Geometry/Trig 2

Unit 2 Mixed Practice

Name: _____

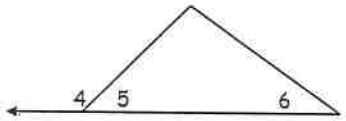
Date: _____

4. Fill in the missing pieces of the proof.

Given: TI = RG Prove: TR = IG

Statements	Reasons
1. $\overline{TI} = \overline{RG}$	1. Given
2. $\overline{TR} + \overline{RI} = \overline{TI}$ $\overline{RI} + \overline{IG} = \overline{RG}$	2. Segment Addition Postulate
3. TR + RI = RI + IG	3. Substitution
4. $\overline{TR} = \overline{IG}$	4. Subtraction

8. Given: m∠4 + m∠6 = 180 Prove: m∠5 = m∠6



Statements	Reasons
1. m∠4 + m∠6 = 180	1. Given
2. m∠4 + m∠5 = 180	2. Angle Addition Postulate OR Def. of Linear Pair
3. m∠4 + m∠5 = m∠4 + m∠6	3. Substitution
4. m∠4 = m∠4	4. Reflexive Property
5. m∠5 = m∠6	5. Subtraction

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#1-2 Decide whether the given conditional is true or false. If it is false provide a counterexample to support your claim. Identify the hypothesis and conclusion of the conditional. Write the converse of the conditional. Decide whether the converse is true or false. If it is false provide a counterexample to support your claim.

1. If m∠1 = 120, then ∠1 is an obtuse angle.

Conditional, True or False? True

If false, provide a counterexample. —

Hypothesis: m∠1 = 120°

Conclusion: ∠1 is an obtuse angle

Converse: If ∠1 is an obtuse angle, then m∠1 = 120

Converse, True or False? False

If false, provide a counterexample. m∠1 = 130°

2. If I live in the United States, then I live in Pennsylvania.

Conditional, True or False? False

If false, provide a counterexample. I live in New Jersey

Hypothesis: I live in the United States

Conclusion: I live in Pennsylvania

Converse: If I live in Pennsylvania, then I live in the U.S.

Converse, True or False? True

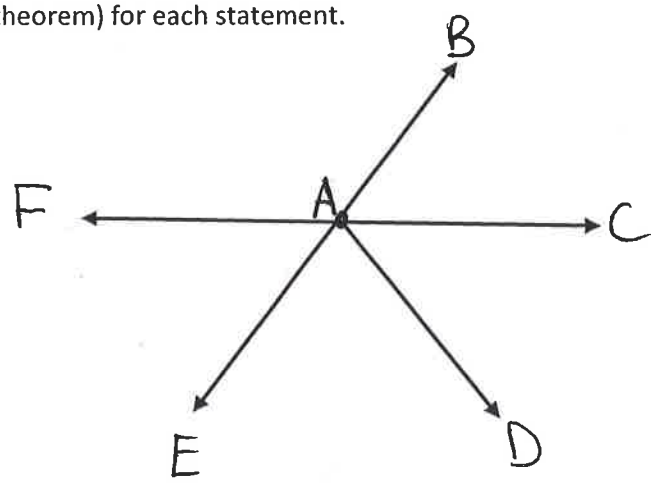
If false, provide a counterexample. —

3. Fill in the blanks.

Given: MA = TH Prove: MT = AH

Statements	Reasons
1. MA = TH	1. Given
2. MA + AT = TH + AT	2. Addition Property
3. MA + AT = MT TH + AT = AH	3. Segment Addition Postulate
4. MT = AH	4. Substitution

Provide a justification (a definition, property, postulate, or theorem) for each statement.



