

Your Name

Mrs. Theo

1 / 12 / 22

Notes

5.1 - Angles in TrianglesLesson Objectives

- Find interior and exterior angles of triangles
- Classify triangles by side lengths and angle measures

**Role Play****Group Member Grade**

Group Roles Practice

*on a scale of 1 - 10 how well did your partner perform their role?*Classifying Triangles Assignment*what could they do to improve in their group role for next time?*

Task Reader: We are now working on number \_\_\_\_ Member Name:  
 We need to classify each triangle by its \_\_\_\_ Rating:

Needs to improve on:

Questioner: Do we need to look at the angles or the sides?

What are the measurements of the \_\_\_\_ Member Name:

How many are the same? Rating:

Which classification name matches this scenario? Needs to improve on:

Are we dealing with interior angles or exterior angles? What is the formula we need to use?

How should we set up the equation?

Solution Confirmer: Did we answer all the questions? Member Name:

The classification for the triangle in question \_\_ is \_\_\_\_ Rating:

Needs to improve on:

The measure of the identified angle in question \_\_ is \_\_\_\_

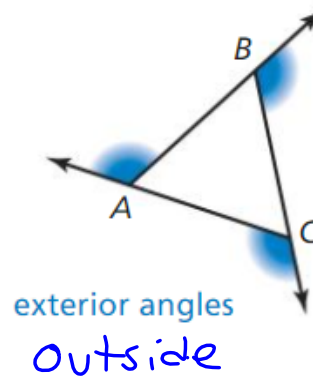
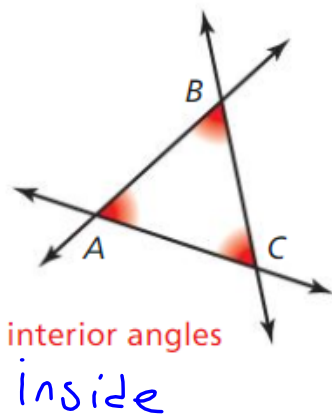
Does everyone have this written down?

Teacher Liason: Our group is having trouble with number \_\_\_\_ Member Name:

We discussed it and think \_\_\_\_, but could you explain \_\_\_\_? Rating:

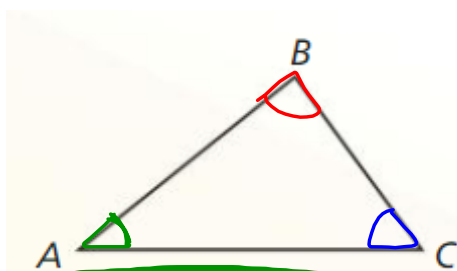
Hi Mrs. Theo, we are currently working on number \_\_\_\_, we are doing fine/need help. Needs to improve on:

## Angle Measures in Triangles



### Triangle Sum Theorem

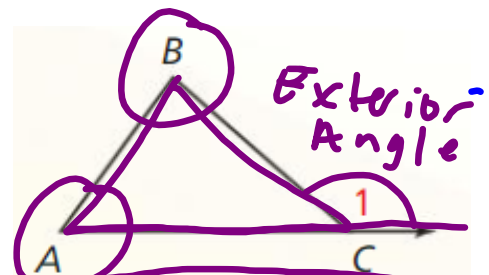
The sum of the measures of the interior angles of a triangle is  $180^\circ$ . *inside*



