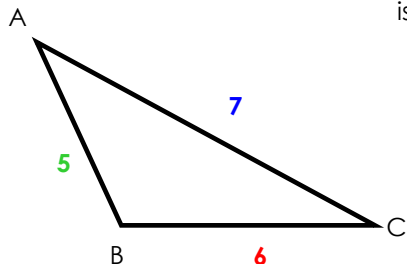


5.7 Study Guide for Level 5 Test

5.1 Angle Side Relationships in Triangles

In a triangle, the largest side is opposite the largest angle and the smallest side is opposite the smallest angle



List the sides from largest to smallest

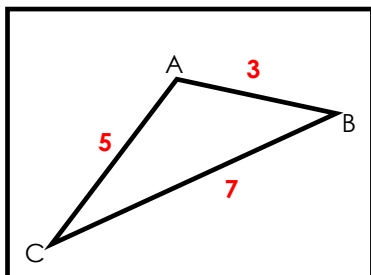
AC BC AB

List the angles from largest to smallest

<B <A <C

△ In $\triangle ABC$, $AB = 3$, $BC = 7$, and $AC = 5$. List the angles of $\triangle ABC$ in order from largest to smallest

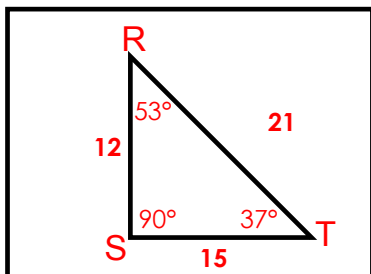
Draw Here:



<A, <B, <C

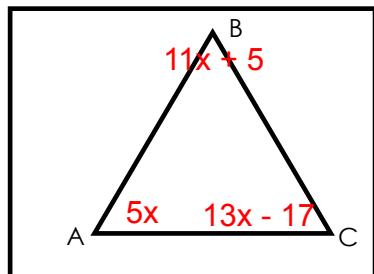
Draw a triangle with sides 12 cm, 21 cm, and 15 cm. The angle measures are 90° , 53° , and 37° . Place the angle measures in the appropriate spots.

Draw Here:



In $\triangle ABC$, $m\angle A = 5x$, $m\angle B = 11x + 5$, and $m\angle C = 13x - 17$. Determine the longest side of $\triangle ABC$.

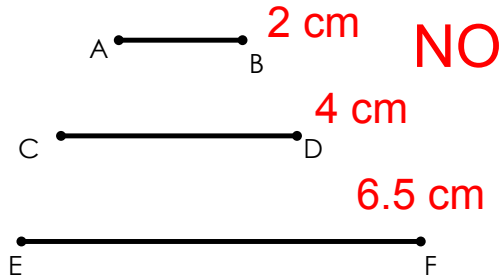
Draw Here:



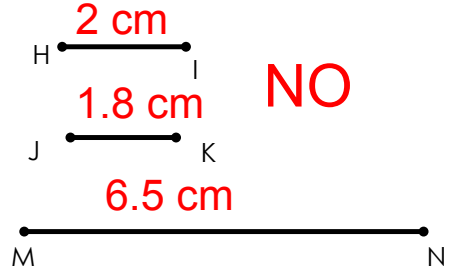
AC

5.2 Triangle Inequality Theorem

Measure the following line segments
Could line segment AB, CD,
and EF be used to make a triangle?



Measure the following line segments
Could line segment HI, JK,
and MN be used to make a triangle?



State if the three numbers can be the measures of the sides of a triangle.

3, 10, 8

YES

2, 15, 16

YES

1, 13, 13

YES

10, 18, 10

YES

Two sides of a triangle have the following measures. Find the range of possible measures for the third side.

