

Name: Answer key Per: _____ Date: _____
 Serafino • Geometry

3-TR Unit 3: Triangles - Test Review

Classifying triangles, Pythagorean Theorem, Triangle Inequalities, Congruence, Special Segments, Points of Concurrency

DO ALL WORK ON A SEPARATE SHEET OF PAPER!! ... please. ** Sorry for the icky #'s.*

1. Tell whether the given segments could form the sides of a triangle. If no, go to the next set of segments. If so, classify the triangle by sides and angles.

Side Lengths	Possible? Yes or No	Classify by Sides	Classify by Angles
7, 3, 4	no	—	—
$3\sqrt{5}$, $5\sqrt{2}$, $2\sqrt{6}$	yes	scalene	acute
12.08, 12.08, 24.16	no	—	—
1.5, 2, 2.5	yes	scalene	right

2. The possible lengths of the 3rd side of a triangle with sides 3.48 and 7.91 $4.43 < x < 11.39$

3. Classify the triangle by sides and by angles:

The measure of each base angle is equal to 20° .

isosceles
obtuse

The three angles are $2x$, $12x-20$, $4x+10$

scalene
obtuse

4. A triangle on the coordinate plane has the vertices: C (1, 1) A (4, 4) T (? , ?)

a) Write the equation of the line that goes through CA. $y = x$

b) Find Point T, the intersection of: CT: ~~—~~ $-x + 5y = 24$ AT $y = -x + 8$ $(2.\bar{6}, 5.\bar{3})$

c) Find the lengths of sides CA, AT, and CT. $CA = 4.24$ $AT = 1.87$ $CT = 4.61$

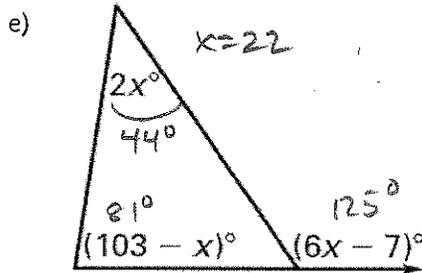
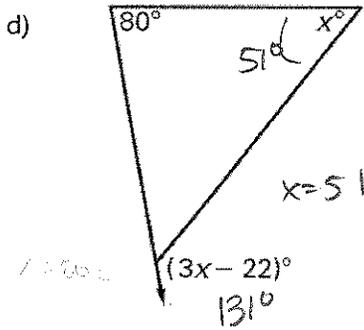
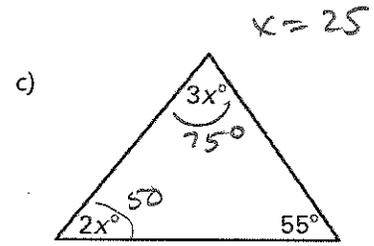
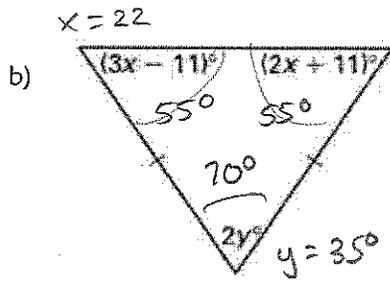
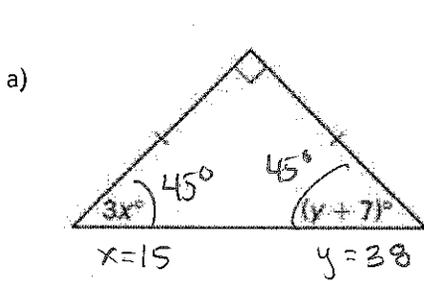
d) Classify the triangle by its sides and angles. State how you know.

scalene
acute $a^2 + b^2 > c^2$

5. In $\triangle ABC$, $\angle A = x - y$ $\angle B = 2x + 3y$ $\angle C = 4x + 2y$.
Find the measure of each angle. Classify by sides and angles.