$$m\angle A + m\angle B + m\angle C = 180^\circ$$

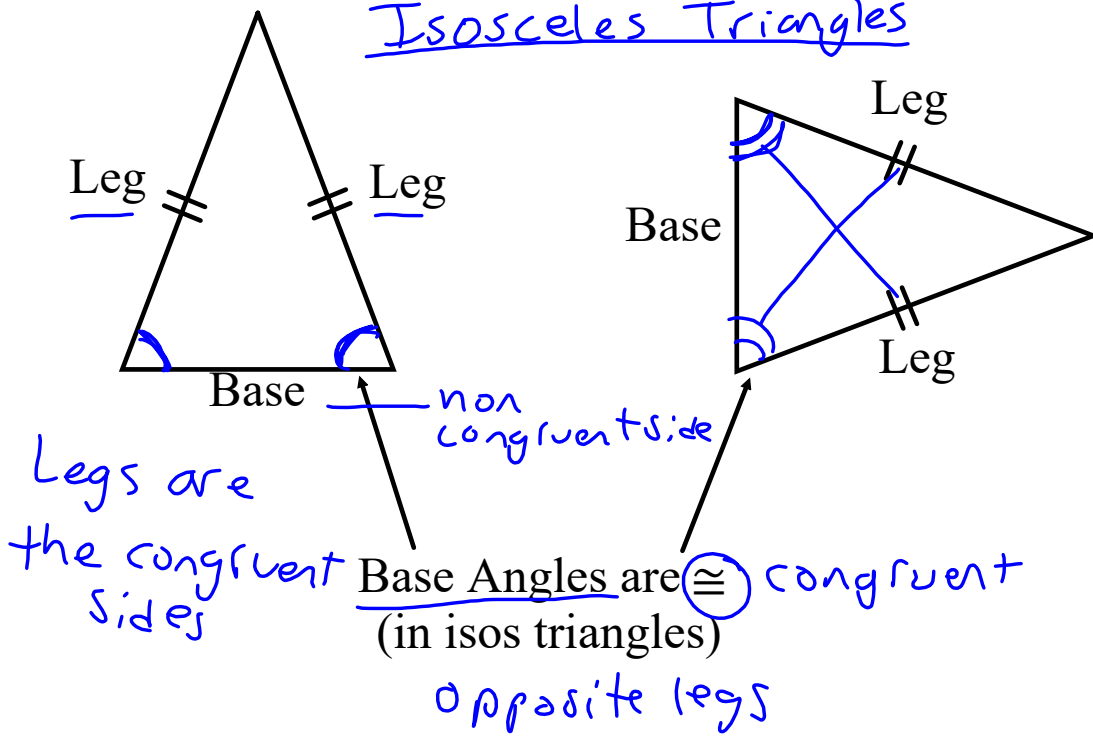
### Exterior Angle Theorem

The measure of an exterior angle in a triangle is equal to the sum of the non-adjacent interior angles.



$$m\angle 1 = m\angle A + m\angle B$$

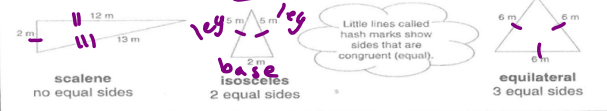
# Isosceles Triangles



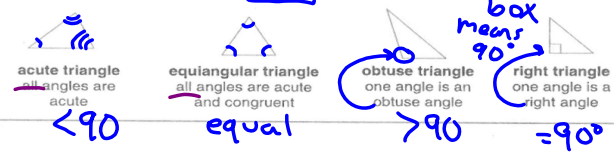
Geometry

Name \_\_\_\_\_

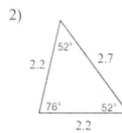
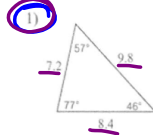
Triangles can be classified by the lengths of their sides.



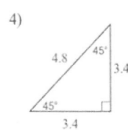
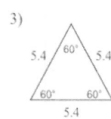
Triangles can be classified by their angles.



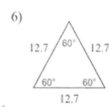
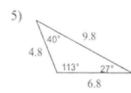
Classify each triangle by its sides.



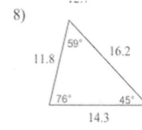
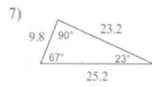
Scalene



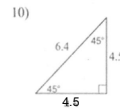
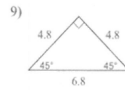
Classify each triangle by its angles.



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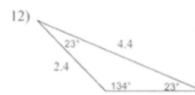


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Classify each triangle by its angles and sides.

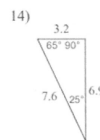
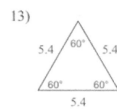


By angles:

By sides:

By angles:

By sides:

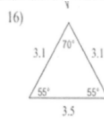
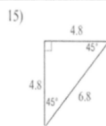


By angles:

By sides:

By angles:

By sides:

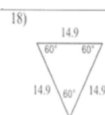
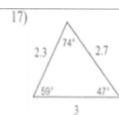


By angles:

By sides:

By angles:

By sides:



By angles:

By sides:

By angles:

By sides:

Mental Floss

The ratio of boys to girls taking enriched Geometry at Richwoods is 4:5. If there are a total of 135 students in all enriched Geometry classes, how many girls are in these classes?

$$4x + 5x = 135$$

$$9x = 135$$

$$\frac{9x}{9} = \frac{135}{9}$$

$$x = 15$$

<u>Boys</u>	<u>Girls</u>
$4(15)$	$5(15)$
$60$ boys $75$ girls	

In Exercises 19-22, State whether the given set of angles form a triangle.


19.  $86^\circ, 53^\circ, 41^\circ$   
 $86 + 53 + 41 = 180$   
 $180 = 180$   
 Yes they form a triangle


20.  $47^\circ, 84^\circ, 56^\circ$  \_\_\_\_\_

21.  $70^\circ, 22^\circ, 68^\circ$  \_\_\_\_\_


22.  $54^\circ, 97^\circ, 29^\circ$  \_\_\_\_\_


In Exercises 23 and 24, classify the triangle by its sides and by measuring its angles.


23. 


24. 

In Exercises 25-28 find  $m\angle 1$ . Then classify the triangle by its angles.

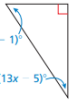
25.   $m\angle 1 = 71^\circ$

26. 

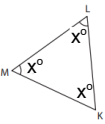
29.  Acute

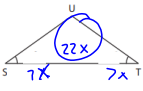
28. 

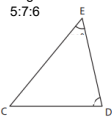
In Exercises 29-32 find the measure of each acute angle. (See Example 4.)

29. 


In Exercises 30-32, find the measure of the indicated angle using the information given.


