Geometry H
Mrs. Diaz

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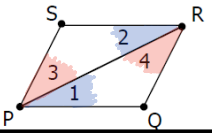
UNIT 2
Assignment #11: Proof Practice

12) Given: $m\angle 1 = m\angle 2$, $m\angle 3 = m\angle 4$

Prove: $m\angle QPS = m\angle QRS$

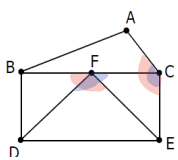


Proof:

Statements	Reasons
1. $m\angle 1 = m\angle 2$; $m\angle 3 = m\angle 4$	1. Given
2. $m\angle 2 + m\angle 4 = m\angle QRS$	2. Angle addition Postulate
3. $m\angle 1 + m\angle 3 = m\angle QPS$	3. Angle addition Postulate
4. $m\angle 2 + m\angle 3 = m\angle QPS$	4. Substitution
5. $m\angle 2 + m\angle 4 = m\angle QPS$	5. Substitution
6. $m\angle 2 + m\angle 4 = m\angle QRS$	6. Transitive Property (=)
7. $m\angle QPS = m\angle QRS$	7. Substitution

13) Given: $m\angle BFE = m\angle ECA$ and $m\angle CFD = m\angle ECA$

Prove: $m\angle BFD = m\angle CFE$

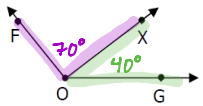


Proof:

Statements	Reasons
1. $m\angle BFE = m\angle ECA$ & $m\angle CFD = m\angle ECA$	1. Given
2. $m\angle CFD = m\angle CFE + m\angle EFD$	2. Angle addition Property
3. $m\angle ECA = m\angle CFD$	3. Symmetric Property of (=)
4. $m\angle BFE = m\angle CED$	4. Transitive Property of Segments
5. $m\angle BFE + m\angle CFE = m\angle BFC$	5. Angle addition Property
6. $m\angle CFD + m\angle CFE = m\angle BFC$	6. Substitution
7. $m\angle CFD + m\angle BFD = m\angle BFC$	7. Transitive Property
8. $m\angle CFD + m\angle BFD = m\angle CFD + m\angle CFE$	8. Substitution
9. $m\angle BFD = m\angle CFE$	9. Subtraction

14) Given: $m\angle FOX = 70°$ and $m\angle XOG = 40°$

Prove: $\angle FOG$ is obtuse

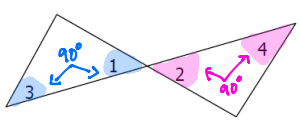


Proof:

Statements	Reasons
1. $m\angle FOX = 70°$	1. Given
2. $m\angle XOG = 40°$	2. Given
3. $m\angle FOG = m\angle FOX + m\angle XOG$	3. Angle Addition Postulate
4. $m\angle FOG = 70° + 40°$	4. Substitution
5. $m\angle FOG = 110°$	5. Addition Property of (=)
6. $\angle FOG$ is an obtuse angle	6. Defn of obtuse angles

15) Given: $\angle 3$ is complementary to $\angle 1$
$\angle 4$ is complementary to $\angle 2$

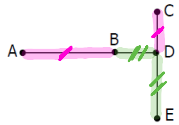
Prove: $\angle 3 \cong \angle 4$



Proof:

Statements	Reasons
1. $\angle 3$ is complementary to $\angle 1$	1. Given
2. $\angle 4$ is complementary to $\angle 2$	2. Given
3. $m\angle 3 + m\angle 1 = 90°$; $m\angle 4 + m\angle 2 = 90°$	3. Defn of complementary $\angle$'s
4. $m\angle 3 + m\angle 1 = m\angle 4 + m\angle 2$	4. Substitution
5. $\angle 1$ and $\angle 2$ are vertical angles	5. Defn of vertical $\angle$'s (You do not need this step)
6. $\angle 1 \cong \angle 2$	6. Defn of vertical $\angle$'s
7. $m\angle 1 = m\angle 2$	7. Defn of ($\cong$)
8. $m\angle 3 + m\angle 2 = m\angle 4 + m\angle 2$	8. Substitution
9. $m\angle 3 = m\angle 4$	9. Subtraction Property of (=)
10. $\angle 3 \cong \angle 4$	10. Defn of ($\cong$)

