

Name: _____

Date: _____

Hr: _____

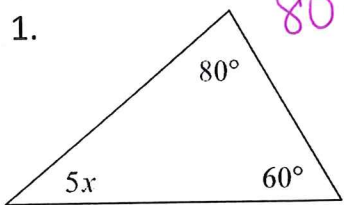
Key

Triangle Review

Show all work throughout the review to receive full credit!

Directions: Find x.

1.



$$80 + 60 + 5x = 180$$

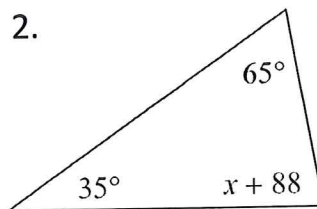
$$140 + 5x = 180$$

$$5x = 40$$

$$x = 8$$

Δ sum thm

2.



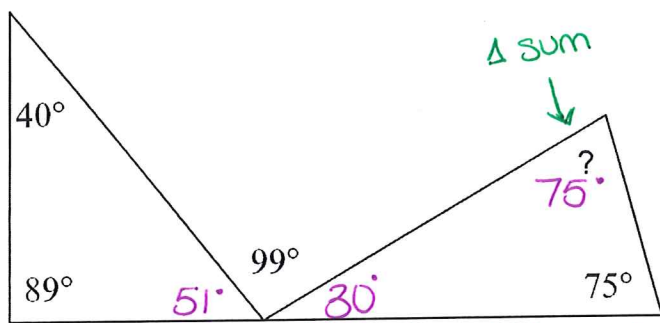
$$65 + 35 + x + 88 = 180$$

$$x + 188 = 180$$

$$x = -8$$

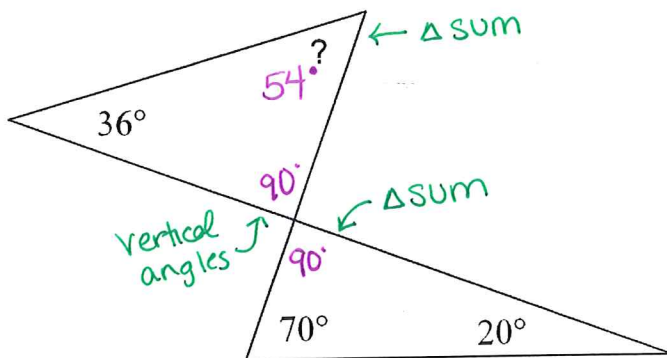
Δ sum thm

3. Find the measure of the missing angle.



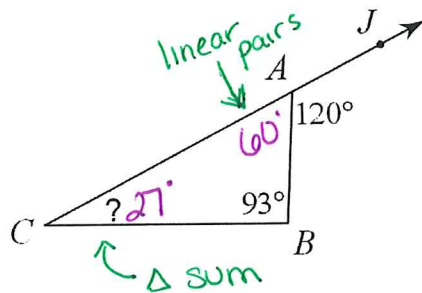
Δ sum \uparrow \uparrow angle addition into a straight angle

4. Find the measure of the missing angle.



Δ sum \leftarrow
Vertical angles \uparrow
 Δ sum \leftarrow

5. Find the measure of the missing angle.



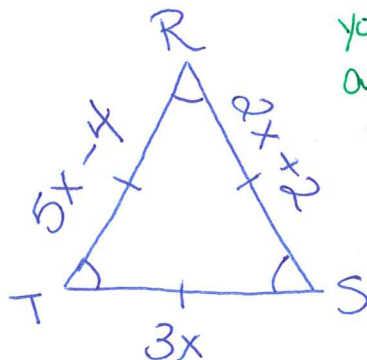
linear pairs \downarrow

Δ sum \leftarrow

Directions: For 6 and 7, draw, mark and label the figure, solve for the missing variable, and find the lengths of each side.

\uparrow When there is no figure, you MUST draw one!