6, 10

$$5 \leq x \leq 15$$

11, 8

$$4 \leq x \leq 18$$

6, 9

$$4 \leq x \leq 14$$

14, 11

$$4 \leq x \leq 24$$

5.3 Midsegments of Triangle

A line segment that connects two _____ of the sides of a triangle is called a _____

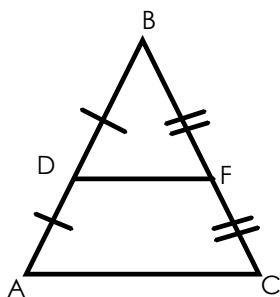
Midsegment Theorem

The midsegment is parallel to the base

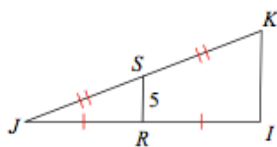
$$\underline{DF} \parallel \underline{AC}$$

The midsegment is half the length of the base

$$\underline{\left(\frac{1}{2}\right) AC} = \underline{DF}$$



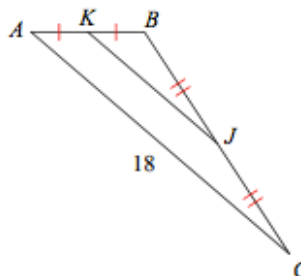
Find all side lengths and state which segments are parallel



$$\underline{SR} \parallel \underline{KI}$$

$$KI = \underline{10}$$

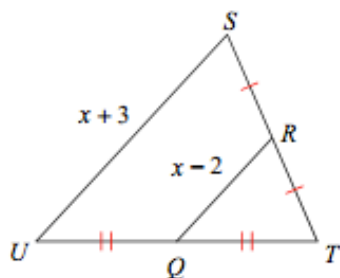
Find all side lengths and state which segments are parallel



$$\underline{KJ} \parallel \underline{AC}$$

$$KJ = \underline{9}$$

Solve for x and find the side lengths

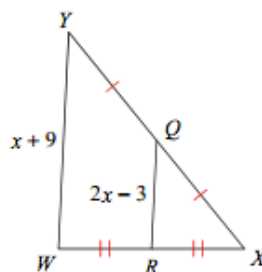


$$x = \underline{7}$$

$$SU = \underline{10}$$

$$RQ = \underline{5}$$

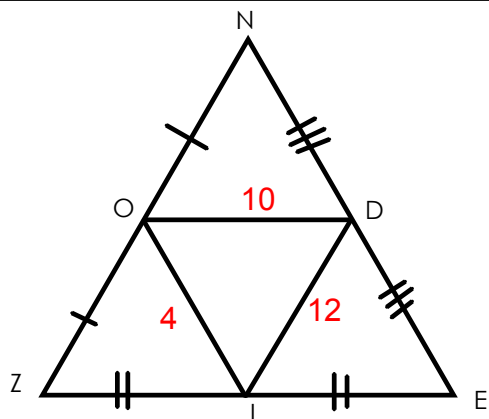
Solve for x and find the side lengths



$$x = \underline{5}$$

$$YW = \underline{14}$$

$$QR = \underline{7}$$



OD = 10, DL = 12, and LO = 4.

$$ZN = \underline{24}$$

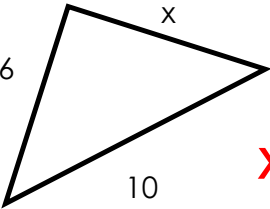
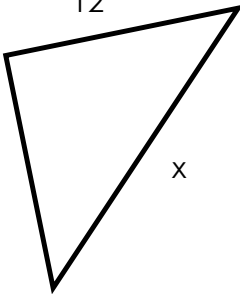
$$NE = \underline{8}$$

$$ZE = \underline{20}$$

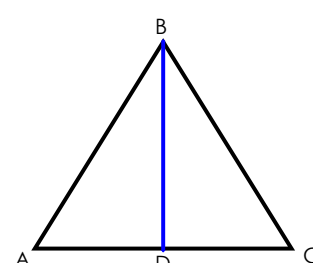
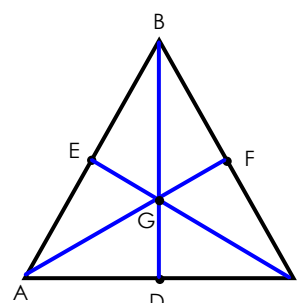
What is the perimeter of $\triangle ZNE$?