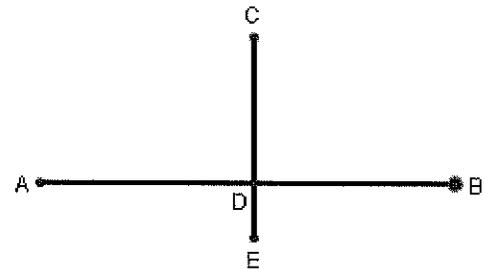
Not possible. $\angle A = -12$
 $\angle B = 96^\circ$
 $\angle C = 96^\circ$

6. You've seen these before but doesn't hurt to review. Find the MEASURE of each angle.

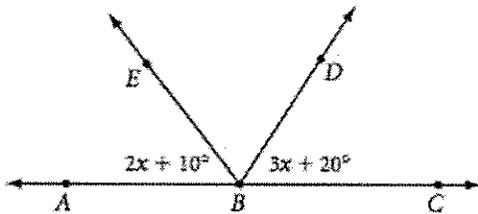


7. What does CPCTC stand for? *Corresponding parts of Cong. Δ s are Cong.*

8. a) $AD = 13x + 25$ and $AB = 122$. $x = \underline{2.77}$
 b) $\angle CDA = 6y - 12$. $y = \underline{17}$



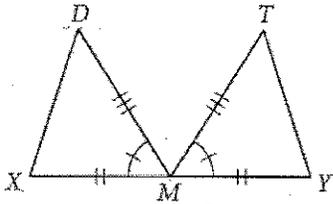
9. BE bisects $\angle ABD$... $x = \underline{20}$ $m\angle ABD = \underline{100^\circ}$



10. Given $\triangle BIG \cong \triangle DOG$ $\angle B \cong \underline{\angle D}$ $\angle G \cong \underline{\angle G}$ $\angle O \cong \underline{\angle O}$
 $\overline{BG} \cong \underline{\overline{DG}}$ $\overline{DO} \cong \underline{\overline{BO}}$ $\overline{IG} \cong \underline{\overline{OG}}$

11.

a)

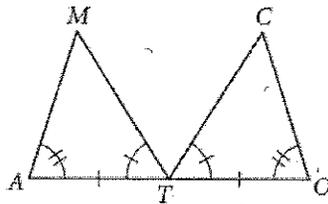


Postulate: SAS

Cannot be determined

$\Delta MXD \cong \Delta$ MYT

b.

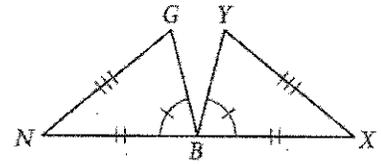


Postulate: ASA

Cannot be determined

$\Delta TAM \cong \Delta$ TUC

c.

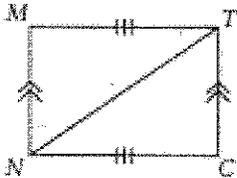


Postulate: _____

Cannot be determined

$\Delta BNG \cong \Delta$ _____

d. ** Can only use ASA if both sides are //.*

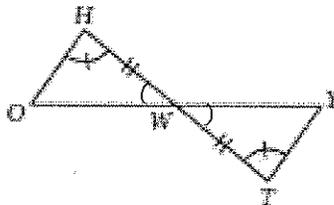


Postulate: _____

Cannot be determined

$\Delta NMT \cong \Delta$ _____

e.

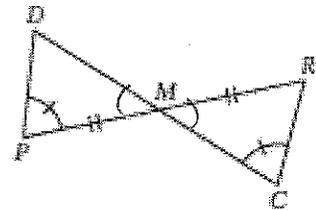


Postulate: ASA

Cannot be determined

$\Delta HOW \cong \Delta$ _____

f.

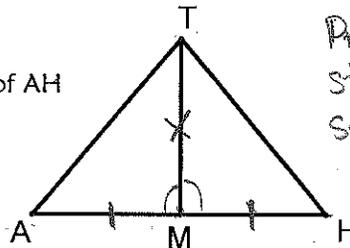


Postulate: _____

Cannot be determined

$\Delta MPD \cong \Delta$ _____

12. Given: $\angle AMT \cong \angle HMT$, M is midpoint of AH
Prove: ΔATH is isosceles

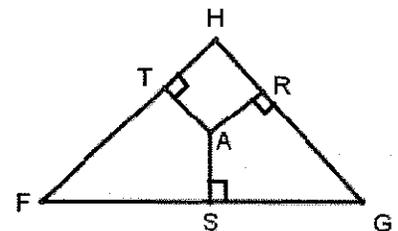


*Prove \cong using SAS
state $\angle A \cong \angle H$ using CPCTC
state ΔTS isosceles using
def of isosceles*

