Geometry Ch. 4 Triangle Congruence Test Review #2

Key

1.

What other information do you need in order to prove the triangles congruent using the SAS Congruence Postulate?

1) $AB = AB$ Reflexive

2) If $A = B$, $B = C$, then $A = C$ Transitive

3) $A = B$, $C = D$, then $A = C$ False (SSA)

A. $\angle BAC \cong \angle DAC$

C. $\angle CBA \cong \angle CDA$

B. $\overline{AC} \perp \overline{BD}$

D. $\overline{AC} \cong \overline{BD}$

5 congruence theorems / postulates

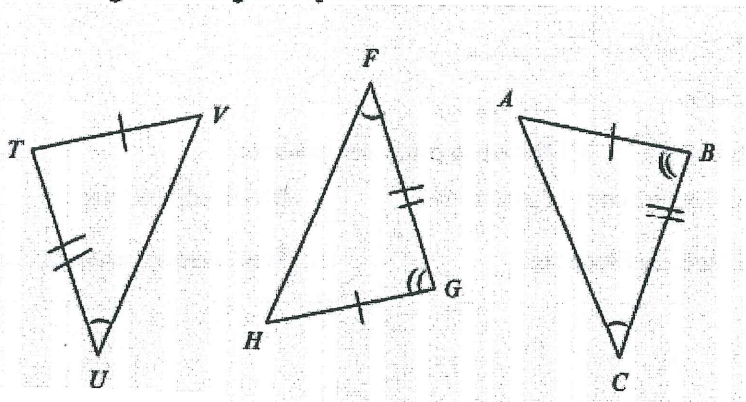
1) SSS
2) SAS
3) HL * Right Triangle
4) ASA
5) AAS

Not theorems

1) AA
*2) SSA

2.

Which triangles are congruent by ASA?

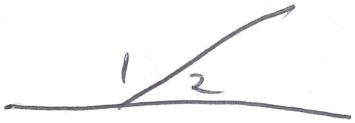


A. ΔABC and ΔGFH

C. ΔHGF and ΔVTU

B. ΔHGF and ΔABC

D. none



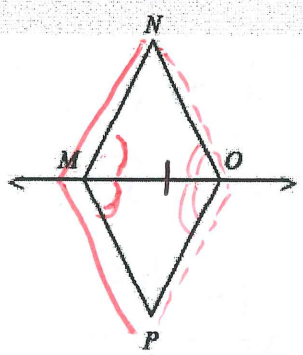
$m\angle 1 + m\angle 2 = 180°$

3.

What is the missing reason in the two-column proof?

Given: $\overrightarrow{MO}$ bisects $\angle PMN$ and $\overrightarrow{OM}$ bisects $\angle PON$

Prove: $\Delta PMO \cong \Delta NMO$



Statements	Reasons
1. $\overrightarrow{MO}$ bisects $\angle PMN$	1. Given
2. $\angle PMO \cong \angle NMO$	2. Definition of angle bisector
3. $\overline{MO} \cong \overline{MO}$	3. Reflexive property
4. $\overrightarrow{OM}$ bisects $\angle PON$	4. Given
5. $\angle POM \cong \angle NOM$	5. Definition of angle bisector
6. $\Delta PMO \cong \Delta NMO$	6. ?

A. ASA Postulate

C. AAS Theorem

B. SSS Postulate

D. SAS Postulate

4.

Can you use the SAS Postulate, the AAS Theorem, or both to prove the triangles congruent?

A. either SAS or AAS

B. SAS only

C. AAS only

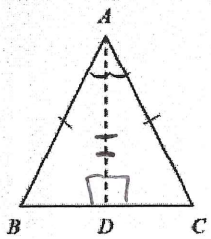
D. neither

5.

Supply the reasons missing from the proof shown below.