$$\underline{52}$$

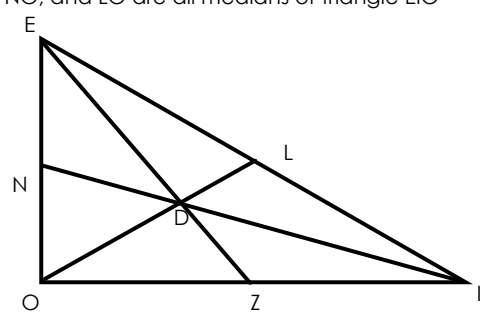
5.5 Pythagorean Theorem and The Distance

<p>Solve for x</p>  <p>$x = 8$</p>	<p>Solve for x</p>  <p>$\sqrt{265} = 16.3$</p>
<p>Which set of numbers does <i>not</i> represent the sides of a right triangle?</p> <ol style="list-style-type: none"> 1) {6, 8, 10} 2) {8, 15, 17} 3) {8, 24, 25} 4) {15, 36, 39} 	<p>Which set of numbers could <i>not</i> represent the lengths of the sides of a right triangle?</p> <ol style="list-style-type: none"> 1) {1, 3, $\sqrt{10}$} 2) {2, 3, 4} 3) {3, 4, 5} 4) {8, 15, 17}
<p>The coordinates of the endpoints of \overline{FG} are $(-4, 3)$ and $(2, 5)$. State the answer as a radical and a decimal to the nearest tenth</p> <p>$\sqrt{40} = 6.3$</p>	<p>What is the length of \overleftrightarrow{AB} with endpoints $A(-1, 0)$ and $B(4, -3)$? State the answer as a radical and a decimal to the nearest tenth</p> <p>$\sqrt{34} = 5.8$</p>

5.4 Medians and Centroids

<p style="text-align: center;">Medians of a triangle</p> <p>A median of a triangle is a line segment joining a vertex to the midpoint of the opposite side.</p>  <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> \overline{BD} is a median of triangle ABC </div>	<p style="text-align: center;">Centroid</p> <p>The point where the three medians of the triangle meet is called the centroid.</p>  <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p style="text-align: center;">G is the centroid of triangle ABC</p> <p style="text-align: center;">_____ = _____</p> <p style="text-align: center;">_____ = _____</p> <p style="text-align: center;">_____ = _____</p> </div>
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EZ, NO, and LO are all medians of triangle EIO



If $DZ = 8$ find the value of ED and EZ.

ED = **16**

EZ = **24**

If $DI = 8y + 8$ and $DN = 2y + 18$, what is the length of DN?

DN = 32

Plot Triangle SRQ :

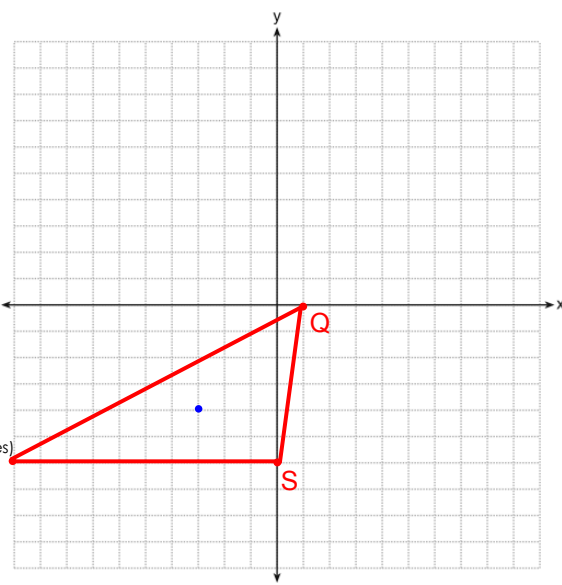
$S(0, -6), R(-10, -6), Q(1, 0)$

1. Find the centroid of SRQ

$(-3, -4)$

2. State the largest angle of triangle SRQ
(hint: remember the relationship between angles and sides)

$\angle S$



5.6 Triangles in the Coordinate Plane

Classify the triangle with vertices at the following points as equilateral, isosceles, or scalene
 $A(-2, 1)$, $B(-2, 7)$ and $C(6, 5)$

