

Geometry Unit 4 Review

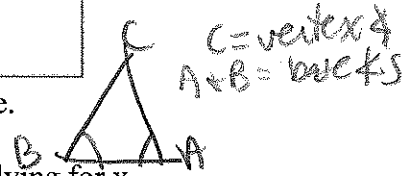
Name the special segment for #1-4

1) \overline{AC} median 2) \overline{HE} perpendicular bisector 3) \overline{IL} angle bisector 4) \overline{PN} altitude

5) Fill in the table below.

	Through vertex	Through midpoint	Forms right angle	Picture
Median	Yes/no	Yes/no	Yes/no	
Altitude	Yes/no	Yes/no	Yes/no	
Angle bisector	Yes/no	Yes/no	Yes/no	
Perpendicular bisector	Yes/no	Yes/no	Yes/no	

6) Draw an isosceles triangle. Label the base angles and the vertex angle.



7) The perimeter of $\triangle ABC$ is 72. $AB = 3x + 4$, $BC = x + 9$, $AC = 11$. By solving for x , determine whether $\triangle ABC$ is:

- a) scalene
- b) isosceles
- c) equilateral

$$72 = 3x + 4 + x + 9 + 11$$

$$72 = 4x + 24$$

$$48 = 4x$$

$$12 = x$$

$$AB = 3(12) + 4 = 40$$

$$BC = 12 + 9 = 21$$

$$AC = 11$$

8) The perimeter of $\triangle ABC$ is 72. $AB = 14x - 4$, $BC = 12x$, $AC = 11x + 2$. By solving for x , determine whether $\triangle ABC$ is:

- a) scalene
- b) isosceles
- c) equilateral

$$14x - 4 + 12x + 11x + 2 = 72$$

$$37x - 2 = 72$$

$$37x = 74$$

$$x = 2$$

$$AB = 14(2) - 4 = 24$$

$$BC = 12(2) = 24$$

$$AC = 11(2) + 2 = 24$$

9) The perimeter of $\triangle ABC$ is 72. $AB = 2x + 5$, $BC = 22$, $AC = 7x$. By solving for x , determine whether $\triangle ABC$ is:

- a) scalene
- b) isosceles
- c) equilateral

$$72 = 2x + 5 + 22 + 7x$$

$$72 = 9x + 27$$

$$45 = 9x$$

$$5 = x$$

$$AB = 2(5) + 5 = 15$$

$$BC = 22$$

$$AC = 7(5) = 35$$

10)

If $\triangle BAT \cong \triangle DOG$, and $m\angle B = 14^\circ$, $m\angle G = 29^\circ$ and $m\angle O = (10x + 7)^\circ$, find x and $m\angle O$.

$$14 + 29 + 10x + 7 = 180$$

$$10x + 50 = 180$$

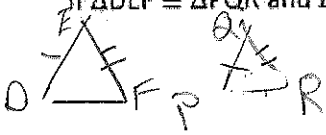
$$10x = 130$$

$$x = 13$$

$$m\angle O = 10(13) + 7 = 137^\circ$$

11)

If $\triangle DEF \cong \triangle PQR$ and $DE = 3x - 10$, $QR = 4x - 23$, $PQ = 2x + 7$ and $EF = y$, find x and y .



$$3x - 10 = 2x + 7$$

$$x = 17$$

$$4(17) - 23 = y$$

$$68 - 23 = y$$

$$45 = y$$

12) IF $\triangle TOP$ is congruent to $\triangle LOW$, complete the following:

$$\angle T \cong \angle L$$

$$\angle OPT \cong \angle OWL$$

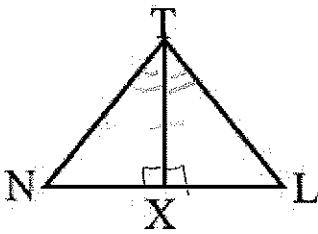
$$\overline{OP} \cong \overline{OW}$$

$$\overline{TP} \cong \overline{LW}$$

13) Given: TX is an altitude to NL.

TX bisects angle NTL.