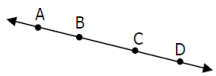
2) Given: $\overline{AB} \cong \overline{CD}$ and $\overline{BD} \cong \overline{DE}$
Prove: $\overline{AD} \cong \overline{CE}$



Proof:

Statements	Reasons
1. $\overline{AB} \cong \overline{CD}$ & $\overline{BD} \cong \overline{DE}$	1. Given
2. $AB = CD$, $BD = DE$	2. Defn of $\cong$ segments
3. $AD = AB + BD$	3. Segment Addition Postulate
4. $AD = CD + BD$	4. Substitution
5. $CE = CD + DE$	5. Segment Addition Postulate
6. $CE = CD + BD$	6. Substitution
7. $AD = CE$	7. Transitive Property
8. $\overline{AD} \cong \overline{CE}$	8. Defn of $\cong$ segments

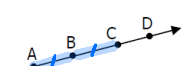
4) Given: B is between A and D, C is between A and D
Prove: $AB + BD = AC + CD$



Proof:

Statements	Reasons
1. B is between A and D	1. Given
2. $AB + BD = AD$	2. Segment Addition Postulate
3. C is between A and D	3. Given
4. $AC + CD = AD$	4. Segment Addition Postulate
5. $AD = AC + CD$	5. Reflexive Property of $=$
6. $AB + BD = AC + CD$	6. Substitution

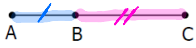
5) Given: B is the midpoint of $\overline{AC}$
Prove: $AB + CD = BD$

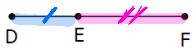


Proof:

Statements	Reasons
1. B is the midpoint of $\overline{AC}$	1. Given
2a. $\overline{AB} \cong \overline{BC}$	2. Def. of a midpoint
→ 2b. $AB = BC$	2b. Defn. of $\cong$ segments
3. $BD = BC + CD$	3. Segment Addition Postulate
4. $BD = AB + CD$	4. Substitution
5. $AB + CD = BD$	5. Symmetric Property of $=$

6) Given: $\overline{AB} \cong \overline{DE}$, $\overline{BC} \cong \overline{EF}$
Prove: $\overline{AC} \cong \overline{DF}$



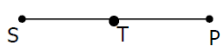


Proof:

Statements	Reasons
1. $\overline{AB} \cong \overline{DE}$ & $\overline{BC} \cong \overline{EF}$	1. Given
2. $AB = DE$, $BC = EF$	2. Defn of $\cong$ segments
3. $AB + BC = AC$	3. Segment addition Property
4. $DE + BC = AC$	4. Substitution
5. $DE + EF = AC$	5. Substitution
6. $DE + EF = DF$	6. Segment Addition Postulate
7. $AC = DF$	7. Transitive Property
8. $\overline{AC} \cong \overline{DF}$	8. Defn of $\cong$ segments

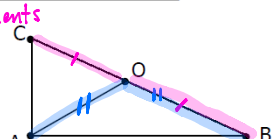
10) Given: T is the midpoint of $\overline{SP}$
Prove: $2\overline{ST} = \overline{SP}$

Proof:



Statements	Reasons
1. T is the midpoint of $\overline{SP}$	1. Given
2a. $\overline{ST} \cong \overline{TP}$	2a. Def. of a midpoint
→ 2b. $ST = TP$	2b. Defn of $\cong$ segments
3. $ST + TP = SP$	3. Segment Addition Postulate
4. $ST + ST = SP$	4. Substitution
5. $2ST = SP$	5. Addition Property of $=$
6. $2\overline{ST} \cong \overline{SP}$	6. Defn of $\cong$ segments

11) Given: O is the midpoint of $\overline{BC}$, $OA = OB$
Prove: $\overline{OC} \cong \overline{OA}$



Proof:

Statements	Reasons
1. O is the midpoint of $\overline{BC}$ & $OA = OB$	1. Given
2. $\overline{OC} \cong \overline{OB}$	2. Defn. of midpoint
3. $OC = OB$	3. Defn of $\cong$ segments
4. $OB = OC$	4. Symmetric Property of $=$
5. $OA = OC$	5. Transitive Property of Segments
6. $\overline{OA} \cong \overline{OC}$	6. Def. of Congruent Segments