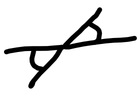
1. J Conditional statement
2. W Converse
3. P Hypothesis
4. G Conclusion
5. L Theorem
6. E Postulate
7. S Collinear
8. H Reflexive Property
9. Q Substitution Property
10. A Ruler Postulate
11. Y Betweenness of points definition
12. O Betweenness of Points Theorem
13. V Protractor Postulate
14. F Betweenness of rays definition
15. R Betweenness of Rays Theorem
16. D Midpoint
17. N Angle bisector
18. X Complementary angles
19. M Supplementary angles
20. Z Linear pair
21. T Vertical angles
22. B Perpendicular lines
23. I Congruent triangles
24. K Isosceles triangle
25. U Equilateral triangle
26. C Right triangle

A. The points on a line can be numbered so that positive number differences measure distance.
B. **Two lines forming a right angle.**
C. A triangle containing a 90° angle.
D. **A point which divides a line segment into two equal segments.**
E. A statement that is assumed to be true without proof.
F. **OA-OB-OC iff a<b<c or a>b>c.**
G. For statement "If a, then b," the expression "b."
H. **Any number is equal to itself.**
I. Two triangles possessing a correspondence between their vertices such that all of their corresponding sides and angles are equal.
J. **The statement: "If a, then b."**
K. A triangle having at least two equal sides.
L. **A statement that is proved by reasoning deductively from already accepted statements.**
M. Angles whose sum is 180°.
N. **A line which divides an angle into two equal angles.**
O. If A-B-C, then AB+BC=AC
P. **For statement "If a, then b," the expression "a."**
Q. If a=b, then a can be replaced by b in any expression.
R. **If OA-OB-OC, then ∠AOB+∠BOC=∠AOC.**
S. Points contained within a single line.

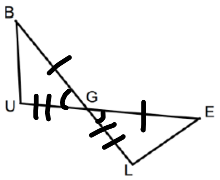


T. **Two angles such that the sides of one angle are opposite rays to the sides of the other.**
U. A triangle with all sides equal.
V. **The rays in a half-rotation can be numbered from 0 to 180 so that positive number differences measure angles.**
W. For statement "If a, then b," the statement: "If b, then a."
X. **Angles whose sum is 90°.**
Y. A-B-C iff a<b<c or a>b>c.

Z. **Two angles having a common side and their other sides are opposite rays.**

Given: ∠BGU and ∠EGL are vertical angles;
BG=GE;
UG=GL.

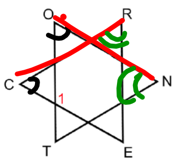
Prove: BU=LE



Statements:	Reasons:
27. BG=GE, UG=GL	Given
28. ∠BGU & ∠EGL are vertical ∠'s	Given
29. ∠BGU=∠EGL	vertical angles are equal
30. ΔBGU ≅ ΔEGL	SAS Congruence
31. BU=EL	corresponding parts of congruent Δ's are equal

Given: ∠C=∠O;
∠R and ∠N are supplements of ∠1;
CR=ON.

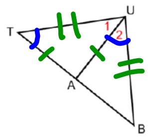
Prove: ΔCRE≅ΔONT.



Statements:	Reasons:
32. ∠C=∠O; CR=ON	Given
33. ∠R & ∠N are supplements of ∠1	Given
34. ∠R+∠1= 180°	Supplementary angles sum to 180°
35. ∠N+ ∠1 =180°	Supplementary angles sum to 180°
36. ∠R+∠1=∠N+∠1	Substitution (#34 & 35)
37. ∠R=∠N	subtraction (∠1)
38. ΔCRE≅ΔONT	ASA congruence

Given: ∠T and ∠2 are complements of ∠1;
TA=AU;
TU=UB.

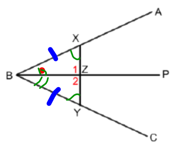
Prove: AU=AB.



Statements:	Reasons:
39. TA=AU; TU=UB	Given
40. ∠T & ∠2 are complements of ∠1	Given
41. ∠T+∠1=90°	Complementary angles sum to 90°
42. ∠2+∠1=90°	Complementary angles sum to 90°
43. ∠T+∠1=∠2+∠1	Substitution (#41 & 42)
44. ∠T = ∠2	Subtraction
45. ΔATU≅ΔAUB	SAS congruence
46. AU=AB	Corresponding parts of congruent triangles are equal.

Given: BP bisects ∠ABC;
BX=BY;
∠1 and ∠2 form a linear pair.

Prove: XY ⊥ BP.



Statements:	Reasons:
47. BX=BY	Given
48. ∠BXZ=∠BYZ	If two sides of a triangle are equal, the ~~sides~~ angles opposite them are equal.
49. BP bisects ∠ABC	Given
50. ∠CBP=∠ABP	an angle bisector divides an angle into two equal angles
51. ΔBXZ≅ΔBYZ	ASA congruence
52. ∠1= ∠2	corresponding parts of congruent Δ's are equal
53. ∠1 and ∠2 form a linear pair	Given
54. XY ⊥ BP	If ∠'s in a linear pair are equal, lines are perpendicular

1. Point __B__ is defined to be between point __A__ and point __C__ on the same line if and only if $a < b < c$ or $a > b > c$.
2. The Betweenness of Points Theorem states that if $A - B - C$, then $AC =$ __AB + BC__.
3. Ray OB is defined to be between rays OA and OC if and only if __a<b<c__ or __c<b<a__.
4. The Ruler Postulate states that points on a line can be numbered so that positive number differences measure __distance__.
5. A point is on the midpoint of a line segment if and only if it divides the line segment into __two equal parts__.
6. Two angles are a __linear pair__ if and only if they have a common side and their other sides are opposite rays.
7. Two angles are __vertical angles__ if and only if the sides of one angle are opposite rays to the sides of the other.
8. Two lines are __perpendicular__ if and only if they form a right angle.
9. Two triangles are __congruent__ if and only if there is a correspondence between their vertices such that all of their corresponding sides and angles are equal.

Given the following definition, fill in the missing parts of the direct proof of the theorem.
Def: Two angles are supplementary if and only if their sum is 180°.

Theorem: Supplements of the same angle are equal.
i.e., if $\angle 1$ is a supplement of $\angle 3$ *and* $\angle 2$ is a supplement of $\angle 3$, then $\angle 1 = \angle 2$.

Proof:

Statements	Reasons
10. $\angle 1$ and $\angle 2$ are supplements of $\angle 3$	Given
11. $\angle 1 + \angle 3 =$ __180°__ and $\angle 2 + \angle 3 =$ __180°__	Definition of supplementary angles.
12. $\angle 1 + \angle 3 =$ __$\angle 2 + \angle 3$__	Substitution.
13. $\angle 1 = \angle 2$	Subtraction