2/11/16
Review for Proofs Quiz

EQ:Name some of the most common properties, theorems, and postulates used when performing proofs.

MCC9-12.G.CO.9 Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.

MCC9-12.G.CO.10 Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 1800; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point

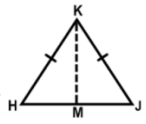
Sep 8-5:10 PM

Analytic Geometry
Homework: Proofs Answers

Two Column Proof - Complete the proof by filling in the blanks.

Given: KH ≅ KJ, KM bisects HJ

Prove: $\angle H \cong \angle J$

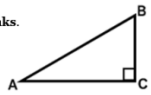


STATEMENTS	REASONS
1) KM bisects HJ	1) Given
2) HM ≅ JM	2) Definition of bisector
3) KH ≅ KM	3) Given
4) KM ≅ KM	4) Reflexive Property
5) ΔKHM ≅ ΔKJM	5) SSS
6) <H ≅ <J	6) Corresponding parts of ≅ triangles are ≅

Paragraph Proof - Complete the following proof by filling in the blanks.

Given: ΔABC with right angle C

Prove: $\angle A$ and $\angle B$ are complimentary

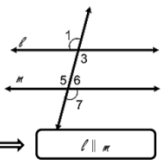


Proof: $m\angle A + m\angle B + m\angle C = 180$ by the Triangle Angle Sum Theorem It is given that m<C = 90°, so $m\angle A + m\angle B + 90 = 180$. By Subtraction Property of Equality m<A + m<B = 90°. Thus $\angle A$ and $\angle B$ are complementary by the definition of complementary angles.

Flow Proof - Complete the proof by filling in the blanks.

Given: $\angle 1 \cong \angle 7$

Prove: $\ell \parallel m$



∠1 ≅ ∠7 — Given

∠3 ≅ ∠1 — Vertical Angles are congruent

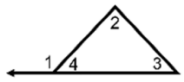
<3 ≅ <7 — Transitive Property

ℓ ∥ m — Corresponding Angles

Complete the proof by filling in the blanks.

Given: $\angle 1$ is an exterior angle of the triangle

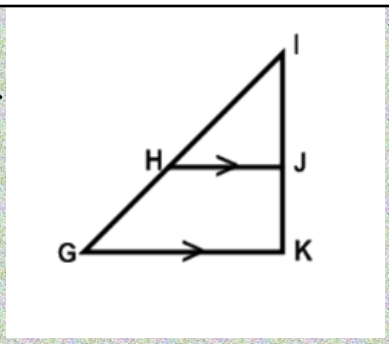
Prove: $m\angle 1 = m\angle 2 + m\angle 3$



STATEMENTS	REASONS
1) $\angle 1$ is an exterior angle of the triangle	1) Given
2) <1 and <4 are supplementary	2) **linear angles are supplementary**
3) $m\angle 1 + m\angle 4 = 180$	3) Definition of Supplementary
4) $m\angle 2 + m\angle 3 + m\angle 4 = 180$	4) **Triangle Angle Sum Theorem**
5) $m\angle 1 + m\angle 4 = m\angle 2 + m\angle 3 + m\angle 4$	5) **Substitution Property**
6) **m<1 = m<2 + m<3**	6) Subtraction Property

Two Column Proofs - Complete the proof by filling in the blanks.

1) Given: GK‖HJ
Prove: ΔGIK~ΔHIJ

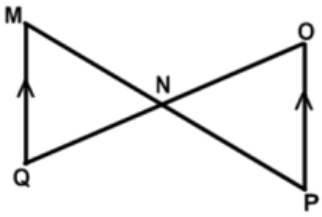


STATEMENTS	REASONS
1) GK‖HJ	1) Given
2) $\angle K \cong \angle HJI$	2) **Corresponding angle theorem**
3) **<G <KGH**	3) Corresponding Angles
4) ΔGIK~ΔHIJ	4)

Sep 8-5:23 PM

2)

Given: MQ||OP
Prove: ΔMNQ~PNO



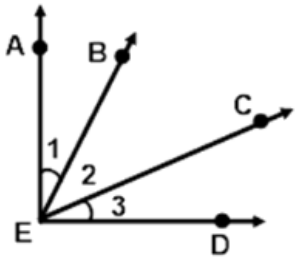
STATEMENTS	REASONS
1) MQ|| OP	1) Given
2) <MNQ <ONP	2) Vertical Angles
3) <QMN <OPN	3) Alternate Interior Angles
4) ΔMNQ~ΔPNO	4) AA~

Sep 8-6:11 PM

Paragraph Proof - Complete the following proof by filling in the bl

3)

Given: m<1 = m<3
Prove: m<AEC = m<DEB

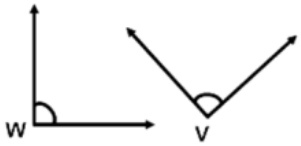


Proof : It is given that m<1 = m<3. By the _____ we know that m<2 = m<2. So because of the Addition Property we can say, m<1 + m<2 =m<3 + m<2. By the Angle Addition Postule, m<1 + m<2 = m<AEC. Also, by the Angle Addition Postulate, m<3 + m<2 = m<DEB. By the Transitive Property, m<AEC = m<DEB.

Sep 8-6:30 PM

Complete the proof by filling in the blanks.