6. Find the measure of each side of equilateral ΔRST with $RS = 2x + 2$, $ST = 3x$, and $TR = 5x - 4$



you can set any of the sides = since all 3 sides are \cong

$$RS \cong ST$$

$$2x + 2 = 3x$$

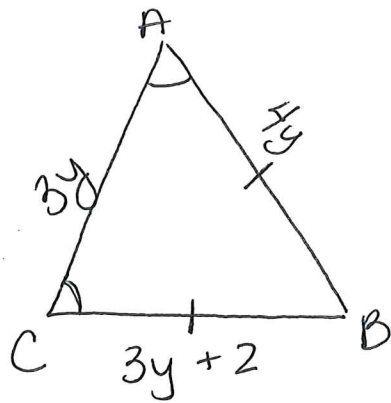
$$2 = x$$

$$RS = 2(2) + 2 = 6$$

$$ST = 3(2) = 6$$

$$TR = 5(2) - 4 = 6$$

7. Find the measure of each side of isosceles $\triangle ABC$ with $AB \cong BC$ if $AB = 4y$, $BC = 3y + 2$, and $AC = 3y$



$$AB \cong BC$$

$$4y = 3y + 2$$

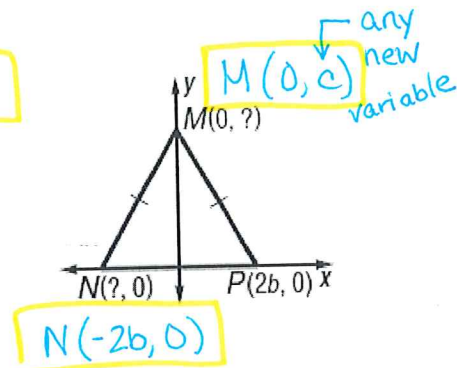
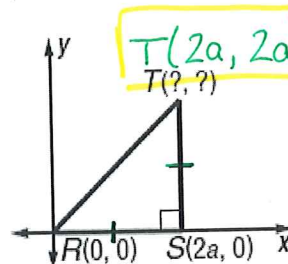
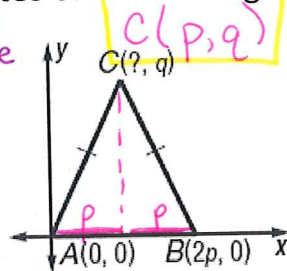
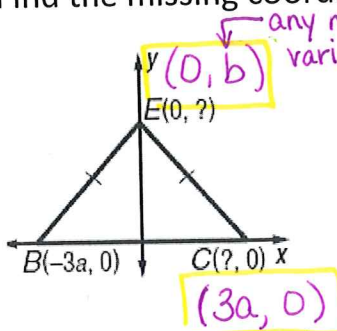
$$\underline{y = 2}$$

$$AB = 4(2) = \boxed{8}$$

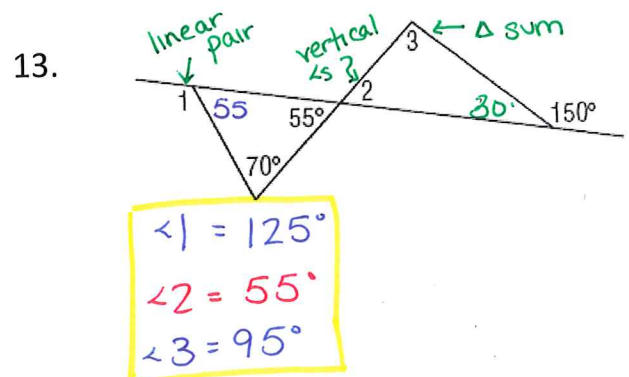
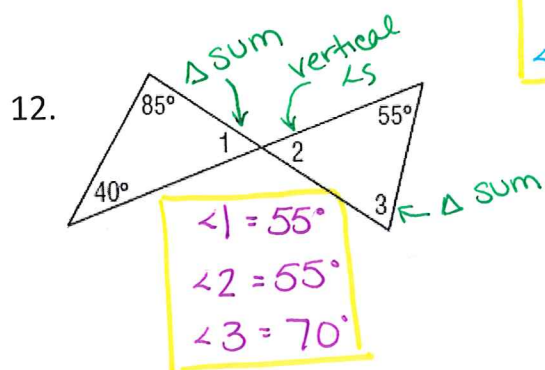
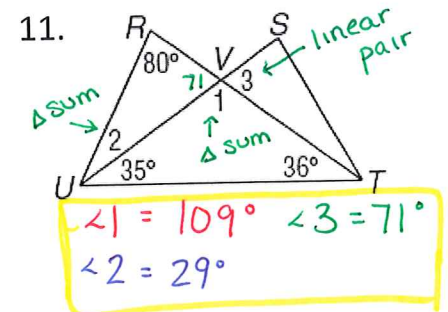
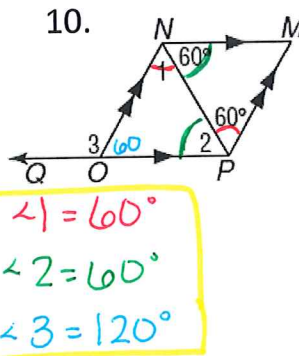
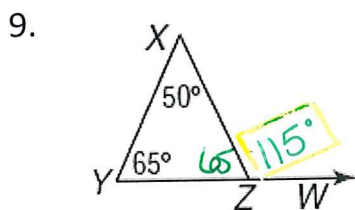
$$BC = 3(2) + 2 = \boxed{8}$$

