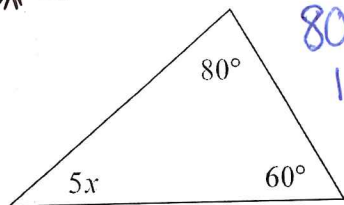


# Triangle Review 2014

Due: Monday, Dec. 15<sup>th</sup>

Directions: Find x.

\* 1.



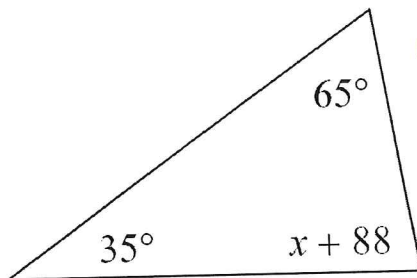
$$80 + 60 + 5x = 180$$

$$140 + 5x = 180$$

$$5x = 40$$

$$x = 8$$

\* 2.

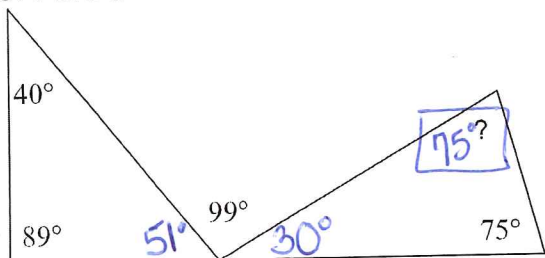


$$65 + 35 + x + 88 = 180$$

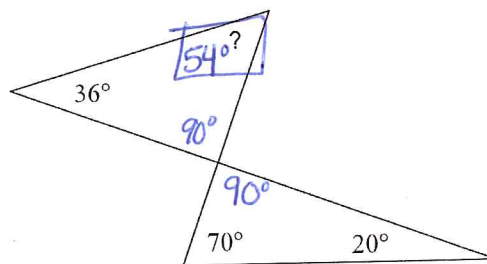
$$188 + x = 180$$

$$x = -8$$

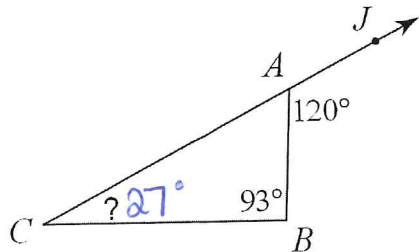
\* 3. Find the measure of the missing angle.



\* 4. Find the measure of the missing angle.



\* 5. Find the measure of the missing angle.



$$x + 93 = 120$$

$$x = 27$$

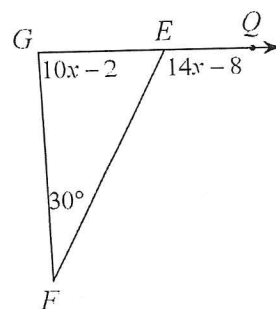
\* 6. Solve for x.

$$30 + 10x - 2 = 14x - 8$$

$$10x + 28 = 14x - 8$$

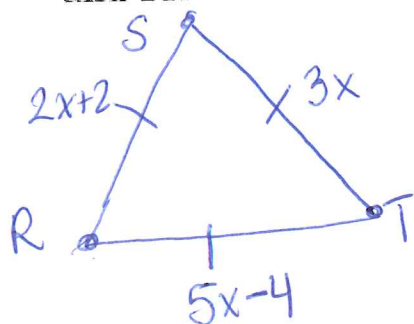
$$36 = 4x$$

$$9 = x$$



Directions: Draw, mark and label the figure, solve for the missing variable, and find the lengths of each side.

\* 7. Find the measure of each side of equilateral  $\triangle RST$  with  $RS = 2x + 2$ ,  $ST = 3x$ , and  $TR = 5x - 4$ .



