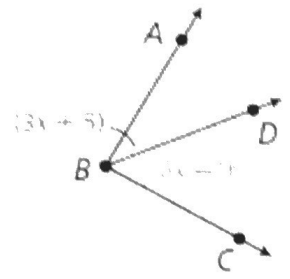
Name _____ Date _____

Day 4 – Intro to Proofs (Algebraic)

1. Given: m∠ABD = 3x + 5, m∠DBC = 6x − 16, m∠ABC = 8x

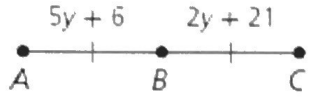


$m\angle ABC = 8x$

Prove: x = 11

STATEMENTS	REASONS
1. $m\angle ABD = 3x+5$, $m\angle DBC = 6x-16$, $m\angle ABC = 8x$	1. Given
2. $m\angle ABD + m\angle DBC = m\angle ABC$	2. Angle Add. Post.
3. $3x+5+6x-16 = 8x$	3. Substitution
4. $9x-11 = 8x$	4. Combine Like Terms
5. $-11 = -1x$	5. Subtract. Prop.
6. $11 = x$	6. Division Prop.
7. $x = 11$	7. Symmetric Prop.

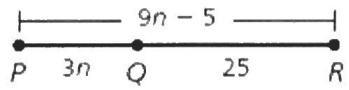
2. Given: B is the midpoint of AC.



Prove: y = 5

STATEMENTS	REASONS
1. B is the midpoint of AC	1. given.
2. $AB = BC$	2. Def. of Midpoint
3. $5y+6 = 2y+21$	3. Substitution
4. $3y+6 = 21$	4. Subtraction Prop
5. $3y = 15$	5. Subtraction Prop.
6. $y = 5$	6. Division Prop.

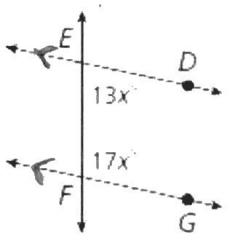
3. Given: $m\overline{PR} = 9n - 5$, $m\overline{PQ} = 3n$, $m\overline{QR} = 25$



Prove: n = 5

STATEMENTS	REASONS
1. $m\overline{PR} = 9n-5$, $m\overline{PQ} = 3n$, $m\overline{QR} = 25$	1. Given
2. $PR = PQ + QR$	2. Seg. Addition Post.
3. $9n-5 = 3n+25$	3. Substitution
4. $6n-5 = 25$	4. Subtraction Prop.
5. $6n = 30$	5. Addition Prop.
6. $n = 5$	6. Division Prop.

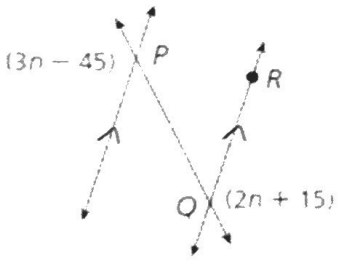
4. Given: $m\angle DEF = 13x$, $m\angle EFG = 17x$



Prove: x = 6

STATEMENTS	REASONS
1. $m\angle DEF = 13x$, $m\angle EFG = 17x$	1. Given
2. $m\angle DEF + m\angle EFG = 180$	2. Def. of Same Side Interior $\angle$'s
3. $13x + 17x = 180$	3. Substitution Prop.
4. $30x = 180$	4. Combine Like Terms
5. $x = 6$	5. Division Prop

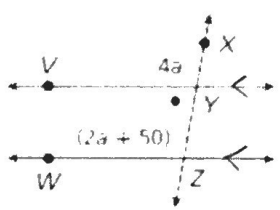
5. Given: $m\angle 1 = 3n - 45$, $m\angle 2 = 2n + 15$



Prove: n = 60

STATEMENTS	REASONS
1. $m\angle 1 = 3n - 45$, $m\angle 2 = 2n + 15$	1. Given
2. $m\angle 1 = m\angle 2$	2. Def. of Alt. Int $\angle$'s
3. $3n - 45 = 2n + 15$	3. Substitution Prop
4. $n - 45 = 15$	4. Subtract. Prop.
5. $n = 60$	5. Addition Prop.

6. Given: $m\angle VYX = 4a$, $m\angle WZY = 2a + 50$



Prove: $m\angle VYZ = 80°$

STATEMENTS	REASONS
1. $m\angle VYX = 4a$, $m\angle WZY = 2a + 50$	1. Given
2. $m\angle VYX = m\angle WZY$	2. Def. of Corresponding $\angle$'s
3. $4a = 2a + 50$	3. Substitution
4. $2a = 50$	4. Subtraction Prop
5. $a = 25$	5. Division Prop.
6. $m\angle VYX = 4(25)$	6 Substitution
7. $m\angle VYX = 100$	7. Simplify
8 $m\angle VYX + m\angle VYZ = 180$	8. Linear Pairs Post
9. $100 + m\angle VYZ = 180$	Substitution
10. $m\angle VYZ = 80$	Subt. Prop.