HW #6 - Due Wed. Dec 16

Ch 6 Review Problems pp. 250-254 #9-19, 33-53

Test #2 - Wed. Dec 16

Theorem 17: Equal corresponding angles mean that lines are parallel.
Corollary 1: Equal alternate interior angles mean that lines are parallel.
Corollary 2: Supplementary interior angles on the same side of a transversal mean that lines are parallel.
Corollary 3: In a plane, two lines perpendicular to a third line are parallel.

The Parallel Postulate – Through a point not on a line, there is exactly one line parallel to the given line.

Theorem 18: In a plane, two lines parallel to a third line are parallel to each other.

Theorem 19: Parallel lines form equal corresponding angles.
Corollary 1: Parallel lines form equal alternate interior angles.
Corollary 2: Parallel lines form supplementary interior angles on the same side of a transversal.
Corollary 3: In a plane, a line perpendicular to one of two parallel lines is also perpendicular to the other.

Geometry - Review for Test #2 December 14, 2015

Theorem 20: The Triangle Sum Theorem – The sum of the angles of a triangle is 180°.

Corollary 1: If two angles of one triangle are equal to two angles of another triangle, the third angles are equal.

Corollary 2: The acute angles of a right triangle are complementary.

Corollary 3: Each angle of an equilateral triangle is 60°.

Theorem 21: An exterior angle of a triangle is equal to the sum of the remote interior angles.

Theorem 22: The AAS Theorem – If two angles and the side opposite one of them in one triangle are equal to the corresponding parts of another triangle, the triangles are congruent.

Theorem 23: The HL Theorem – If the hypotenuse and a leg of one right triangle are equal to the corresponding parts of another right triangle, the triangles are congruent.

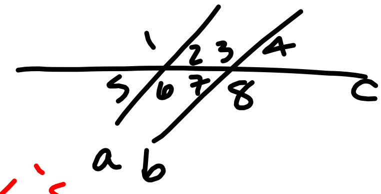
2 lines ⊥ to same line, equal correspondg ∠'s

equal alt int ⇒ parallel

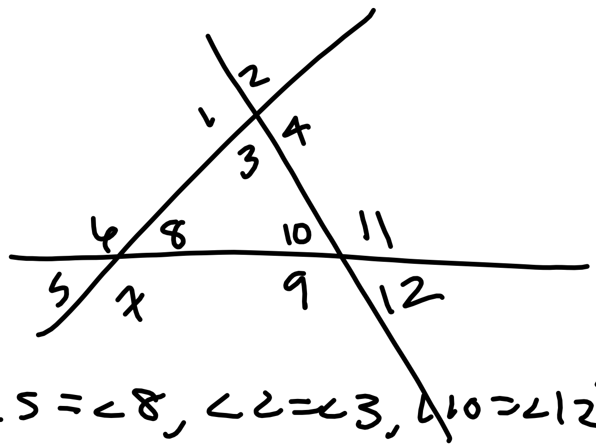
supplementary interior angles on same side of the transversal ⇒ parallel

2 lines that don't intersect

2 parallel lines $\Rightarrow$



- equal corresponding $\angle$'s
  1&3, 2&4, 5&7, 6&8
- never intersect
- equal alternate interior $\angle$'s
  3&6, 2&7
- supplementary interior $\angle$'s on same side of transversal
  2&3, 6&7
- If a line is perpendicular to one, it's perpendicular to the other



exterior $\angle$'s

$\angle 1 = \angle 8 + \angle 10$

$\angle 4 = \angle 1 = \angle 8 + \angle 10$

$\angle 6 = \angle 3 + \angle 10$

$\angle 7 = \angle 6 = \angle 3 + \angle 10$

$\angle 9 = \angle 3 + \angle 8$

$\angle 11 = \angle 9 = \angle 3 + \angle 8$

$\angle 5 = \angle 8$, $\angle 2 = \angle 3$, $\angle 10 = \angle 12$

$\angle 3 + \angle 8 + \angle 10 = 180°$

$\angle 1 + \angle 3 = 180°$, etc.