Given: $\overline{AB} \cong \overline{AC}$, $\angle BAD \cong \angle CAD$

Prove: $\overline{AD}$ bisects $\overline{BC}$



Statements	Reasons
1. $\overline{AB} \cong \overline{AC}$	1. Given
2. $\angle BAD \cong \angle CAD$	2. Given
3. $\overline{AD} \cong \overline{AD}$	3. Reflexive Property
4. $\Delta BAD \cong \Delta CAD$	4. ___?___
5. $\overline{BD} \cong \overline{CD}$	5. ___?___
6. $\overline{AD}$ bisects $\overline{BC}$	6. Definition of segment bisector

A. ASA; Corresp. parts of $\cong \Delta$ are $\cong$.

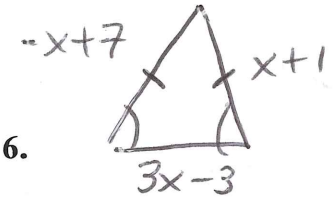
B. SAS; Reflexive Property

C. SSS; Reflexive Property

D. SAS; Corresp. parts of $\cong \Delta$ are $\cong$.

CPCTC

6.



$x+1 = -x+7$

$+x \quad +x$

$2x = 6$

$x = 3$

The legs of an isosceles triangle have lengths $x + 1$ and $-x + 7$. The base has length $3x - 3$. What is the length of the base?

A. 4

B. 6

C. 3

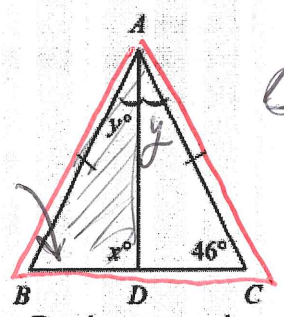
D. cannot be determined

base $= 3x - 3$

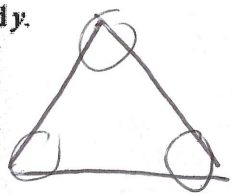
$= 3(3) - 3 = 6$

7.

Find the values of x and y.



Drawing not to scale



A. $x = 44$, $y = 46$

B. $x = 46$, $y = 44$

C. $x = 90$, $y = 44$

D. $x = 90$, $y = 46$

$x + 46 + 44 = 180$

$x = 90$

$2y + 46 + 46 = 180$

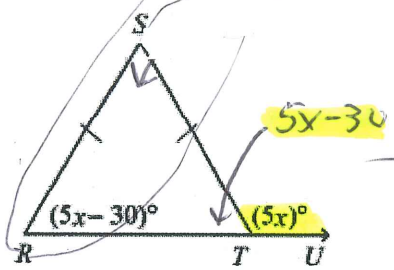
$2y + 92 = 180$

$2y = 88$

$y = 44$

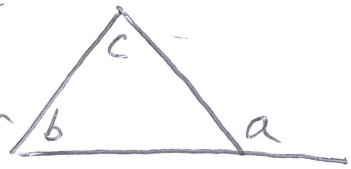
8.

Find the value of x. The diagram is not to scale.



A. 60
B. 21
C. 15
D. None of these

Exterior Angle theorem



$\angle a = \angle b + \angle c$

$5x + 5x - 30 = 180$

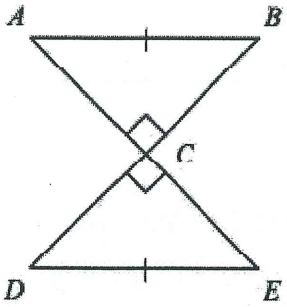
$10x - 30 = 180$

$10x = 210$

$x = 21$

9.

What additional information will allow you to prove the triangles congruent by the HL Theorem?



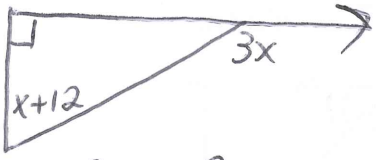
A. $\angle A \cong \angle E$

B. $m\angle BCE = 90$

C. $\overline{AC} \cong \overline{DC}$

D. $\overline{AC} \cong \overline{BD}$

9b)



$3x = 90 + x + 12$

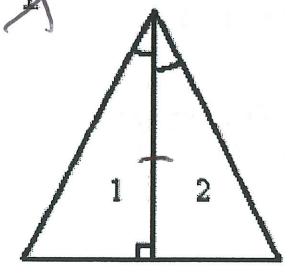
$2x = 102$

$x = 51$

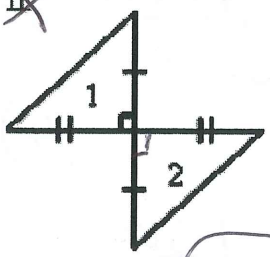
10.