$$AC = 3(2) = \boxed{6}$$

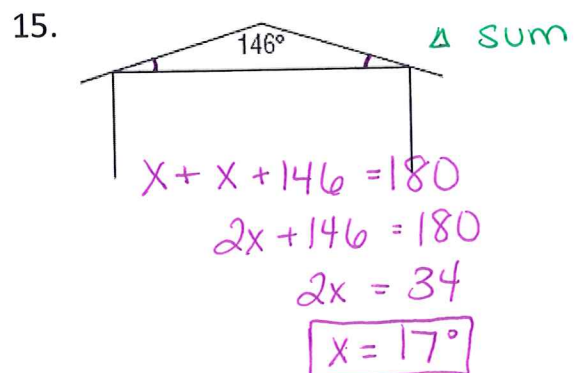
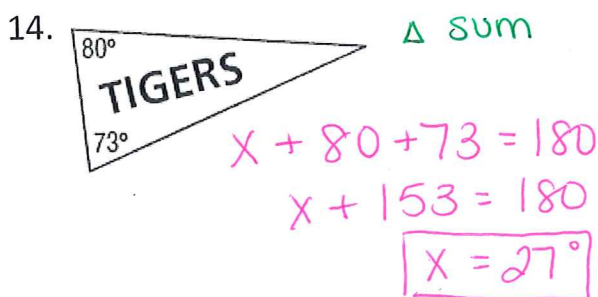
8. Find the missing coordinates of each triangle.



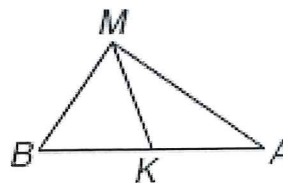
Find the measures of the numbered angles.



Find all missing angle measures.



16. Given the following triangle with median MK state if the following statements are true or false.



a. $m\angle MKA = 90^\circ$ False

b. $BK \cong AK$ True

c. $m\angle BMK = m\angle AMK$ False

d. $\triangle BMA$ is isosceles with vertex angle M. False

17. Classify the triangle by its sides and angles given the two angle measure are 61° and 29° .

Find 3rd angle

$$x + 61 + 29 = 180$$

$$x = 90^\circ$$

Right Scalene Triangle

18. Classify the triangle by its sides and angles given the two angle measure are 12° and 84° .

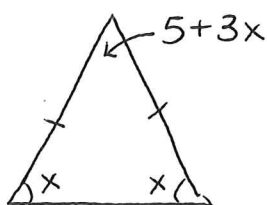
Find 3rd angle

$$x + 12 + 84 = 180$$

$$x = 84^\circ$$

Acute Isosceles Triangle

19. If in an isosceles triangle, the vertex angle is 5 more than 3 times the measure of one of the base angles, find the measures of EVERY angle. Show all work and algebraic set up.



$$5 + 3x + x + x = 180$$

$$5x + 5 = 180$$

$$5x = 175$$

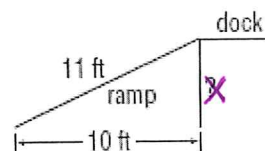
$$x = 35^\circ$$

The base angles are 35°

The vertex angle is 110°

$$3(35) + 5 = 110$$

20. CONSTRUCTION The bottom end of a ramp at a warehouse is 10 feet from the base of the main dock and is 11 feet long. How high is the dock?



