



Aim#25: 4.1 How can we use our knowledge of congruence to classify triangles and find measures of their angles?

Guiding Questions	Notes/Diagrams/Illustrations
Describe the two parts of a triangle.	
Classify the triangle by its angles.	<p>1. obtuse</p> <p>2. acute isosceles</p>
Classify the triangles by their angles.	<p>3. scalene acute</p> <p>4. equilateral equiangular</p>
Classify the triangle by its sides. <u>distance</u> Formula: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$	<p>5. <u>Scalene</u></p> <p> $d_1 = \sqrt{(3-2)^2 + (5+3)^2} = \sqrt{(1)^2 + (8)^2}$ $d_1 = \sqrt{9} = \sqrt{65}$ $d_2 = \sqrt{(-1-2)^2 + (3-5)^2} = \sqrt{(-3)^2 + (-2)^2}$ $d_2 = \sqrt{9+4} = \sqrt{13}$ $d_3 = \sqrt{(-1-3)^2 + (3--3)^2} = d_3 = \sqrt{(-4)^2 + (6)^2} = \sqrt{16+36} = \sqrt{52}$ </p>
Triangle Sum Theorem	<p>The <u>sum</u> of the measures of the <u>interior</u> angles of a <u>triangle</u> is <u>180</u>.</p>
How can we prove the Triangle Sum Theorem?	<p>$m\angle A + m\angle B + m\angle C = 180^\circ$</p>

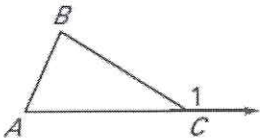


Find the value of x and classify the triangle by its angles.

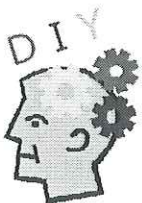


Exterior Angle Sum

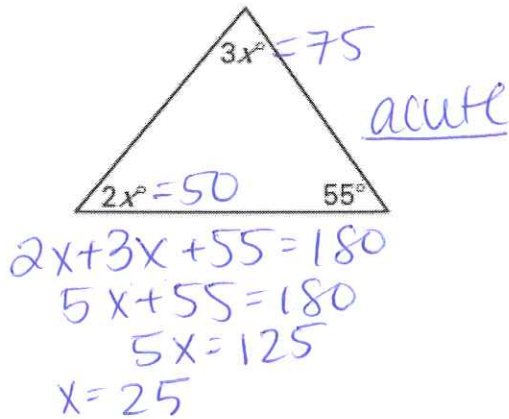
Theorem:



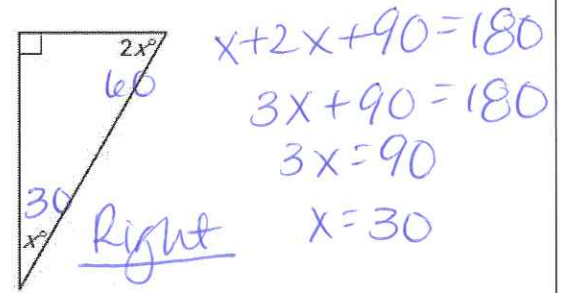
How can we apply the exterior angle sum theorem?



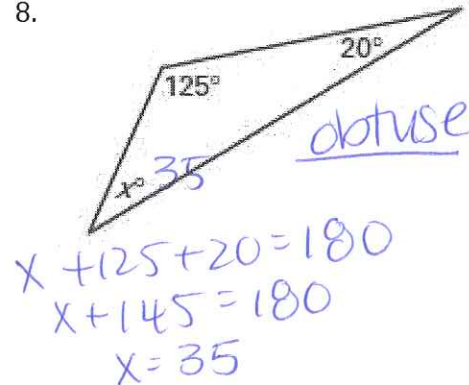
6.



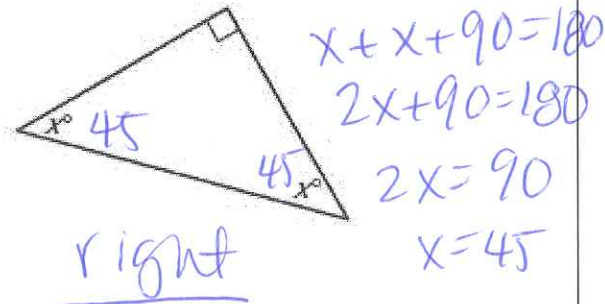
7.



8.



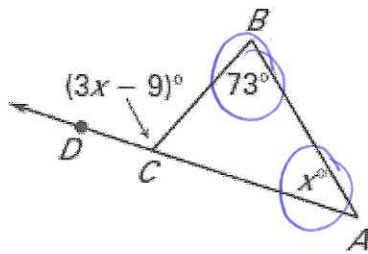
9.



The measure of the exterior angles of a triangle is equal to the sum of the measures of the 2 non adjacent interior angles.

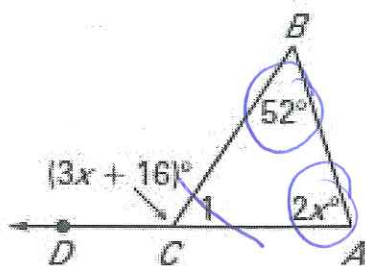
$m\angle 1 = m\angle A + m\angle B$ * not touching EXTERIOR

10.



$$\begin{array}{r} 3x - 9 = 73 + x \\ + 9 \quad + 9 \\ \hline 3x = 82 + x \\ - x \quad - x \\ \hline 2x = 82 \\ \frac{2x}{2} = \frac{82}{2} \quad x = 41 \end{array}$$

11.



$$\begin{array}{r} 3x + 16 = 52 + 2x \\ - 2x \quad - 2x \\ \hline x + 16 = 52 \\ - 16 \quad - 16 \\ \hline x = 36 \end{array}$$