13. In ΔFHS , $TA = 8y + 22$. $AR = 10y - 10$, $AS = 15x$

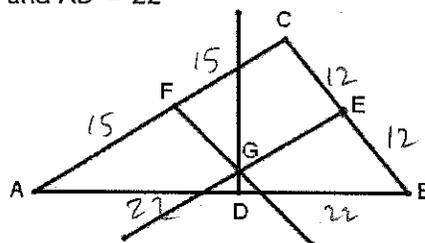
$x =$ 10

$y =$ 16



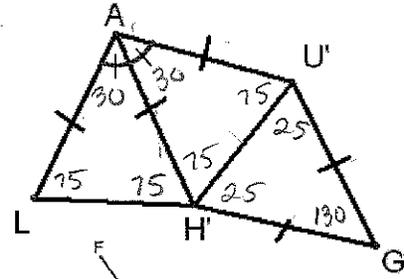
14. In triangle ABC, G is the circumcenter.
Find the perimeter of the triangle if $CF = 15$, $EB = 12$ and $AD = 22$

98



15. In the figure to the right, explain what is wrong with the picture.
 $m\angle LAH = 30^\circ$ and $m\angle AUG = 100^\circ$

All 3 triangles should be \cong
 but they're not



16. Use the figure to the right to answer the following questions:

- a. If $\angle JPG = 8x + 7$, $\angle JEH = 10x - 31$, $\angle GCH = 7x + 4$
 Find the measures of each of the angles.

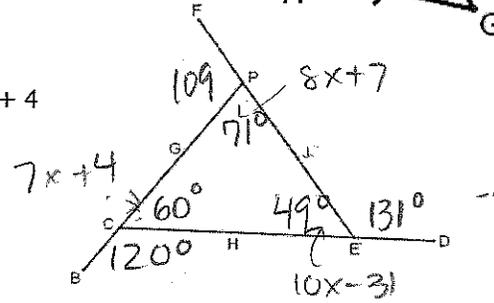
$60^\circ, 71^\circ, 49^\circ$

- b. Using the above information, name and find the measures of each of the exterior angles:

$120^\circ, 109^\circ, 131^\circ$

- c. Using the above information, what is the sum of the exterior angles of the triangle above?

360°



17. In $\triangle TRY$, $T(0, 0)$ $R(4, 6)$ $Y(8, 2)$

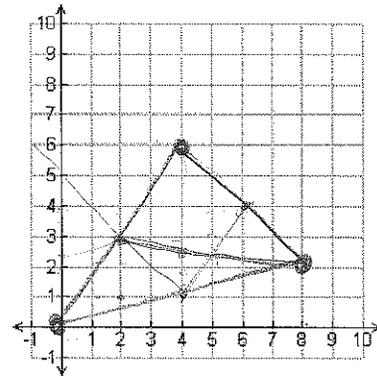
Be able to write the equation of:

- A perpendicular bisector
- An altitude
- A median
- A midsegment

(all are below)

Find the coordinates of:

- The centroid
- The circumcenter
- The orthocenter



Perp bisectors

$$y = -4x + 17$$

$$y = -\frac{2}{3}x + \frac{13}{3}$$

$$y = x - 2$$

Altitudes

$$y = -4x + 22$$

$$y = -\frac{2}{3}x + \frac{22}{3}$$

$$y = x$$

Medians

$$x = 4$$

$$y = -\frac{1}{6}x + \frac{10}{3}$$

$$y = \frac{2}{3}x$$

Midsegment

$$y = \frac{1}{4}x + \frac{5}{2}$$

$$y = -x + 5$$

$$y = \frac{3}{2}x - 5$$

Circumcenter

$(3.8, 5.8)$

Orthocenter

$(4.4, 4.4)$

Centroid

$(4, 2.6)$