1. $\overline{EA} + \overline{AB} = \overline{EB}$ Segment Addition Postulate

2. If $X+7=12$, then $X=5$ Subtraction Property

3. If A is the midpoint of $\overline{FC}$, then $\overline{FA} \cong \overline{AC}$ Definition of Midpoint

4. If A is the midpoint of $\overline{FC}$, then $\overline{FA} = \frac{1}{2}\overline{FC}$ Midpoint Theorem

5. If $\overrightarrow{AC}$ is the bisector of $\angle BAD$, then $m\angle BAC = m\angle CAD$ Definition of Angle Bisector

6. $m\angle EAD \cong m\angle EAD$ Reflexive Property

7. $\angle FAE \cong \angle BAC$ Vertical Angle Theorem

8. $m\angle FAD + m\angle DAC = 180°$ Angle Addition Postulate (or def. of linear pair)

9. If $\angle FAD$ and $\angle DAC$ are supplementary, then $m\angle FAD + m\angle DAC = 180°$ Def. of Supplementary Angles

10. If $AD=AC$ and $AC=AB$, then $AD=AB$ Transitive Property

Not On Diagram:

11. If $ML \perp RS$, then $\angle LAS$ is a right angle Definition of Perpendicular lines

12. If $m\angle DEF = 90°$, then $\angle DEF$ is a right angle Definition of right Angle

13. If $\angle RST$ is a right angle, then $m\angle RST = 90°$ Definition of Right Angle

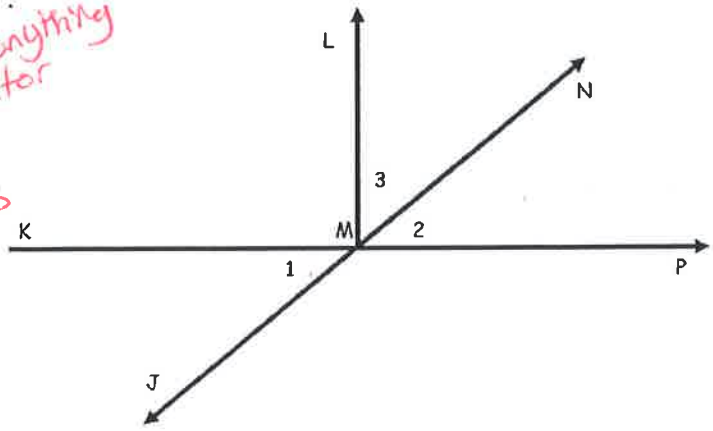
14. If $\angle PQR$ is a right angle, then $PQ \perp QR$ Definition of Perpendicular Lines

Given: $2(x+5) = 16$

Prove: $x = 3$

Statement	Reason
$2(x+5)=16$	Given
$2x+10=16$	Distributive Property
$2x=6$	Subtraction Property
$x=3$	Division Property

Can you DEFINITELY conclude the following? (Yes or No)



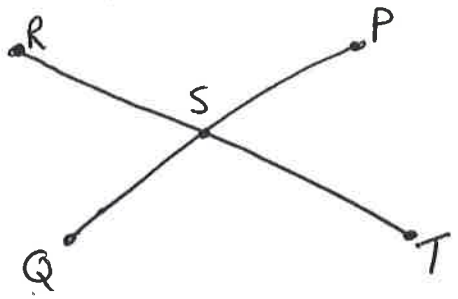
1. $\angle 3 \cong \angle 2$ NO – Doesn't say anything about bisector
2. $\angle 1 \cong \angle 2$ YES – Vertical Angles
3. $\angle 1 \cong \angle 3$ NO – No relation
4. $m\angle LMP = 90°$ Yes – By Def. of right angle

Given: $\angle LMP$ is a right angle

5. $m\angle KMJ + m\angle JMP = 180°$ Yes – Angle Add. Postulate $\angle KMP$ is a straight angle
6. J and L are Collinear Points YES – There is a line between ANY two points
7. $\angle LMN$ and $\angle NMP$ are complementary YES – By Def. of comp. Angles ($=90°$)
8. $\angle KMJ$ and $\angle JMP$ are supplementary YES – By Def. of supp. Angles ($=180°$)
9. $\angle KML$, $\angle LMN$, and $\angle NMP$ are supplementary No – Supplementary are two Angles
10. $JM = MN$ No – Doesn't say anything about midpoint
11. $\angle KML$ is a right angle Yes – Since $\angle LMP = 90$ and $\angle KMP$ is straight (180) then $\angle KML = 90°$

