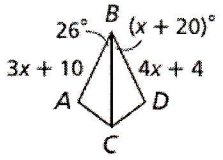
Geometry CC
5.1-5.4 Quiz

Name: KEY
Date: _____ Period: ____

Section 5.1 (SSS and SAS)

1. Show that $\triangle ABC \cong \triangle DBC$, when $x = 6$.



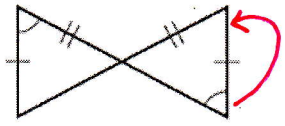
$BC \cong BC$ (Reflexive)

$\angle ABC \cong \angle DBC$
$26 = x + 20$
$26 = 6 + 20$ ✓

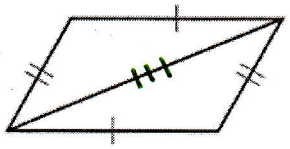
$AB \cong DB$
$3x + 10 = 4x + 4$
$3(6) + 10 = 4(6) + 4$ ✓

$\triangle ABC \cong \triangle DBC$ by SAS

Which postulate, if any, can be used to prove the triangle congruent?

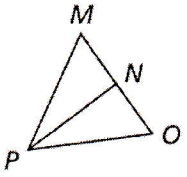
2. 

None, the angle would need to between the two sides.

3. 

SSS

4. **Given:** $\overline{PN}$ bisects $\overline{MO}$. $\overline{PN} \perp \overline{MO}$
Prove: $\triangle MNP \cong \triangle ONP$



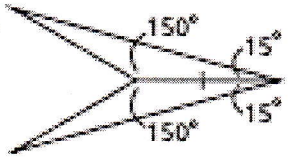
Statements	Reasons
1. $\overline{PN}$ bisects $\overline{MO}$	Given
2. $\overline{MN} \cong \overline{ON}$	Def. of Bisector
3. $\overline{PN} \cong \overline{PN}$	Reflexive POC
4. $\overline{PN} \perp \overline{MO}$	Given
5. $\angle PNM$ and $\angle PNO$ are right $\angle s$	Def. of Perpendicular Bisector
6. $\angle PNM \cong \angle PNO$	Right Angle Theorem
7. $\triangle MNP \cong \triangle ONP$	SAS

Options for Proof:

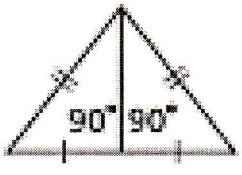
Definition of Perpendicular Bisector
Reflexive POC
Given
Right Angle Theorem
Given
Definition of Bisector
SAS

Section 5.2 (ASA, AAS, and HL)

Identify the postulate or theorem that proves the triangles congruent.

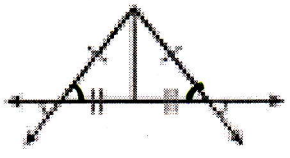
5. 

ASA

6. 

HL

*Remember only works with right triangles.

7. 

SSS or SAS

Geometry CC
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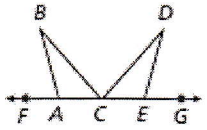
8. **Given:** $\angle FAB \cong \angle GED$, $\angle ACB \cong \angle DCE$, $\overline{AC} \cong \overline{EC}$

Prove: $\triangle ABC \cong \triangle EDC$



*Supplementary: two ∠s add to get 180°

Statements	Reasons
1. $\angle FAB \cong \angle GED$	Given
2. $\angle BAC$ is a supplementary of $\angle FAB$ $\angle DEC$ is a supplementary of $\angle GED$	Def. of Supp. Angles
3. $\angle BAC \cong \angle DEC$	Cong. Supp. ∠s Theorem
4. $\angle ABC \cong \angle DCE$, $\overline{AC} \cong \overline{EC}$	Given
5. $\triangle ABC \cong \triangle EDC$	ASA

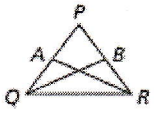
Options for Proof:

ASA
Congruent Supplementary Angle Theorem
Given
Definition of Supplementary Angles
Given

Section 5.3 (CPCTC)

9. **Given:** Isosceles $\triangle PQR$, base $\overline{QR}$, $\overline{PA} \cong \overline{PB}$

Prove: $\overline{AR} \cong \overline{BQ}$



Statements	Reasons
1. Isosceles $\triangle PQR$, base $\overline{QR}$	Given
2. $\overline{PQ} = \overline{PR}$	Def. of Isosc. Triangle
3. $\overline{PA} = \overline{PB}$	Given
4. $\angle P \cong \angle P$	Reflexive POC
5. $\triangle QPB \cong \triangle RPA$	SAS
6. $\overline{AR} = \overline{BQ}$	CPCTC

