Geometry 1-2 Name_____
Triangle Review Date_____Period_____

For problems 1 – 4 use the Triangle Inequality Theorem to determine whether the given side lengths will create a triangle. If a triangle exists, classify it by <u>both</u> sides (Equilateral, Isosceles or Scalene) and angles (Acute, Right, Obtuse or Equiangular).

1. 9, 12, 15

Triangle?

Classify by:

Sides_____

Angles_____

2. 6, 13, 20

Triangle?

Classify by:

Sides_____

Angles_____

3. 7, 22, 21

Triangle?

Classify by:

Sides_____

Angles_____

4. 2, 5, 6

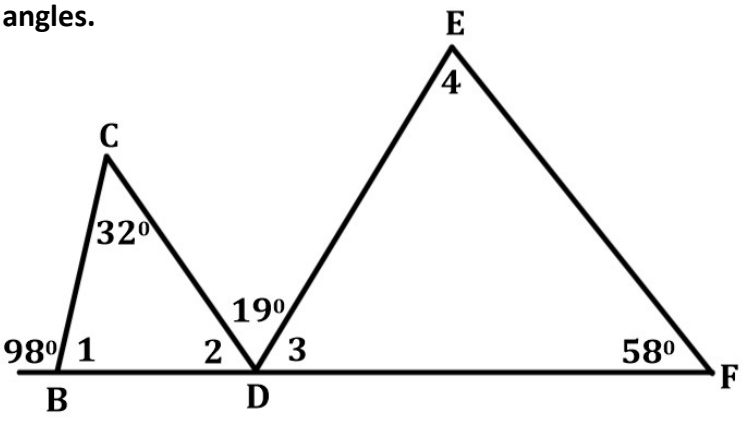
Triangle?

Classify by:

Sides_____

Angles_____

5. Find the measures of the missing angles, then classify each triangle in the diagram by its sides <u>and</u> angles.



m <1_____

m <2_____

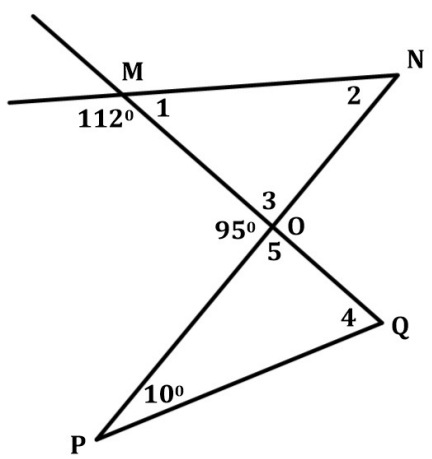
m <3_____

m <4_____

Classify Δ*BCD* by Sides:_____ by Angles:_____

Classify Δ*DEF* by Sides:_____ by Angles:_____

6. Find the measures of the missing angles, then classify each triangle in the diagram by its sides <u>and</u> angles.



m <1_____

m <2_____

m <3_____

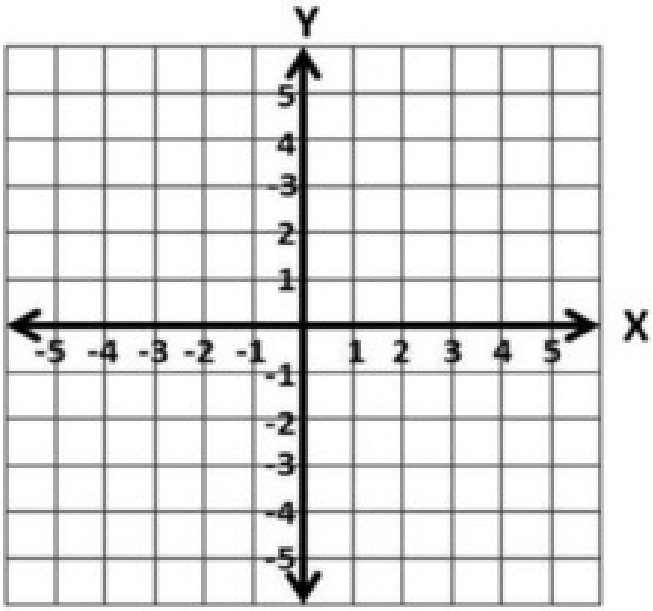
m <4_____

m <5_____

Classify Δ*MNO* by Sides:_____ by Angles:_____

Classify Δ*PQO* by Sides:_____ by Angles:_____

7. Graph Δ*ABC* with vertices *A*(1,1), *B*(-3,3), and *C*(-3,-3). Then use the Pythagorean Theorem to find the side lengths.



