Geometry Proving Statements in Geometry
Notes 3-6 Substitution/Addition/Subtraction Postulates

Substitution Postulate: a quantity may be substituted for its equal in any statement of equality

ex 1) Given: CE = 2CD and CD = DE
Prove: CE = 2DE

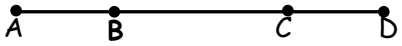
statement	reason
1. $CE = 2CD$	1. given
2. $CD = DE$	2. given
3. $CE = 2DE$	3. a quantity may be substituted for its equal in any statement of equality

ex 2) Given: $m\angle ABD + m\angle DBC = 90$
$m\angle ABD = m\angle CBE$
Prove: $m\angle CBE + m\angle DBC = 90$

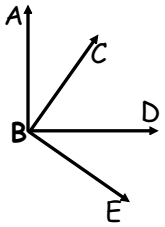
statement	reason
1. $m\angle ABD + m\angle DBC = 90$	1. given
2. $m\angle ABD = m\angle CBE$	2. given
3. $m\angle CBE + m\angle DBC = 90$	3. a quantity may be substituted for its equal in any statement of equality.

Partition Postulate: the whole is equal to the sum of its parts.

$\overline{AB} + \overline{BD} = \overline{AD}$
$\overline{AB} + \overline{BC} = \overline{AC}$



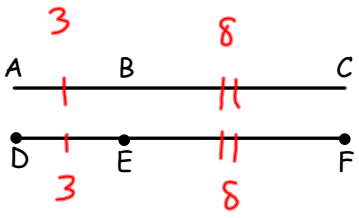
$\overline{BC} + \overline{CD} = \overline{BD}$
$\overline{AB} + \overline{BC} + \overline{CD} = \overline{AD}$



$\angle ABD + \angle DBE = \angle ABE$
$\angle ABC + \angle CBE =$
$\angle ABC + \angle CBD + \angle DBE =$

Addition Postulate: If equal quantities are added to equal quantities, the sums are equal.

ex 1) Given: $\overline{ABC}$ and $\overline{DEF}$ with AB=DE and BC=EF
Prove: AC = DF



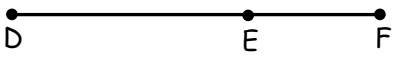
statement	reason
1. $\overline{ABC}$ and $\overline{DEF}$ with AB=DE, BC=EF	1. given
2. AB+BC=DE+EF (AC, DF)	2. If equal quantities are added to equal quantities, the sums are =.
3. AC=AB+BC	3. The whole is equal to the sum of its parts.
4. DF=DE+EF	4. same as # 3
5. AC=DF	5. A quantity may be substituted for its equal in any statement of equality.

Subtraction Postulate: If equal quantities are subtracted from equal quantities, the differences are equal.

Ex 1) Given: x + 6 = 14
Prove: x = 8

statement	reason
1. $x+6=14$	1. given
2. $6=6$	2. a quantity is equal to itself.
3. $x=8$	3. equal quantities are subtracted from equal quantities, the differences are equal.

ex 2) Given: $\overline{DEF}$, E is between D and F
Prove: $\overline{DE} \cong \overline{DF} - \overline{EF}$



statement	reason

see Pg 122