For which situation could you immediately prove $\Delta 1 \cong \Delta 2$ using the HL Theorem?

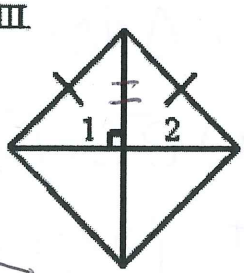
I



II



III



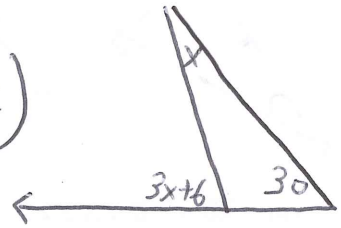
A. I only

B. II only

C. III only

D. II and III

9c)



$3x + 6 = x + 30$

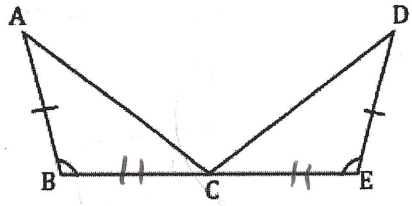
$2x = 24$

$x = 12$

Proofs Reasons Bank (This will NOT be provided for you on the test) : Given, Vertical Angles are Congruent, Reflexive Property, Def of Angle Bisector, Def of Midpoint, Alt. Interior Angles ≅ , Triangles congruent (SSS, SAS, HL, ASA, AAS) , CPCTC

11. (4 steps)

Given: C is the midpoint of $\overline{BE}$, $\angle B \cong \angle E$, and $\overline{AB} \cong \overline{DE}$

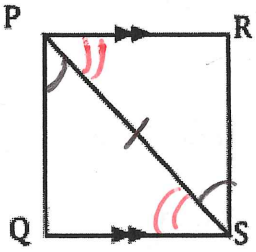


Prove: AC = DC

Statement	Reason
1) C is midpt of BE, $\angle B = \angle E$, $AB = DE$	1) Given
2) $BC = CE$	2) Def. of midpt.
3) $\triangle ABC \cong \triangle DEC$	3) SAS
4) $\overline{AC} \cong \overline{DC}$	4) CPCTC

12.

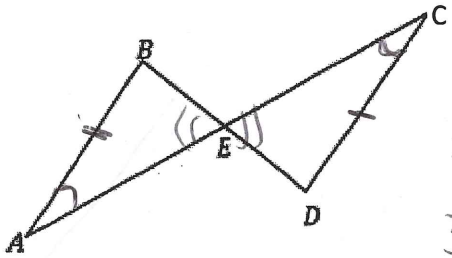
Given: $\overline{PR} \| \overline{QS}$, $\angle QPS \cong \angle RSP$



Prove: $\triangle PQS \cong \triangle SRP$

Statements	Reasons
1. $\overline{PR} \| \overline{QS}$	1. Given
2. $\angle QPS \cong \angle RSP$	2. Given
3. $\angle PSQ \cong \angle SPR$	3. Alternate Interior
4. $PS = PS$	4. Reflexive Property
5. $\triangle ABD \cong \triangle CDB$	5. ASA

13. (4 steps)



Given: $\overline{AB} \cong \overline{CD}$, $\angle A \cong \angle C$
Prove: $\overline{BE} \cong \overline{DE}$

Statement	Reason
1) $AB = CD$, $\angle A = \angle C$	1) Given
2) $\angle AEB = \angle CED$	2) Vertical angles ≅
3) $\triangle ABE \cong \triangle$ ~~DCE~~ $\triangle CDE$	3) AAS
4) $\overline{BE} = \overline{DE}$	4) CPCTC

14.

$8v - 6 = 3v + 4$
$-3v \quad -3v$
$5v - 6 = 4$
$+6 \quad +6$
$5v = 10$
$v = 2$

Given $\triangle ABC \cong \triangle PQR$, $m\angle B = 3v + 4$, and $m\angle Q = 8v - 6$, find $m\angle B$ and $m\angle Q$.

A. 22 B. 11 C. 10 ~~D. 25~~ E. 2

$m\angle B = 3(2) + 4$
$= 10$