Side Lengths: *AB* = _____

BC = _____

AC = _____

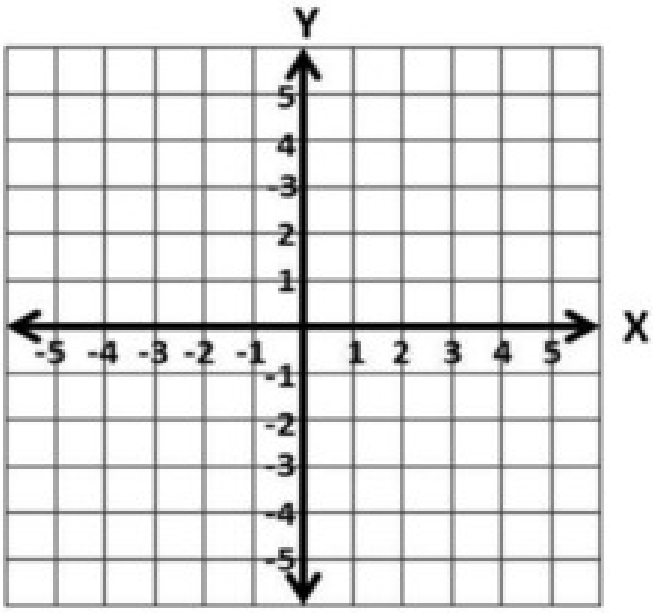
Is Δ*ABC* a Right Triangle?_____

If not, is it an Obtuse Triangle, or an Acute Triangle?_____

Explain why you classified it as Acute or Obtuse.

Classify Δ*ABC* by its sides (Scalene, Isosceles or Equilateral), and explain how you came to that classification.

8. Graph *ΔQRS* with vertices *Q*(4,-1), *R*(5,6), and *S*(1,3). Then use the Pythagorean Theorem to find the side lengths. Finally, classify the triangle by its sides and determine if it is a right triangle.



Side Lengths: *QR* = _____

RS = _____

QS = _____

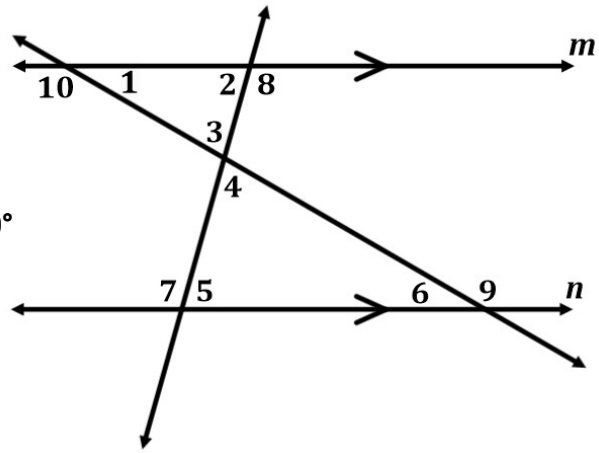
Is Δ*QRS* a Right Triangle?_____

If not, is it an Obtuse Triangle, or an Acute Triangle?_____

Explain why you classified it as Acute or Obtuse.

Classify Δ*QRS* by its sides (Scalene, Isosceles or Equilateral), and explain how you came to that classification.

9. Given the diagram below, explain—<u>without using the Triangle Sum Theorem</u>—why $m\angle 1 + m\angle 2 + m\angle 3 = m\angle 4 + m\angle 5 + m\angle 5 = 180°$. You can use any other theorems or postulates that we have introduced, both for triangles and parallel lines. You may use either a paragraph proof or the two-column format. If you choose to do a paragraph proof, you <u>must</u> support your statements with theorems or postulates.



Given: $m \parallel n$

Prove:
$m\angle 1 + m\angle 2 + m\angle 3 = m\angle 4 + m\angle 5 + m\angle 6 = 180°$

Statements	Reasons