$$RS = ST$$

$$2x + 2 = 3x$$

$$2 = x$$

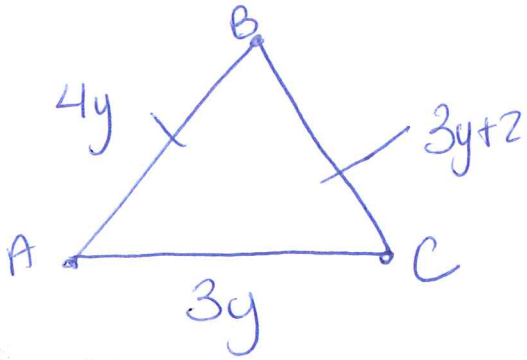
$$x = 2$$

$$RS = 6 \text{ units}$$

$$ST = 6 \text{ units}$$

$$TR = 6 \text{ units}$$

- \* 8. Find the measure of each side of isosceles  $\triangle ABC$  with  $AB = BC$  if  $AB = 4y$ ,  $BC = 3y + 2$ , and  $AC = 3y$ .



$$AB = BC$$

$$4y = 3y + 2$$

$$y = 2$$

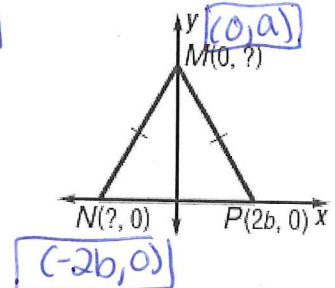
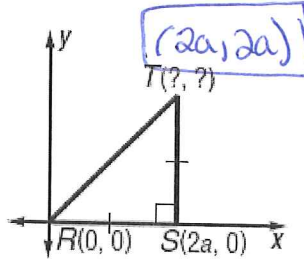
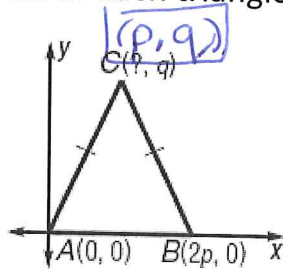
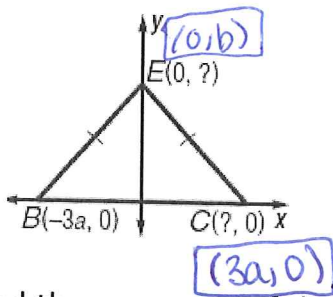
$$y = 2$$

$$AB = 8 \text{ units}$$

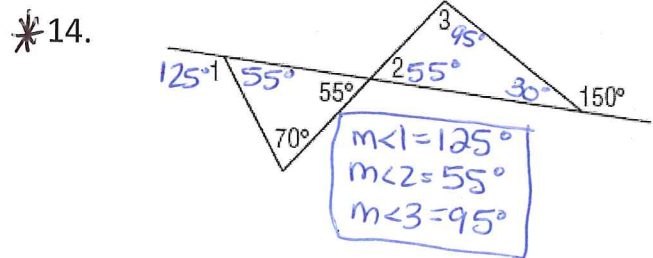
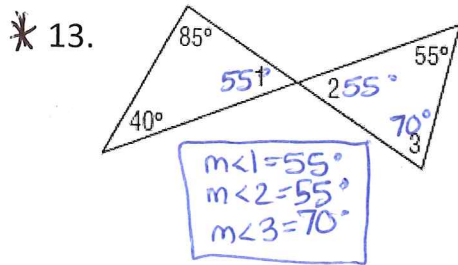
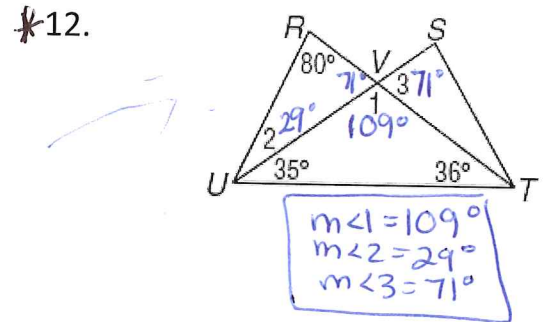
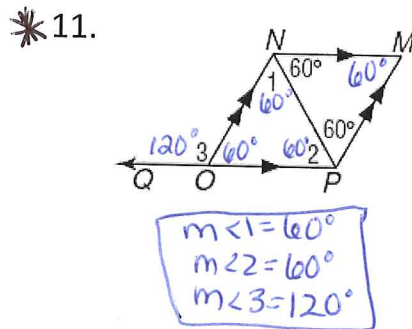
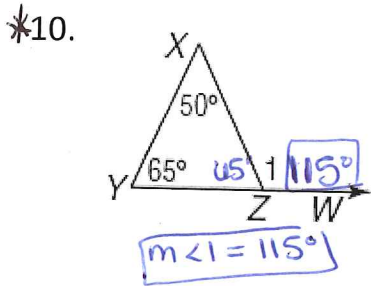
$$BC = 8 \text{ units}$$