30.   $m\angle K =$  \_\_\_\_\_

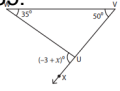
31. Angles in a ratio of 7:7:22  
  
 $7x + 7x + 22x = 180$   
 $m\angle U = x = 5$   
 $110^\circ$   
 $22(5)$

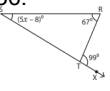
32. Angles in a ratio of 5:7:6  
  $m\angle C =$  \_\_\_\_\_

In Exercises 15-18, find the measure of the exterior angle. (See Example 3.)

33.  exterior angle: \_\_\_\_\_

34.   $x =$  \_\_\_\_\_ exterior angle:  $92$

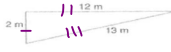


35.   $x =$  \_\_\_\_\_ exterior angle: \_\_\_\_\_

36.   $x =$  \_\_\_\_\_ exterior angle: \_\_\_\_\_

Geometry





Name \_\_\_\_\_

Triangles can be classified by the lengths of their sides.

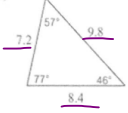
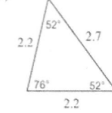
 <b>scalene</b> no equal sides	 <b>isosceles</b> 2 equal sides	 <b>equilateral</b> 3 equal sides
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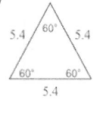
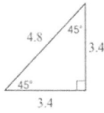
Little lines called hash marks show sides that are congruent (equal).

Triangles can be classified by their angles.

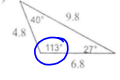

 <b>acute triangle</b> all angles are acute $< 90$	 <b>equiangular triangle</b> all angles are acute and congruent equal	 <b>obtuse triangle</b> one angle is an obtuse angle $> 90$	 <b>right triangle</b> one angle is a right angle $= 90^\circ$
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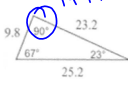
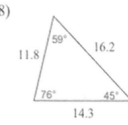
Classify each triangle by its sides.

1)  <b>Scalene</b>	2)  <b>Isosceles</b>
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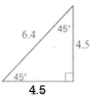
3)  <b>Equilateral</b>	4)  <b>Right</b>
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Classify each triangle by its angles.


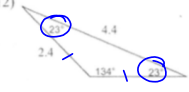
5)  <b>Obtuse</b>	6)  <b>Equiangular</b>
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7)  <b>Right</b>	8)  <b>acute</b>
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if it says  $90^\circ$  it is box also means  $90^\circ$  w/o needing to say so

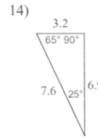
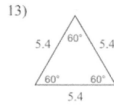
9)  <b>Right</b>	10)  <b>Right</b>
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Classify each triangle by its angles and sides.

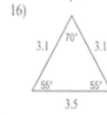
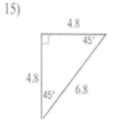
11)  By angles: <b>Obtuse</b> By sides: <b>Scalene</b>	12)  By angles: <b>Obtuse</b> By sides: <b>Isosceles</b>
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# 5.1 - Angles of Triangles Notes

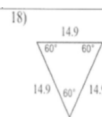
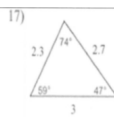
January 12, 2022



By angles Equiangular	By angles Right
By sides Equilateral	By sides Scalene



By angles Right	By angles Acute
By sides Isosceles	By sides Isosceles



By angles Acute	By angles Equiangular
By sides Scalene	By sides Equilateral

In Exercises 19-22, State whether the given set of angles form a triangle.

In Exercises 23 and 24, classify the triangle by its sides and by measuring its angles.

19.  $86^\circ, 53^\circ, 41^\circ$   
 $86 + 53 + 41 = 180$   
 $180 = 180$   
 Yes they form a triangle

20.  $47^\circ, 84^\circ, 56^\circ$   
 $47 + 84 + 56 = 187$   
 $187 \neq 180$   
 No, they do not form a triangle

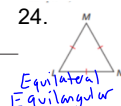


21.  $70^\circ, 22^\circ, 68^\circ$

No

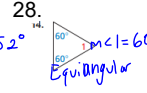
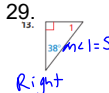
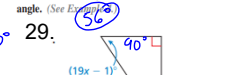
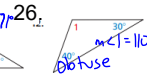
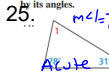
22.  $54^\circ, 97^\circ, 29^\circ$

Yes

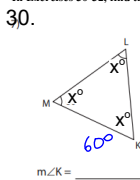


In Exercises 25-28 find  $m\angle 1$ . Then classify the triangle by its angles.

In Exercises 29 find the measure of each acute angle. (See Example 3.)

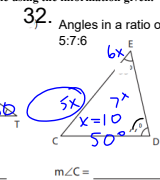


In Exercises 30-32, find the measure of the indicated angle using the information given.



31. Angles in a ratio of 7:7:22

$7x + 7x + 22x = 180$   
 $36x = 180$   
 $x = 5$   
 $m\angle 2 = 110^\circ$



In Exercises 33-36 find the measure of the exterior angle. (See Example 3.)