Pythagorean
Thm (PT)

$$10^2 + x^2 = 11^2$$

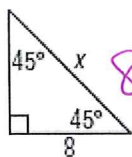
$$100 + x^2 = 121$$

$$\sqrt{x^2} = \sqrt{21}$$

$$x = \sqrt{21} \text{ ft}$$

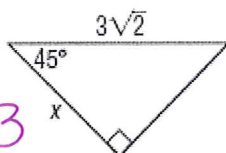
21. Find the value of x.

$$45-45-90$$



$$8\sqrt{2}$$

22. Find the value of x.

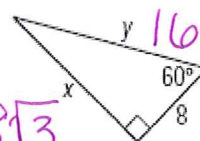


3

$$45-45-90$$

23. Find the value of x and y.

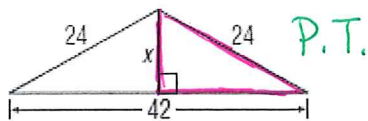
$$30-60-90$$



$$8\sqrt{3}$$

$$y = 16$$

24. Find the value of x.



$$x^2 + 21^2 = 24^2$$

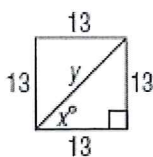
$$x^2 + 441 = 576$$

$$\sqrt{x^2} = \sqrt{135}$$

$$x = 3\sqrt{15}$$

③ 19 115

25. Find the value of x and y.

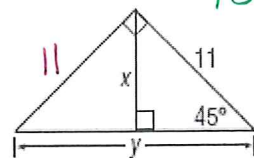


45-45-90

$$x = 45^\circ$$

$$y = 13\sqrt{2}$$

26. Find the value of x and y.

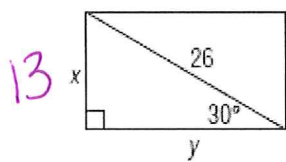


45-45-90

$$y = 11\sqrt{2}$$

$$x = \frac{11}{2}\sqrt{2} = x$$

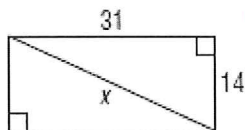
27. Find the value of x and y.



30-60-90

$$13\sqrt{3}$$

28. Find the value of x.



PT

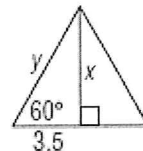
$$14^2 + 31^2 = x^2$$

$$196 + 961 = x^2$$

$$\sqrt{1157} = \sqrt{x^2}$$

$$x = \sqrt{1157}$$

29. Find the value of x and y.



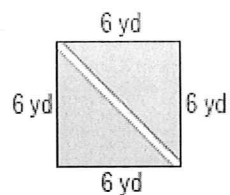
30-60-90

$$y = 7$$

$$x = 3.5\sqrt{3}$$

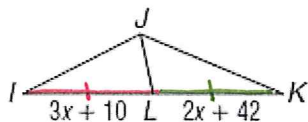
30. **BOTANICAL GARDENS** One of the displays at a botanical garden is an herb garden planted in the shape of a square. The square measures 6 yards on each side. Visitors can view the herbs from a diagonal pathway through the garden. How long is the pathway?

The pathway is $6\sqrt{2}$ yds long



45-45-90

31. **MEDIAN** IF LJ is the median of ΔIJK , find x.



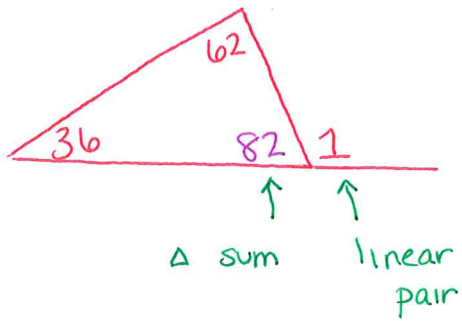
$$IL \cong LK$$

$$3x + 10 = 2x + 42$$

$$x + 10 = 42$$

$$x = 32$$

32. **TOWERS** A lookout tower sits on a network of struts and posts. Leslie measured 2 angles on the tower, find the measure of $\angle 1$.



