\Delta CEF \cong \Delta AEF$



32. **Given:** $\angle M \cong \angle N$
$\angle OKL \cong \angle OLK$

Prove: $\overline{MO} \cong \overline{NO}$



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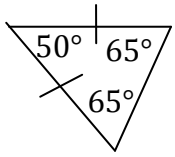
[1] Scalene

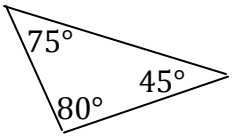
[2] ΔBDC

[3] It can have two acute angles if it is a right isosceles or an obtuse isosceles triangle; otherwise it will have 3 acute angles.

[4] a. Acute Isosceles



b. Acute Scalene



[5] One, If you have more than one obtuse angle, the sum of the three angles would be larger than 180.

[6] 31°

[7] [D]

[8] 24°

[9] 40.1, 60.7, 79.2

[10] 131°

[11] [C]

[12] 15

[13] $\overline{QR}$

[14] d = 5.5, e = 33, f = 90, g = 57, h = 10.1

[15] A, C and D are possible. Sketches vary. B is not possible.

[16] 25

[17] [A]

[18] SAS and SSS Congruence Postulates

[19] [B]

[20] AAS

[21] [B]

[22] 70°

[23] Isosceles. $\Delta ABC \cong \Delta DEF$, so $\overline{BC} \cong \overline{EF}$. Then, since $\overline{AB} \cong \overline{EF}$, $\overline{AB} \cong \overline{BC}$ by the Transitive Property of Congruence. Therefore, ΔABC is isosceles.

[24] [A]

[25] $x = 44°, y = 68°$

[26] 39.5°

[27] AAS

[28] Look below for proof.

[29] A. No. There is no information about the measures of angles *F* and *G*.

B. Obtuse. If $\angle F$ is less than 45°, $\angle FEH$ is greater than 45°. Since the 2 triangles are congruent by SAS, $\angle GEH$ is greater than 45°. Therefore, $\angle FEG$ is greater than 90°, which means it is obtuse.

[30] 79°

[28]

1. $\overline{ED} \perp \overline{EC}$	1. Given
2. $\angle CED$ is a rt $\angle$	2. If 2 segments are $\perp$, they form rt $\angle$s.
3. $\overline{BD} \perp \overline{BC}$	3. Given
4. $\angle DBC$ is a rt $\angle$	4. If 2 segments are $\perp$, they form rt $\angle$s.
5. $\overline{ED} \cong \overline{BC}$	5. Given
6. $\overline{DC} \cong \overline{CD}$	6. Reflexive
7. $\Delta CED \cong \Delta DBC$	7. HL Congruence Theorem

31. .

Statements	Reasons
1. $\overline{BC} \cong \overline{DA}$	1. Given
2. $\measuredangle 1 \cong \measuredangle 2$	2. Given
3. $\measuredangle BEC \cong \measuredangle DEA$	3. Vertical Angles Theorem
4. $\Delta BEC \cong \Delta DEA$	4. AAS
5. $\overline{EC} \cong \overline{EA}$	5. CPCTC
6. $\overline{CF} \cong \overline{AF}$	6. Given
7. $\overline{EF} \cong \overline{EF}$	7. Reflexive Property
8. $\Delta CEF \cong \Delta AEF$	8. SSS

32.

Statements	Reasons
1. $\angle M \cong \angle N$	**1.** Given
2. $\angle OKL \cong \angle OLK$	**2.** Given
3. $\overline{KL} \cong \overline{KL}$	**3.** Reflexive Prop. of Congruence
4. $\triangle NKL \cong \triangle MLK$	**4.** AAS Congruence Thm.
5. $\overline{MK} \cong \overline{NL}$	**5.** Corresp. parts of $\cong$ triangles are $\cong$.
6. $\angle MOK \cong \angle NOL$	**6.** Vertical Angles Theorem
7. $\triangle MOK \cong \triangle NOL$	**7.** AAS Congruence Thm.
8. $\overline{MO} \cong \overline{NO}$	**8.** Corresp. parts of $\cong$ triangles are $\cong$.