$$AC = 6 \text{ units}$$

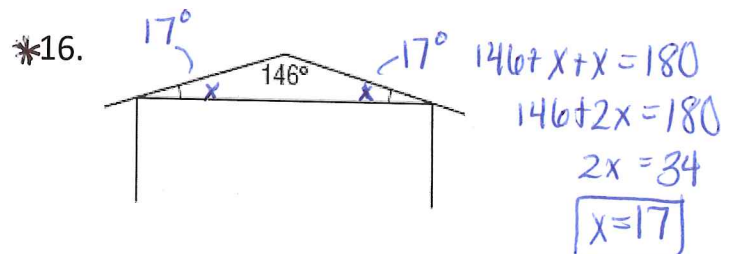
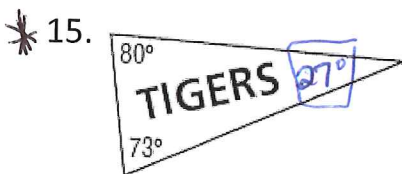
- \* 9. Find the missing coordinates of each triangle.



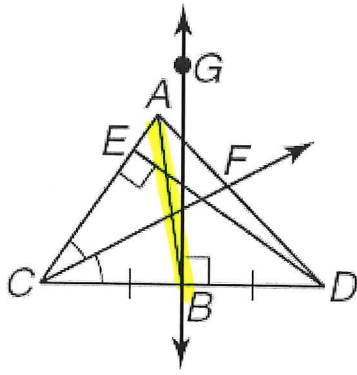
Find the measures of the numbered angles.



Find all missing angle measures.

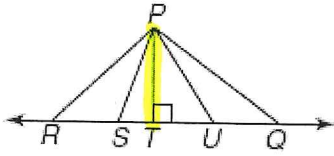


- \*17. Highlight and name the median of the triangle.



$\overline{AB}$

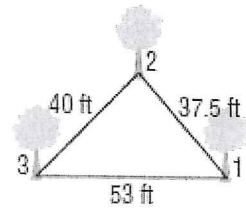
- \*18. Name the shortest distance from P to RQ.



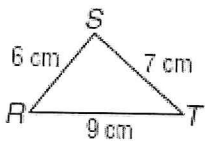
$\overline{PT}$

- \*19. **SPORTS** The figure shows the position of three trees on one part of a Frisbee™ course. At which tree position is the angle between the trees the greatest?

Tree 2

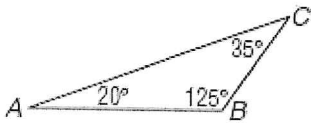


- \*20. List the angles from least to greatest.



$\angle T, \angle R, \angle S$

- \*21. List the side lengths from greatest to least.



$\overline{AC}, \overline{AB}, \overline{CB}$

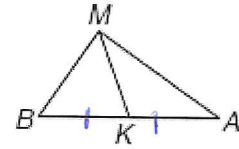
- \*22. Do the following lengths form a triangle 4, 6, 16. Why or why not?

Yes, because when you add any two of the sides the sum is always greater than the third side.

- \*23. Find the range for the measure of the third side given two sides of the triangle are 12 and 19.

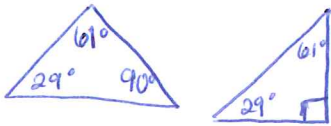
$$\frac{7}{19-12} < x < \frac{31}{12+19}$$

- \*24. Given the following triangle with median MK state if the following statements are true or false.



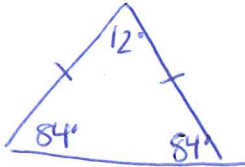
- a.  $m \angle MKA = 90^\circ$  FALSE  
 b.  $BK \cong AK$  TRUE  
 c.  $m \angle BMK = m \angle AMK$  FALSE  
 d.  $\triangle BMA$  is isosceles with vertex angle M. FALSE

- \*25. Classify the triangle by its sides and angles given the two angle measure are  $61^\circ$  and  $29^\circ$ .