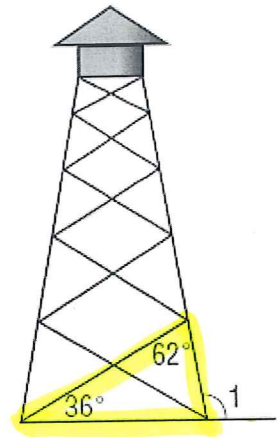
$$x + 36 + 62 = 180$$

$$x + 98 = 180$$

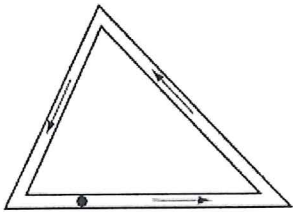
$$x = 82$$

$$\angle 1 = 180 - 82$$

$$\boxed{\angle 1 = 98^\circ}$$

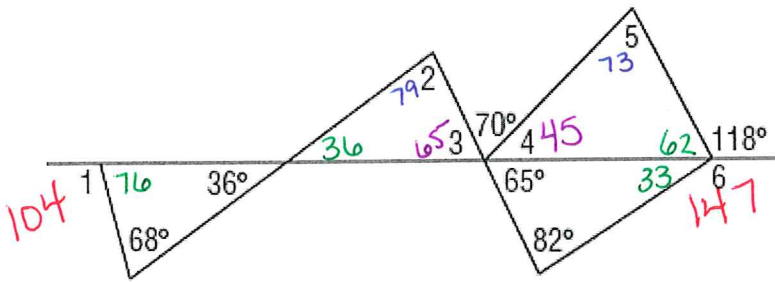


33.. **PATHS** Rachel walks around a triangular path. At each corner, she records the measure of the angle she creates. She makes one complete circuit around the path. What is the sum of the three angle measure that she wrote down during one complete circuit?



The sum of 3 angles in a triangle is 180°

34. **CRAZY ANGLES!** Find the measures of the numbered angles.



$$\angle 1 = \underline{104^\circ}$$

$$\angle 4 = \underline{45^\circ}$$

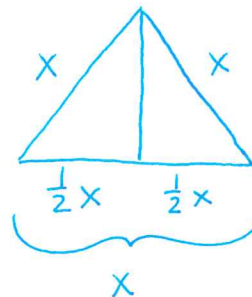
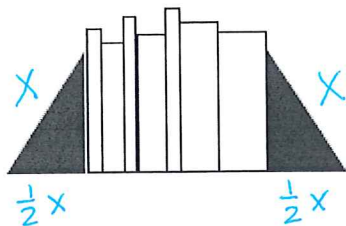
$$\angle 2 = \underline{79^\circ}$$

$$\angle 5 = \underline{73^\circ}$$

$$\angle 3 = \underline{65^\circ}$$

$$\angle 6 = \underline{147^\circ}$$

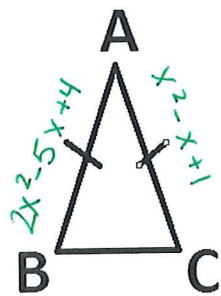
35. **BOOKENDS** Two bookends are shaped like right triangles. The bottom side of each triangle is exactly half as long as the slanted hypotenuse of the triangle. If all the book between the bookends are removed and they are pushed together, they will form a single triangle. Classify the triangle that will be formed as equilateral, isosceles or scalene.