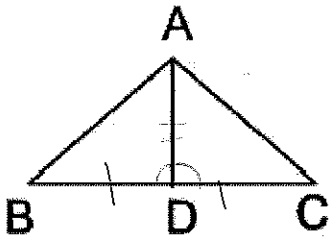
Prove: $NX = XL$



14) Given:

$CD \cong DB$, $\angle CDA \cong \angle BDA$

Prove: $AB \cong AC$



Statements

Reasons

1.) TX is an altitude to NL
TX bisects $\angle NTL$

1.) given

2.) $\overline{TX} \perp \overline{NL}$

2.) def of altitude

3.) $\angle NXT$ & $\angle LXT$ are right \angle s

3.) def of \perp

4.) $\angle NXT \cong \angle LXT$

4.) all right \angle s are \cong

5.) $\angle NTX \cong \angle LTX$

5.) def of bisects

6.) $\overline{TX} \cong \overline{TX}$

6.) reflexive

7.) $\triangle NTX \cong \triangle LTX$

7.) ASA

8.) $\overline{NX} \cong \overline{XL}$

8.) CPCTC

Statements

Reasons

1.) $\overline{CD} \cong \overline{DB}$

1.) given

$\angle CDA \cong \angle BDA$

2.) reflexive

2.) $\overline{AD} \cong \overline{AD}$

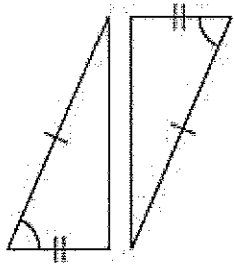
3.) $\triangle ADB \cong \triangle ADC$

3.) SAS

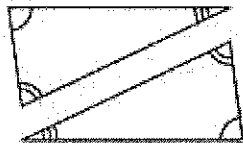
4.) $\overline{AB} \cong \overline{AC}$

4.) CPCTC

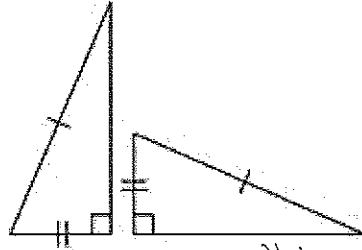
15) Decide if these triangles are congruent—if so, label them with SAS, SSS, ASA, AAS, HL or not congruent.



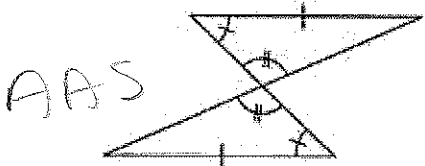
(a) SAS



(b) Not \cong
AAS does not work

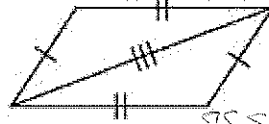


(c) HL

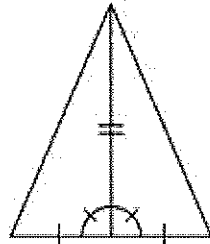


AAS

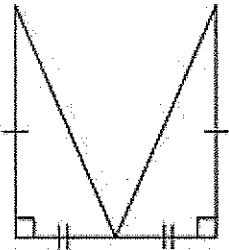
(d)



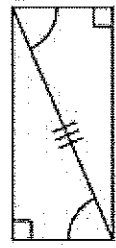
(e) SSS



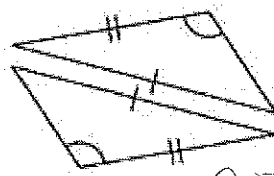
(f) SAS



(g) SAS



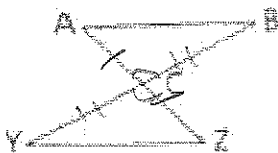
(h) AAS



(i) Not \cong
ASS does not work

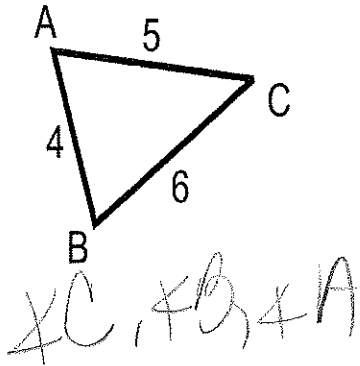
16) Given C is the midpoint of AZ and BY.

Prove: $\triangle ACB \cong \triangle ZCY$

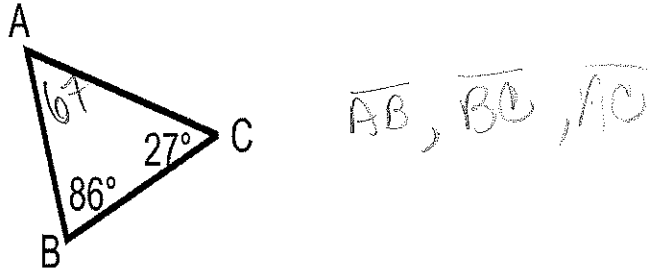


Statements	Reasons
1.) C is the midpoint of AZ and BY	1.) given
2.) $\overline{AC} \cong \overline{ZC}$	2.) def. of midpoint
3.) $\overline{BC} \cong \overline{YC}$	3.) def. of midpoint
4.) $\angle ACB \cong \angle ZCY$	4.) vertical \angle s
5. $\triangle ACB \cong \triangle ZCY$	5.) SAS