△ congruences:

SSS HL (right △)

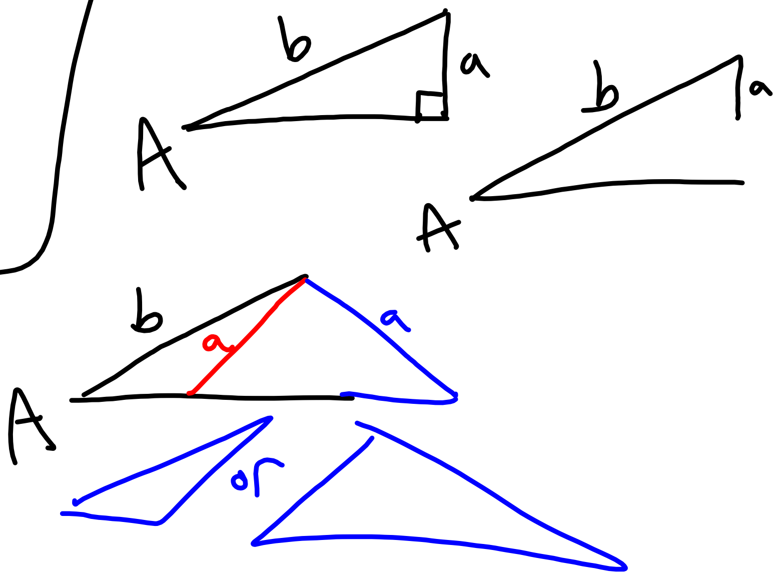
SAS

ASA

AAS

~~ASS~~ = ~~SSA~~

problematic



AAA?

similar

Betweenness of Points

Def: A-B-C if $a<b<c$ or $a>b>c$

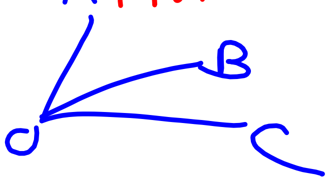
Thm: If A-B-C, then $AB+BC=AC$

Betweenness of Rays

Def: OA-OB-OC if $a<b<c$ or $a>b>c$

Thm: If OA-OB-OC, then

$\angle AOB + \angle BOC = \angle AOC$



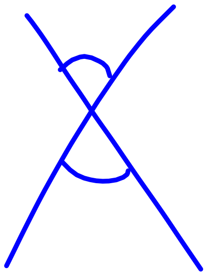
Addition Theorem of Inequality:

If $a > b$ and $c > d$

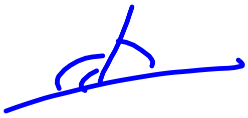
then $a + c > b + d$

Triangle Inequality

The sum of any 2 sides of a $\triangle$ is greater than the 3rd side



2 angles are vertical if their sides are opposite rays



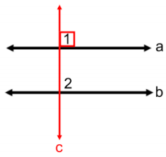
2 ∠'s are a linear pair if they share one side & the other sides are opposite rays

1. ____ Transitive Property of Inequality
2. ____ Betweenness of Points Theorem
3. ____ Transversal
4. ____ Complementary angles
5. ____ Diagonal
6. ____ Betweenness of Rays Theorem
7. ____ Congruent triangles
8. ____ Rectangle
9. ____ Perpendicular lines
10. ____ Betweenness of points definition
11. ____ Parallelogram
12. ____ Addition Property of Inequality
13. ____ Vertical angles
14. ____ Exterior angle
15. ____ "Three Possibilities" Property
16. ____ Linear pair
17. ____ Parallel lines
18. ____ Supplementary angles
19. ____ Betweenness of rays definition
20. ____ "Whole Greater than Part" Theorem

A. If OA-OB-OC, then ∠AOB+∠BOC=∠AOC
B. Angles whose sum is 180°
C. Either a>b, a=b, or a<b
D. Quadrilateral whose opposite sides are parallel
E. Angle that forms a linear pair with an angle of a triangle
F. Angles whose sum is 90°
G. OA-OB-OC iff a<b<c or a>b>c
H. Lines in the same plane that do not intersect
I. If a>0, b>0, and a+b=c, then c>a and c>b
J. Line that intersects two or more lines in different points
K. Two angles such that the sides of one angle are opposite rays to the sides of the other
L. Two angles having a common side and their other sides are opposite rays
M. If a>b and b>c, then a>c
N. Two lines forming a right angle
O. Line segment that connects any two nonconsecutive vertices
P. Quadrilateral each of whose angles is a right angle
Q. A-B-C iff a<b<c or a>b>c
R. Two triangles possessing a correspondence between their vertices such that all of their corresponding sides and angles are equal
S. If a>b, then a+c>b+c
T. If A-B-C, then AB+BC=AC