4) Given: <W and <V are congruent and supplementary
Prove: <W and <V are right angles



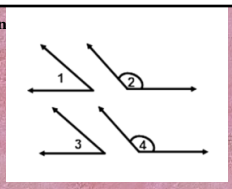
STATEMENTS	REASONS
1) <W <V	1) Given
2) **<W = <V**	2) Congruent angles have the same measure
3) <W & <V are supplementary	3) Given
4) <W + <V = 180	4) **Definition of supplementary**
5) m<W + m<W = 180 or 2m<W = 180	5) **Substitution Property**
6) **m<W = 90**	6) Division Property
7) **m<V = 90**	7) Transitive Property
8) **<W & <V are right angles**	8) Definition of right angles

Sep 8-6:42 PM

Flow Proof - Complete the proof by filling in the blan

5)

Given: <1 and <2 are supplementary;
<3 and <4 are supplementary;
<2 <4
Prove: <1 <3

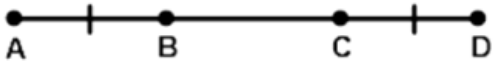


Sep 8-7:03 PM

Complete the proofs by filling in the blanks.

6) Given: $\overline{AB}$ $\overline{CD}$

Prove: $\overline{AC}$ $\overline{BD}$

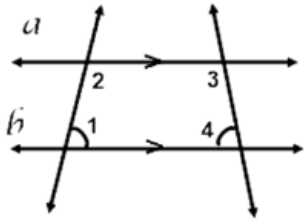


STATEMENTS	REASONS
1) $\overline{AB} \cong \overline{CD}$	1) **Given**
2) **$\overline{AB} = \overline{CD}$**	2) Congruent segments have = length
3) $\overline{BC} = \overline{BC}$	3) **Reflexive Property**
4) $\overline{AB} + \overline{BC} = \overline{BC} + \overline{CD}$	4) **Addition Property**
5) $\overline{AB} + \overline{BC} = \overline{AC}$	5) Segment Addition Postulate
6) $\overline{BC} + \overline{CD} = \overline{BD}$	6) **Segment Addition Postulate**
7) **$\overline{AC}$ $\overline{BD}$**	7) Substitution Property

Sep 8-7:44 PM

7) Given: a||b; <1 <4

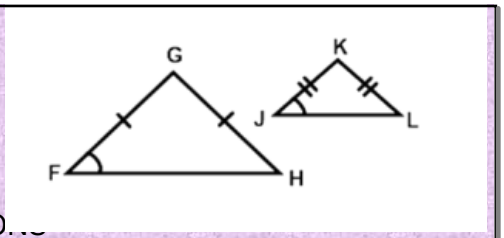
Prove: <2 <3



STATEMENTS	REASONS
1) a||b	1) Given
2) m<1 + m<2 = 180	2) **Consecutive Interior Angles are supplemental**
3) m<3 + m<4 = 180	3) **Consecutive Interior Angles are supplemental**
4) m<1 + m<2 = m<3 + m<4	4) **Transitive Property**
5) **<1 <4**	5) Given
6) m<4 + m<2 = m<3 + m<4	6) **Substitution Property**
7) **m<2 = m<3**	7) Subtraction Property
8) m<2 m<3	8) **Congruent Angles have = measure**

Sep 8-8:07 PM

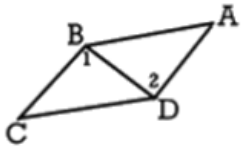
8) Given: FG GH; JK KL; <F <J
Prove: ΔFGH ~ ΔJKL



STATEMENTS	REASONS
1) FG ≅ GH; JK ≅ KL	1) Given
2) ΔFGH is isosceles	2) Definition of isosceles Δ
3) _____	3) Definition of isosceles Δ
4) **<F ≅ <H; <J <L**	4) Base angles of isosceles Δ are
5) <F ≅ <J	5) Given
6) <H ≅ <J	6) **Transitive Property**
7) <H ≅ <L	7) **Transitive Property**
8) ΔFGH ~ ΔJKL	8) **AA~**

Sep 8-8:28 PM

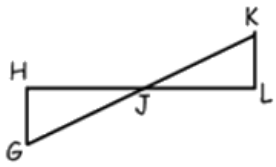
9) Given: $\overline{AD} \cong \overline{BC}$; $\angle 1 \cong \angle 2$
Prove: $\Delta ABD \cong \Delta CDB$



STATEMENTS	REASONS
1) $\overline{AD} \cong \overline{BC}$; $\angle 1 \cong \angle 2$	1) _____
2) $\overline{BD} \cong \overline{BD}$	2) _____
3) $\Delta ABD \cong \Delta CDB$	3) _____

Sep 8-7:44 PM

10) Given: J is the midpoint of GK
$\angle H$ and $\angle L$ are right angles
Prove: $\Delta GHJ \cong \Delta KLJ$



We are given that J is the _____ of GK. Therefore _____ ≅ _____.

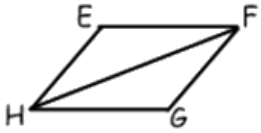
It is also given that $\angle H$ and $\angle L$ are right angles. Since all right angles are congruent,

_____ ≅ _____. Since _____ and _____ are vertical angles,

_____ ≅ _____. Therefore, $\Delta GHJ \cong \Delta KLJ$ by _____.

Sep 8-8:07 PM

11) Given: $\overline{EF} \cong \overline{GH}$; $\overline{EH} \cong \overline{GF}$
Proof: $\Delta EFH \cong \Delta GHF$



	$\overline{EH} \cong \overline{GF}$	
Given	_____	Reflexive Property
	$\Delta EFH \cong \Delta GHF$	
	_____	

Sep 8-8:28 PM

Study for Quiz

On-line and textbook help references: p. 44

- **http://www.ixl.com/math/geometry/proofs-involving-parallel-lines**

- **https://www.khanacademy.org/math/geometry/geometry-worked-examples/v/ca-geometry-more-proofs**

- **http://www.regentsprep.org/Regents/math/geometry/GP11/LsimilarProof.htm**

Sep 8-8:47 PM