WARMUP

Solve each equation using the quadratic formula.

1) $2x^2 + 6x + 5 = 0$

2) $x^2 + 2x - 11 = 0$

3) $x^2 + 6x + 9 = 0$

Warm-Up

Write a 2-column proof to solve the following equations:

1. $2x + 5 = 4x - 11$

Statements	Reasons
1) $2x + 5 = 4x - 11$	1) given
2) $5 = 2x - 11$	2) sub. prop. of =
3) $16 = 2x$	3) add prop. of =
4) $8 = x$	4) div. prop. of equality

2. $2(3x + 1) = 4x + 10$

1) $2(3x + 1) = 4x + 10$	1) given
2) $6x + 2 = 4x + 10$	2) distr. prop.
3) $6x = 4x + 8$	3) subt prop of =
4) $2x = 8$	4) subt prop of =
5) $x = 4$	5) div prop of =

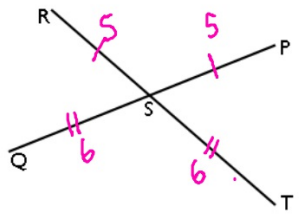
SECTION 2.2:
PROPERTIES FROM ALGEBRA

Standards:

2.0 - Students write geometric proofs, including proofs by contradiction.

Given: $\overline{RT}$ and $\overline{PQ}$ intersecting at S so that $RS = PS$ and $ST = SQ$

Prove: $RT = PQ$



STATEMENTS	REASONS
1) $RS = PS$, $ST = SQ$	1. GIVEN
2) $RS + ST = PS + SQ$	2. Add. Prop. of =
3) $RS + ST = RT$, $PS + SQ = PQ$	3. Seg. Add. Post.
4) $RT = PQ$	4. SUBSTITUTION

1) $m\angle 1 = m\angle 2$

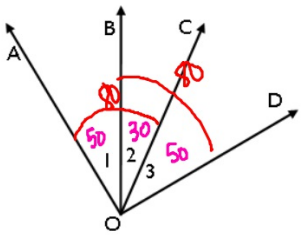
2) $m\angle 2 = m\angle 3$

3) $m\angle 1 = m\angle 3$

Given: $m(\angle AOC) = m(\angle BOD)$

Prove: $m(\angle 1) = m(\angle 3)$

Proof:

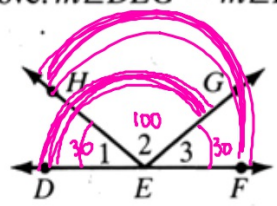


STATEMENT	REASONS
1) $m\angle AOC = m\angle BOD$	1) Given
2) $m\angle AOC = m\angle 1 + m\angle 2$ $m\angle BOD = m\angle 2 + m\angle 3$	2) Angle Add. Post.
3) $m\angle 1 + m\angle 2 = m\angle 2 + m\angle 3$	3) SUBSTITUTION
4) $m\angle 2 = m\angle 2$	4) Reflexive
5) $m\angle 1 = m\angle 3$	5) Subt. prop. of =

Example Complete the proof by supplying the missing statements and reasons.

Given: $m\angle 1 = m\angle 3$

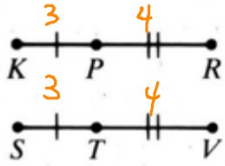
Prove: $m\angle DEG = m\angle HEF$



Statements	Reasons
1) $m\angle 1 = m\angle 3$	1. Given
2) $m\angle 2 = m\angle 2$	2. Reflexive
3) $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 2$	3. Add. Prop of =
4) $m\angle DEG = m\angle 1 + m\angle 2$; $m\angle HEF = m\angle 3 + m\angle 2$	4. Angle Add. Post.
5) $m\angle DEG = m\angle HEF$	5. SUBSTITUTION

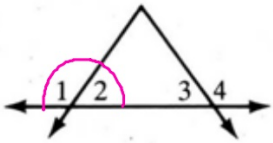
Complete the following proofs by supplying the missing statements and reasons.

6. Given: $KP = ST$;
$PR = TV$
Prove: $KR = SV$



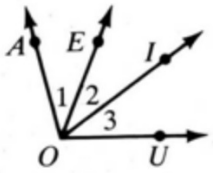
Statements	Reasons
1) $KP = ST$, $PR = TV$	1. Given
2) $KP + PR = ST + TV$	2. Add. Prop. of =
3) $KP + PR = KR$; $ST + TV = SV$	3. Seg. Add Post.
4) $KR = SV$	4. Substitution Prop.

7. Given: $m\angle 1 = m\angle 4$
Prove: $m\angle 2 = m\angle 3$



Statements	Reasons
1) $m\angle 1 + m\angle 2 = 180$; $m\angle 3 + m\angle 4 = 180$	1. Angle Addition Post.
2) ~~$m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$~~	2. SUBSTITUTION
3) ~~$m\angle 1 = m\angle 4$~~	3. Given
4) $m\angle 2 = m\angle 3$	4. subt. prop of =

8. Given: $m\angle AOI = m\angle EOU$
Prove: $m\angle 1 = m\angle 3$



Statements	Reasons
1) $m\angle AOI = m\angle EOU$	1. Given
2) $m\angle 2 = m\angle 2$	2. Reflexive
3) $m\angle 1 + m\angle 2 = m\angle AOI$; $m\angle 2 + m\angle 3 = m\angle EOU$	3. Angle Add post.
4) $m\angle 1 + m\angle 2 = m\angle 2 + m\angle 3$	4. SUBSTITUTION
5) $m\angle 1 = m\angle 3$	5. Subt prop of =