Given: $RS = PS$ and $ST = SQ$

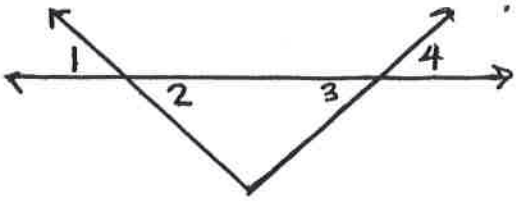
Prove: $RT = PQ$



Statement	Reason
1. $RS = PS$	1. Given
2. $RS + ST = PS + ST$	2. Addition Property
3. $ST = SQ$	3. Given
4. $RS + ST = PS + SQ$	4. Substitution
5. $RS + ST = RT$ $PS + SQ = PQ$	5. Segment Addition Postulate
6. $RT = PQ$	6. Substitution

Given: $\angle 2 \cong \angle 3$

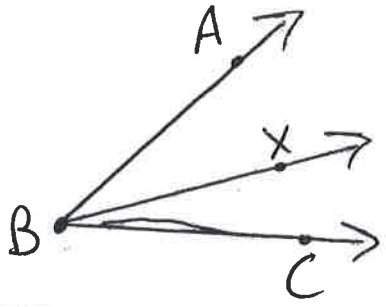
Prove: $\angle 1 \cong \angle 4$



Statement	Reason
1. $\angle 2 \cong \angle 3$	1. Given
2. $\angle 2 \cong \angle 1$	2. Vertical Angle Theorem
3. $\angle 3 \cong \angle 1$	3. Substitution
4. $\angle 3 \cong \angle 4$	4. Vertical Angle Theorem
5. $\angle 1 \cong \angle 4$	5. Substitution

Given: $\overrightarrow{BX}$ is the bisector of $\angle ABC$

Prove: $m\angle ABX = \frac{1}{2} m\angle ABC$



Statement	Reason
1. $\overrightarrow{BX}$ is the bisector of $\angle ABC$	1. Given
2. $m\angle ABC = m\angle XBC$	2. Definition of Angle Bisector
3. $m\angle ABX + m\angle XBC = m\angle ABC$	3. Angle Addition Postulate
4. $m\angle ABX + m\angle ABX = m\angle ABC$ $2 \cdot m\angle ABX = m\angle ABC$	4. Substitution Property
5. $m\angle ABX = \frac{1}{2} m\angle ABC$	5. Division Property

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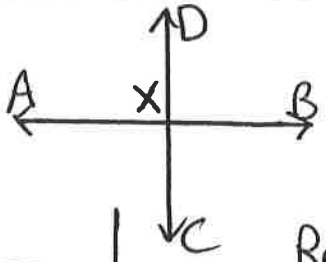
Given: $\angle AXD \cong \angle DXB$

Prove: $\overleftrightarrow{AB} \perp \overleftrightarrow{DC}$



Statement	Reason
1. $\angle AXD \cong \angle DXB$ $m\angle AXD = m\angle DXB$	1. Given
2. $m\angle AXD + m\angle DXB = 180°$	2. Angle Addition Postulate / or Def. of Linear Pair
3. $m\angle AXD + m\angle AXD = 180$ $2 \cdot m\angle AXD = 180$	3. Substitution
4. $m\angle AXD = 90°$	4. Division Property
5. $\angle AXD$ is a right Angle	5. Definition of Right Angle
6. $\overleftrightarrow{AB} \perp \overleftrightarrow{DC}$	6. Definition of Perpendicular Lines