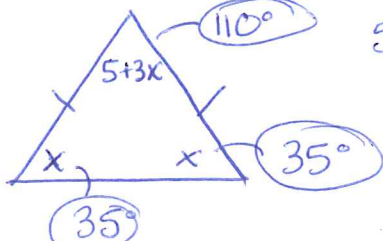
Right Scalene Triangle

- \*26. Classify the triangle by its sides and angles given the two angle measure are  $12^\circ$  and  $84^\circ$ .



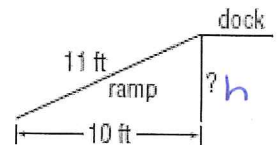
Acute Isosceles Triangle

- \*27. 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.



$$\begin{aligned} 5 + 3x + x + x &= 180 \\ 5 + 5x &= 180 \\ 5x &= 175 \\ \boxed{x = 35} \end{aligned}$$

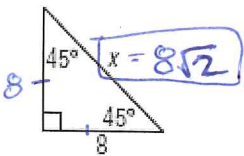
- \*28. CONSTRUCTION The bottom end of a ramp at a warehouse is 10 feet from the base of the main dock and is 11 feet long. How high is the dock?



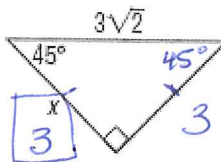
$$\begin{aligned} 11^2 &= 10^2 + h^2 \\ 121 &= 100 + h^2 \\ \sqrt{21} &= \sqrt{h^2} \\ \sqrt{21} &= h \end{aligned}$$

The dock is  $\sqrt{21}$  ft high.

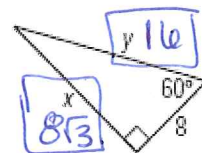
- \*29. Find the value of x.



- \*30. Find the value of x.

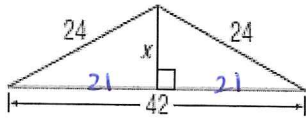


- \*31. Find the value of x and y.





\*32. Find the value of x.



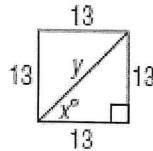
$$24^2 = x^2 + 21^2$$

$$576 = x^2 + 441$$

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

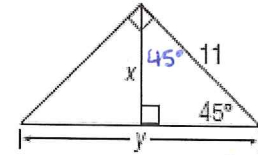
$$\boxed{3\sqrt{15} = x}$$

\*33. Find the value of x and y. \*34. Find the value of x and y.



$$\boxed{x = 45^\circ}$$

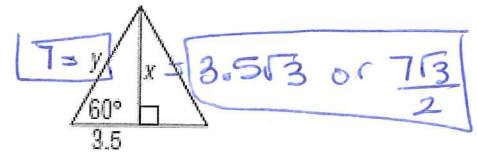
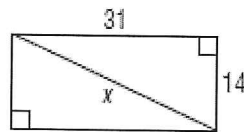
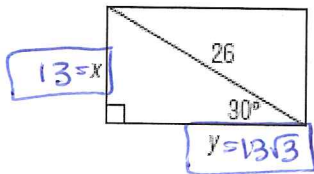
$$\boxed{y = 13\sqrt{2}}$$



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

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

\*35. Find the value of x and y. \*36. Find the value of x. \*37. Find the value of x and y.



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

$$x^2 = 961 + 196$$

$$x^2 = 1157$$

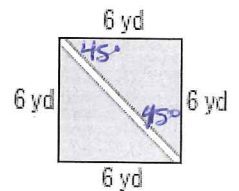
$$\boxed{x = \sqrt{1157}}$$

$$\boxed{7 = y}$$

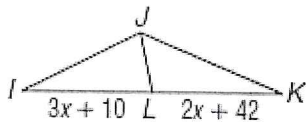
$$\boxed{x = 3.5\sqrt{3} \text{ or } \frac{7\sqrt{3}}{2}}$$

\*38. **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?