Find the length of AB
 $d = (\quad)^2 + (\quad)^2$

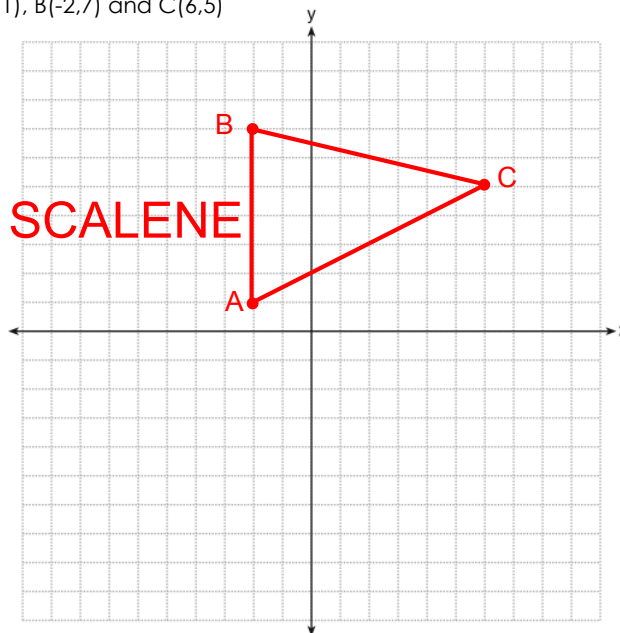
$$d = 6$$

Find the length of AC
 $d = (\quad)^2 + (\quad)^2$

$$d = \sqrt{80}$$

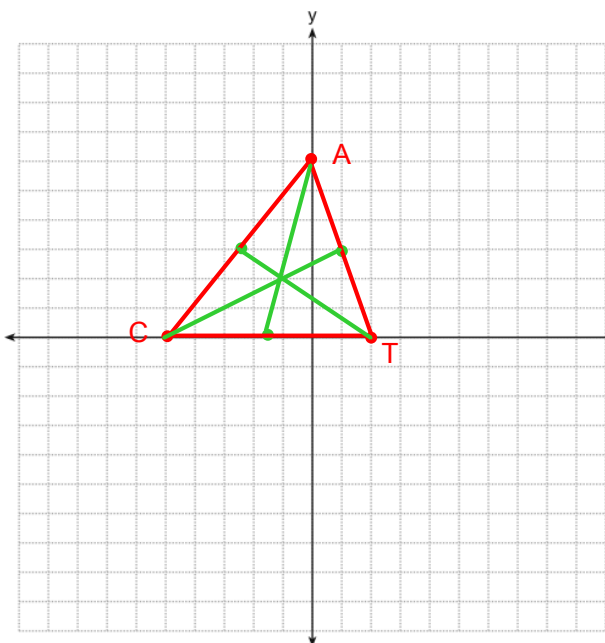
Find the length of BC
 $d = (\quad)^2 + (\quad)^2$

$$d = \sqrt{68}$$



Triangle CAT has its vertices at points $(-5, 0)$, $(0, 6)$, $(2, 0)$

Find the distance from the centroid of CAT to the vertex of angle A



Step 1: Find the midpoints of all the sides

$$(-1.5, 0)$$

$$(1, 3)$$

$$(-2.5, 3)$$

Step 2: Draw Medians

Step 3: Find coordinate of centroid

$$(-1.5, 2)$$

Step 4: Find the distance from centroid to Angle A

$$\sqrt{(73/4)} \text{ OR } \sqrt{18.25}$$

Level 3 Review

What is an equation of the line that is perpendicular to the line whose equation is $y = \frac{3}{5}x - 2$ and that passes through the point $(3, -6)$?

$$y = (-5/3)x - 1$$

What is an equation of the line that passes through the point $(7, 3)$ and is parallel to the line $4x + 2y = 10$?