Equilateral Triangle

36. Find the value(s) that would create an isosceles triangle with vertex at $\angle A$. Show all work!

a) $AB = 2x^2 - 5x + 4$ and $AC = x^2 - x + 1$



$$AB \cong AC$$

$$2x^2 - 5x + 4 = x^2 - x + 1$$

$$x^2 - 4x + 3 = 0$$

$$\boxed{-1} \cdot \boxed{-3} = 3$$

$$\boxed{-1} + \boxed{-3} = -4$$

$$(x-1)(x-3) = 0$$

$$\boxed{x=1} \checkmark$$

$$\boxed{x=3} \checkmark$$

Check $x=1$

$$2(1)^2 - 5(1) + 4 = 1 \checkmark$$

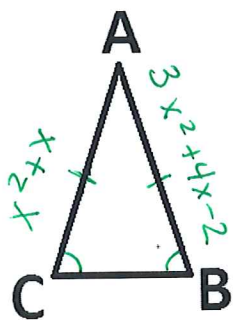
$$1^2 - 1 + 1 = 1 \checkmark$$

Check $x=3$

$$2(3)^2 - 5(3) + 4 = 7 \checkmark$$

$$3^2 - 3 + 1 = 7 \checkmark$$

b) $AB = 3x^2 + 4x - 2$ and $AC = x^2 + x$



$$AB \cong AC$$

$$3x^2 + 4x - 2 = x^2 + x$$

$$2x^2 + 3x - 2 = 0$$

$$\boxed{-1} \cdot \boxed{4} = -4$$

$$\boxed{-1} + \boxed{4} = 3$$

$$(x-1)(x+4) = 0$$

$$(2x-1)(x+2) = 0$$

$$\checkmark \boxed{x = \frac{1}{2}} \quad \boxed{x = -2} \checkmark$$

Check $x = \frac{1}{2}$

$$\frac{1}{2}^2 + \frac{1}{2} = 0.75 \checkmark$$

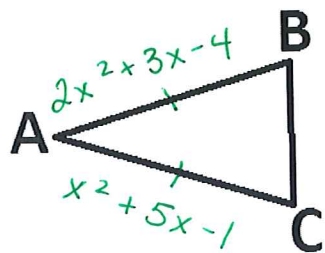
$$3\left(\frac{1}{2}\right)^2 + 4\left(\frac{1}{2}\right) - 2 = 0.75 \checkmark$$

Check $x = -2$

$$(-2)^2 + (-2) = 2 \checkmark$$

$$3(-2)^2 + 4(-2) - 2 = 2 \checkmark$$

c) $AB = 2x^2 + 3x - 4$ and $AC = x^2 + 5x - 1$



$$AB \cong AC$$

$$2x^2 + 3x - 4 = x^2 + 5x - 1$$

$$x^2 - 2x - 3 = 0$$

$$\boxed{-3} \cdot \boxed{1} = -3$$

$$\boxed{-3} + \boxed{1} = -2$$

$$(x-3)(x+1) = 0$$

$$\checkmark \boxed{x=3} \quad \boxed{x=-1}$$

Check $x=3$

$$2(3)^2 + 3(3) - 4 = 23 \checkmark$$

$$3^2 + 5(3) - 1 = 23 \checkmark$$

Check $x=-2$

$$2(-1)^2 + 3(-1) - 4 = -5$$

$$(-1)^2 + 5(-1) - 1 = -5$$

Sides cannot be negative

37. Find the measures of the side of $\triangle KPL$ and classify the triangle by its sides.

$$KL: 5^2 + 1^2 = x^2$$

$$25 + 1 = x^2$$

$$\boxed{\sqrt{26} = x}$$

$$LP: 4^2 + 4^2 = x^2$$

$$16 + 16 = x^2$$

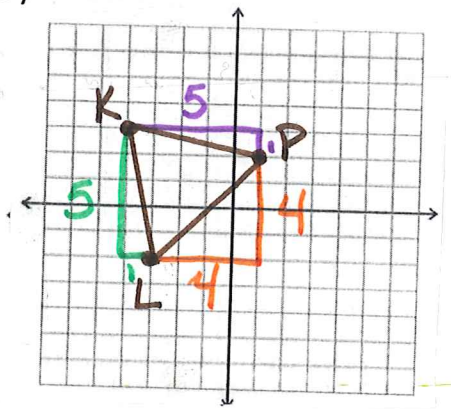
$$\sqrt{32} = x$$

$$\boxed{4\sqrt{2} = x}$$

$$KP: 5^2 + 1^2 = x^2$$

$$\boxed{x = \sqrt{26}}$$

It is an isosceles triangle b/c 2 sides are \cong



38. Find the measures of the side of $\triangle ABC$ and classify the triangle by its sides.

A(-9, -7), B(-6, -3), T(-5, -6)