$$\boxed{6\sqrt{2} \text{ yds}}$$



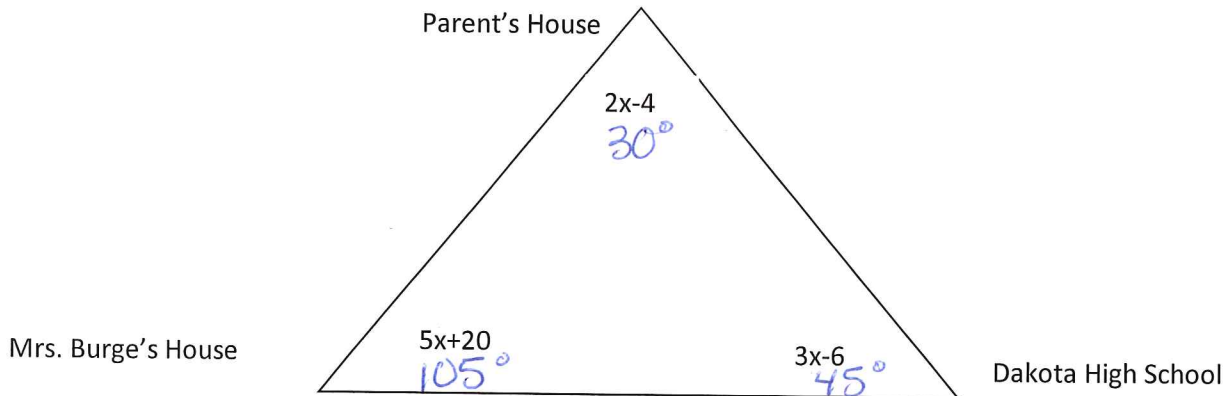
\*39. **MEDIAN** IF LJ is the median of  $\Delta IJK$ , find x.



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

$$\boxed{x = 32}$$

- \*40. **ROUTE** Mrs. Burge's House, her Parent's House, and Dakota High school form a triangle on a map. What route would have the longest drive? (i.e. Which two buildings are farthest apart?)



$$2x-4 + 5x+20 + 3x-6 = 180$$

$$10x+10 = 180$$

$$10x = 170$$

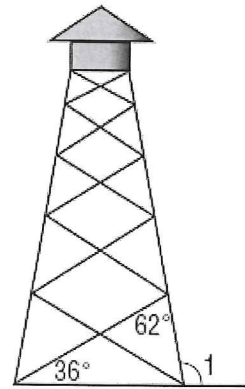
$$\boxed{x=17}$$

Her parents house and Dakota are the furthest apart.

- \*41. **TOWERS** A lookout tower sits on a network of struts and posts. Leslie measured 2 angles on the tower, find the measure of  $\angle 1$ .

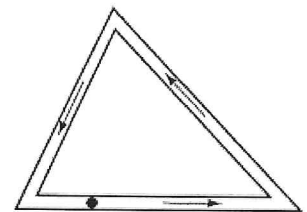
$$36^\circ + 62^\circ = m\angle 1$$

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

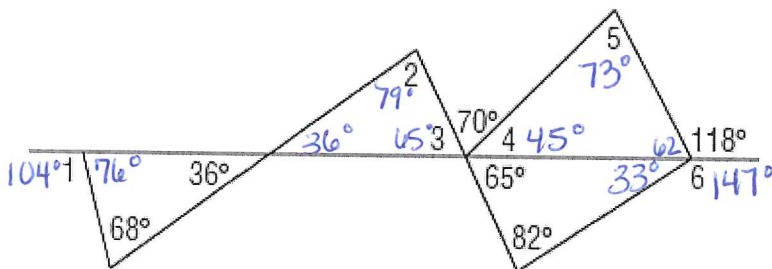


- \*42. **PATHS** Rachel walks around a triangular path. At each corner, she records the measure of the angle she creates. She makes one complete circuit around the path. What is the sum of the three angle measure that she wrote down during one complete circuit?

$$\boxed{180^\circ}$$

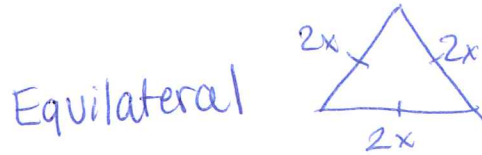
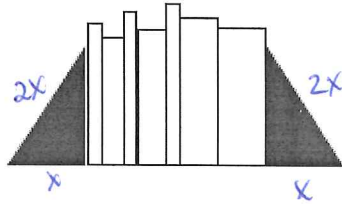


- \*43. **CRAZY ANGLES!** Find the measures of the numbered angles.



$$\boxed{\begin{array}{l} m\angle 1 = 104^\circ \\ m\angle 2 = 79^\circ \\ m\angle 3 = 65^\circ \\ m\angle 4 = 45^\circ \\ m\angle 5 = 73^\circ \\ m\angle 6 = 147^\circ \end{array}}$$

- \*44. **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.