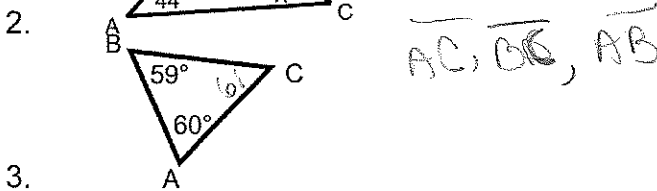
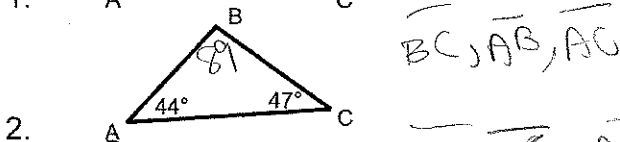
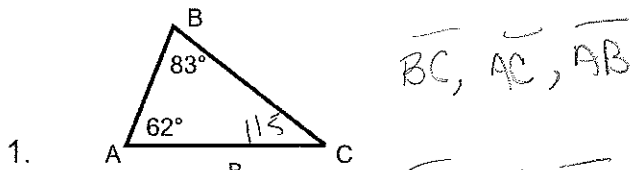
17) Order the angles from largest to smallest



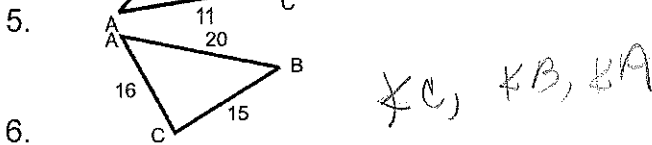
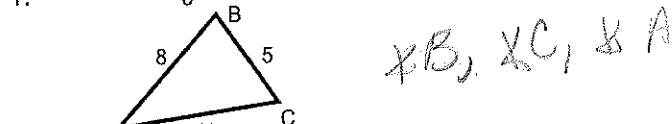
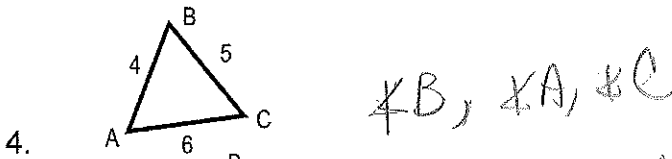
18) Order the sides from shortest to longest



19) For questions 1-3, list the sides in order from shortest to longest.



20) For questions 4-6, list the angles from largest to smallest.



Review:

1) Define

- a. Conditional *if then statement* → if p, then q
- b. Hypothesis *part after if*
- c. Conclusion *part after then*
- d. Converse *if q then p*

2) In the following statement identify the hypothesis and conclusion.

If a point is in the first quadrant, then the coordinates are positive.

hypothesis *conclusion*

3) Write the converse, inverse and contrapositive.

If it rains, then practice will be cancelled.

Converse: If practice will be cancelled, then it rains
inverse: If it does not rain, then practice will not be cancelled
contrapositive: If practice will not be cancelled, then it does not rain

4) Are the graphs of the equations parallel, perpendicular or neither. Explain

a.

$y = 7x + 2$ $m = 7$

$x + 7y = 8$ $7y = \frac{-x + 8}{7}$ $m = -\frac{1}{7}$
 $y = -\frac{1}{7}x + \frac{8}{7}$

*perpendicular
opposite reciprocal
slopes*

b.

$y = \frac{5}{6}x - 6$ $m = \frac{5}{6}$

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

*neither, not
the same or
opposite reciprocal
slopes.*

Define the following terms:

HL Theorem

— if right Δ s have \cong hypotenuses & \cong legs, then they are \cong

CPCTC

— Corresponding parts of \cong Δ s are \cong

Base angles

— the angles opposite the \cong legs in an isosceles Δ , they are \cong

Hypotenuse

— side opposite the right \angle of a right Δ

Leg

— the \cong sides of an isosceles Δ or the other 2 sides of a right Δ

Scalene triangle

— no \cong sides

Equilateral triangle

— all \cong sides

Right triangle

— 1 right \angle .

Isosceles triangle

— 2 \cong sides

Median

— segment from vertex to the mid point of opposite side

Altitude

— side from vertex, \perp to opposite side.

Angle Bisector

— bisects an angle

Segment Bisector

— bisects a segment

Perpendicular Bisector

— bisects a segment and is \perp to that segment

Perimeter

— sum of all sides

SSS

— 3 pairs of \cong sides

SAS

— 2 pairs of \cong sides and included \angle .

ASA

— 2 pairs of \cong \angle s & included side.

AAS

— 2 pairs of \cong \angle s & not included side.