Options for Proof:

Reflexive POC
SAS
Given
Given
Def. of Isosceles Triangle
CPCTC

10. Use the given set of points to prove $\triangle DEF \cong \triangle GHJ$:
$D(-4, 4)$, $E(-2, 1)$, $F(-6, 1)$, $G(3, 1)$, $H(5, -2)$, $J(1, -2)$.

$$d = \sqrt{(x_2 - x_1) + (y_2 - y_1)}$$

$DE \cong GH$

$DE = \sqrt{(-2-(-4))^2+(1-4)^2} = \sqrt{13}$

$GH = \sqrt{(5-3)^2+(-2-1)^2} = \sqrt{13}$

$DF \cong GJ$

$DF = \sqrt{(-6-(-4))^2+(1-4)^2} = \sqrt{13}$

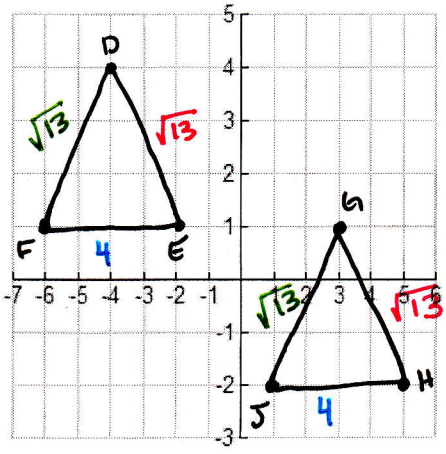
$GJ = \sqrt{(1-3)^2+(-2-1)^2} = \sqrt{13}$

$EF \cong HJ$

$EF = \sqrt{(-6-(-2))^2+(1-1)^2} = 4$

$HJ = \sqrt{(-2-(-2))^2+(1-5)^2} = 4$

$\triangle DEF \cong \triangle GHJ$ by SSS.



Geometry CC
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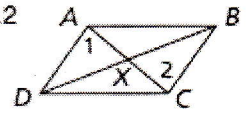
11. **Given:** X is the midpoint of $\overline{AC}$. $\angle 1 \cong \angle 2$
Prove: X is the midpoint of $\overline{BD}$.



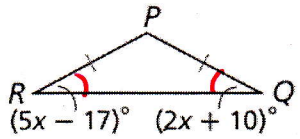
Statements	Reasons
1. X is midpoint of $\overline{AC}$. $\angle 1 \cong \angle 2$	Given
2. $AX = CX$	Def. of Midpoint
3. $\overline{AX} \cong \overline{CX}$	Def. of $\cong$ Segments
4. $\angle AXD \cong \angle CXB$	Vertical $\angle$s
5. $\triangle AXD \cong \triangle CXB$	ASA
6. $\overline{DX} \cong \overline{BX}$	CPCTC
7. $DX = BX$	Def. of $\cong$ Segments
8. X is midpoint of $\overline{BD}$	Def. of Midpoint

Options for Proof:

CPCTC
Given
Def. of Midpoint
Vertical Angles
Def. of Midpoint
Def. of Congruent Segments
ASA
Def. of Congruent Segments

Section 5.4 (Isosceles and Equilateral Triangles)

Find each angle measure.



1. m∠R

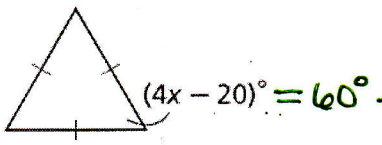
$\angle R = \angle Q$
$5x - 17 = 2x + 10$
$3x = 27$
$x = 9 \rightarrow \angle R = 28°$

2. m∠P

$\angle P + \angle R + \angle Q = 180$
$x + 28 + 28 = 180$
$x + 56 = 180$
$x = 124° \rightarrow \angle P = 124°$

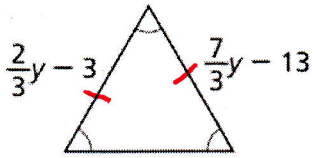
Find each value.

3. x



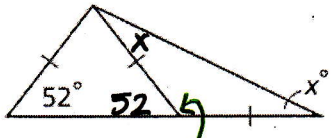
$4x - 20 = 60$
$4x = 40$
$x = 10$

4. y



$\frac{2}{3}y - 3 = \frac{7}{3}y - 13$
$10 = \frac{5}{3}y$
$6 = y$

5. x



$180 - 52 = 128°$

$128 + x + x = 180$
$128 + 2x = 180$
$2x = 52$
$x = 26$