- \*45.  $\triangle XRP$  is isosceles with vertex  $\angle PXR$ .  $m\angle PSR = 31^\circ$ ,  $m\angle XPT = 24^\circ$ ,  $m\angle RTP = 103^\circ$ .

(a) Name the legs of the isosceles triangle.

$PX, XR$

(b) Name the base angles of the isosceles triangle.

$\angle XRP, \angle RPX$

(c) Find the measures of the following angles:

$m\angle SXP = 101^\circ$

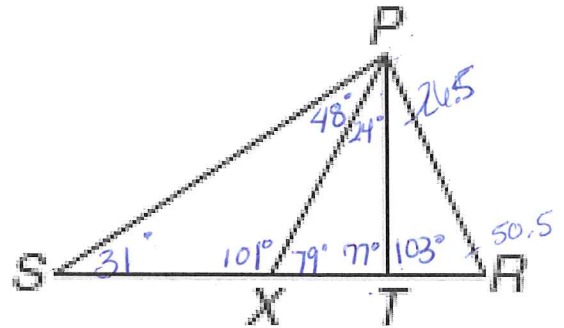
$m\angle SPX = 48^\circ$

$m\angle PTX = 77^\circ$

$m\angle PXT = 79^\circ$

$m\angle TPR = 26.5^\circ$

$m\angle SRP = 50.5^\circ$



- \*46. Find the measures of the side of  $\triangle KPL$  and classify the triangle by its sides.

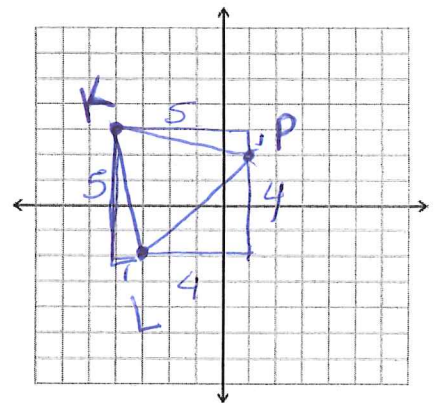
$K(-4,3), P(1,2), L(-3,-2)$

$\overline{KL}: 5^2 + 1^2 = c^2$   
 $\sqrt{26} = c$

$\overline{KP}: 5^2 + 1^2 = c^2$   
 $\sqrt{26} = c$

$\overline{LP}: 4^2 + 4^2 = c^2$   
 $4\sqrt{2} = c$

Isosceles



\*47. Find the measures of the side of  $\Delta ABC$  and classify the triangle by its sides.

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

$$\overline{AB}: 3^2 + 4^2 = c^2$$

$$\boxed{5 = c}$$

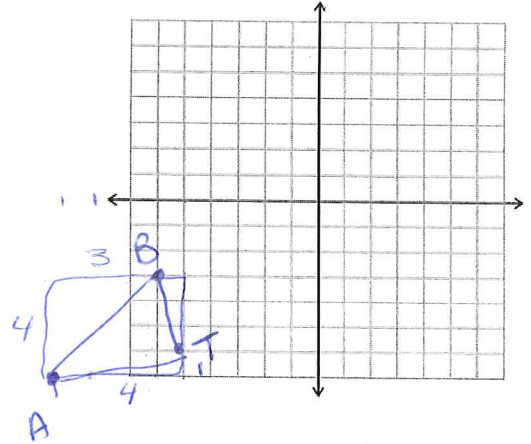
$$\overline{BT}: 1^2 + 3^2 = c^2$$

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

$$\overline{AT}: 4^2 + 1^2 = c^2$$

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

**SCALENE**



\*48. Find the measures of the side of  $\Delta RST$  and classify the triangle by its sides.

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

$$\overline{RS}: 3^2 + 2^2 = c^2$$

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

$$\overline{ST}: 3^2 + 2^2 = c^2$$

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

$$\overline{RT}: \boxed{4}$$

**Isosceles**