$$AB: 4^2 + 3^2 = x^2$$

$$16 + 9 = x^2$$

$$\sqrt{25} = x$$

$$\boxed{5 = x}$$

$$BT: 1^2 + 3^2 = x^2$$

$$1 + 9 = x^2$$

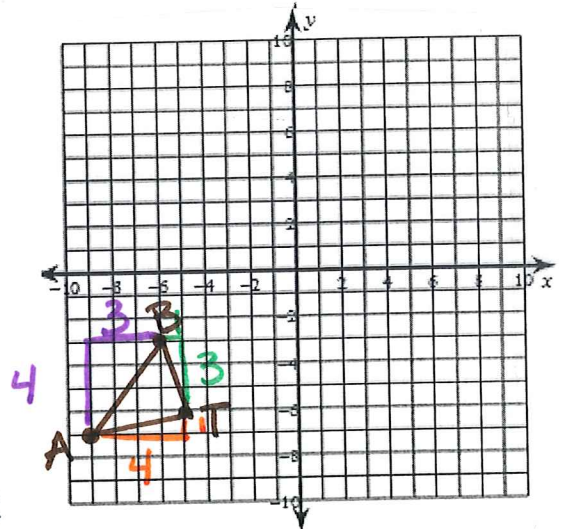
$$\boxed{\sqrt{10} = x}$$

$$AT: 4^2 + 1^2 = x^2$$

$$16 + 1 = x^2$$

$$\boxed{\sqrt{17} = x}$$

This is a scalene triangle b/c all 3 sides are different lengths



39. Find the measures of the side of $\triangle RST$ and classify the triangle by its sides.

R(2,4), S(4,7), T(6,4)

$$SR: 2^2 + 3^2 = x^2$$

$$4 + 9 = x^2$$

$$\boxed{\sqrt{13} = x}$$

$$ST: 2^2 + 3^2 = x^2$$

$$4 + 9 = x^2$$

$$\boxed{\sqrt{13} = x}$$

RT = 4 by counting

\overline{OR}

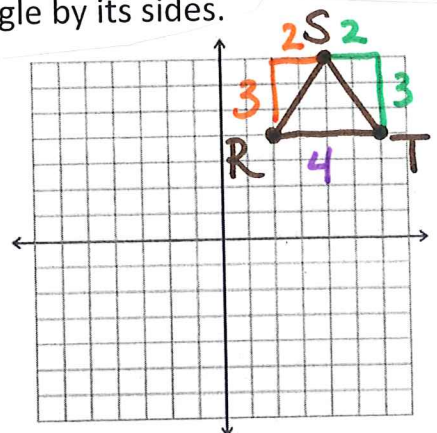
$$RT: 4^2 + 0^2 = x^2$$

$$16 + 0 = x^2$$

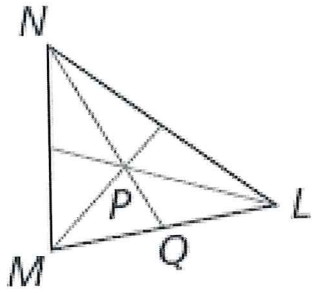
$$\sqrt{16} = x$$

$$\boxed{4 = x}$$

This is an isosceles triangle b/c there are 2 \cong sides.



40. If P is the centroid of $\triangle MNL$ and $QN = 15$ feet, find NP and PQ.



$$NP = \frac{2}{3} QN$$

$$NP = \frac{2}{3} (15)$$

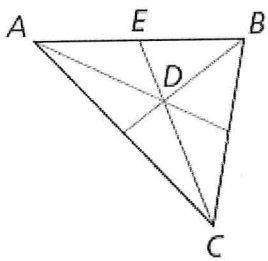
$$\boxed{NP = 10 \text{ ft}}$$

$$NQ = NP + PQ$$

$$15 = 10 + PQ$$

$$\boxed{5 \text{ ft} = PQ}$$

41. If D is the centroid of $\triangle ABC$ and $ED = 6$ inches, find DC and EC.



$$ED = \frac{1}{3} CE$$

$$(3) 6 = \frac{1}{3} CE$$

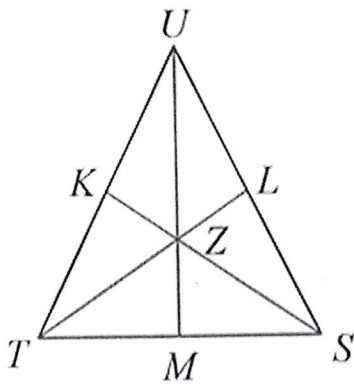
$$\boxed{18 \text{ in} = CE}$$

$$EC = ED + DC$$

$$18 = 6 + DC$$

$$\boxed{DC = 12 \text{ in}}$$

42. Find x if $UZ = 3x - 1$ and $ZM = 2x - 1$



$$UZ = 2(ZM)$$

$$3x - 1 = 2(2x - 1)$$

$$3x - 1 = 4x - 2$$

$$\boxed{1 = x}$$