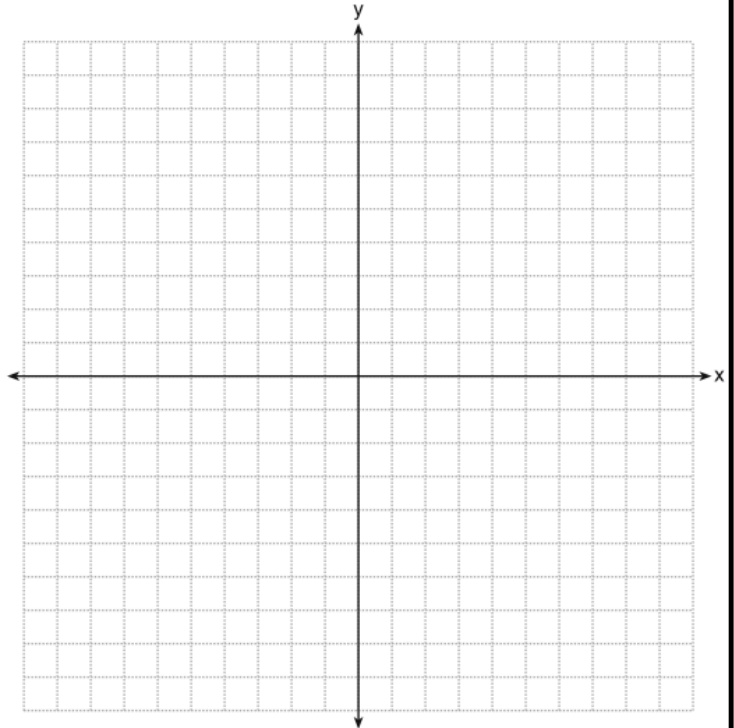
$$y = -2x + 17$$

Given the equations: $y = x^2 - 6x + 10$

$$y + x = 4$$

What is the solution to the given system of equations?

- 1) $(2, 3)$
- 2) $(3, 2)$
- 3) $(2, 2)$ and $(1, 3)$
- 4) $(2, 2)$ and $(3, 1)$

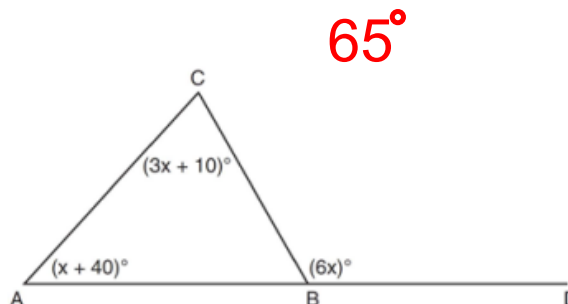


Level 4 Review

In $\triangle ABC$, $m\angle A = x$, $m\angle B = 2x + 2$, and $m\angle C = 3x + 4$. Is the triangle scalene, isosceles, or equilateral?

scalene

If $m\angle CAB = x + 40$, $m\angle ACB = 3x + 10$, $m\angle CBD = 6x$, what is $m\angle CAB$?



In triangle ABC, $AB \cong AC$, $m\angle A = x + 2$, and $m\angle B = 3x - 48$. Find the value of x

**274 OR 39.1
7**

In $\triangle MNO$ $m\angle MNO = 62^\circ$ and $MN \cong ON$. Find $m\angle OMN$.

$\angle OMN = 59$

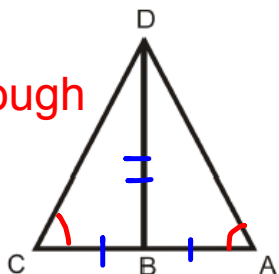
Given:

$\angle C \cong \angle A$
BD bisects CA

Prove:

$\triangle CDB \cong \triangle ADB$

**Not enough
info**

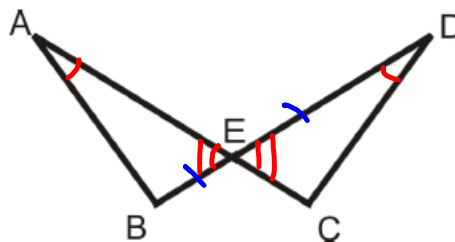


Given:

$\overline{BE} \cong \overline{EC}$
 $\angle A \cong \angle D$

Prove:

$\triangle AEB \cong \triangle DEC$



_____ \cong _____ because _____

$\triangle AEB \cong \triangle DEC$ because AAS