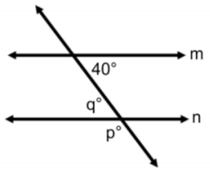
21. Equal alternate interior angles mean that lines are parallel
22. Through a point not on a line, there is exactly one line parallel to the given line
23. Parallel lines form supplementary interior angles on the same side of transversal
24. An exterior angle of a triangle is equal to the sum of both remote interior angles
25. The diagonals of a parallelogram __________
26. A quadrilateral is a parallelogram if its opposite angles are __________
27. If two angles of a triangle are unequal, the sides opposite them are unequal in the same order equal
28. A point is on the midpoint of a line segment iff it divides the line segment into 2 equal parts
29. The angles in a linear pair are supplementary
30. Vertical angles are equal

Theorem: In a plane, a line perpendicular to one of two parallel lines is also perpendicular to the other.
Given: $c \perp a$ and $a || b$
Prove: $c \perp b$



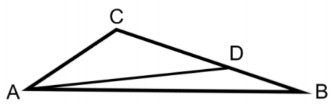
Statements	**Reasons**
$c \perp a$	Given
31. $\angle 1$ is a right angle	perpendicular lines form right angles
32. $\angle 1 = 90°$	Right angles measure 90°
$a \| b$	Given
33. $\angle 1 = \angle 2$	Parallel lines form equal corresponding angles
34. $\angle 2 = 90°$	Substitution
35. $\angle 2$ is a right angle	All right $\angle$'s are equal
36. $c \perp b$	Perpendicular lines form right $\angle$'s

Given: m||n
Prove: p°-q°=100°



Statements	**Reasons**
m||n	Given
37. q°=40°	parallel lines form equal alternate interior angles
38. q° and p° are supplementary	angles in a linear pair are supplementary
39. q° + p° = 180°	Supplementary angles sum to 180°
40°+p°=180°	Substitution
40. p = 140°	Subtraction and simplification
41. p°-q°=100°	Substitution

Theorem: If two sides of a triangle are unequal, the angles opposite them are unequal in the same order.
Given: ΔABC with BC>AC
42. *Prove*: ∠CAB > ∠B

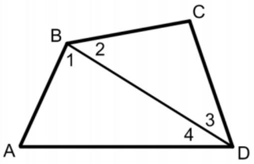


Statements	**Reasons**
ΔABC with BC>AC	Given
Choose D on CB so that CD=CA	Ruler Postulate
43. Draw AD	2 points define a line
44. ∠CAD = ∠CDA	If two sides of a triangle are equal, the angles opposite them are equal.
45. ∠CAB=∠CAD+∠DAB	Betweenness of Rays theorem
46. ∠CAB>∠ CAD	Whole is greater than part
∠CAB>∠CDA	Substitution
47. ∠CDA>∠B	exterior angles are greater than either remote interior angle
48. ∠CAB > ∠B	Transitive

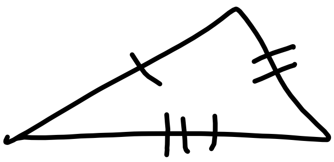
Theorem: The sum of the angles of a quadrilateral is 360°.

49. *Given*: ABCD is a quadrilateral

50. *Prove*: $\angle A+\angle B+\angle C+\angle D=360°$

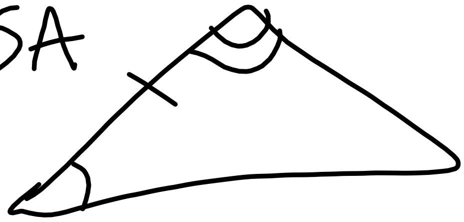


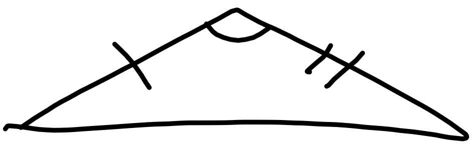
Statements	**Reasons**
51. Draw BD	Two points define a line
52. $\angle A+\angle 1+\angle 4=180°$ and $\angle 2+\angle 3+\angle C=180°$	Triangle Sum Theorem
53. $\angle A+\angle 1+\angle 4+\angle 2+\angle 3+\angle C=360°$	Addition & Simplification
54. $\angle B=\angle 1+\angle 2$ and $\angle D=\angle 3+\angle 4$	Betweenness of Rays Theorem
55. $\angle A+\angle B+\angle C+\angle D=360°$	Substitution



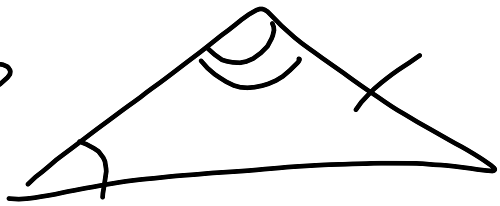
SSS

ASA

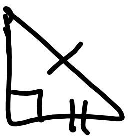




AAS



SAS



HL

Mitchell was near