W-G Geometry Week 7 10/19

If you are purchasing products online from Maya, (hypothesis)
then you are committing a felony. (conclusion)

Converse:

If you are committing a felony, then you are purchasing products online from Maya

False

Counter example: murder, aggressive jaywalking, robbing a bank.

If today is October 19th, (hypothesis) then your Test 1 is due today. (conclusion)

Converse:

If your Test 1 is due today, then it is Oct 19th

True

Biconditional Statement

Your Test 1 is due today if, and only if, it is Oct 19th

A

If you eat shrimp, then you may eat the "vein".

B

If you eat the "vein", then you're actually eating shrimp poop.

C

Law of Syllogism

$A \rightarrow B$ $B \rightarrow C$

$A \rightarrow C$

If you eat shrimp, then you're actually eating shrimp poop.

hypothesis

If you owe money to hobos,

then you live in constant fear of hobo attack.

conclusion

- Josh owes money to a hobo

  He lives in constant fear of hobo attack

- Emma lives in constant fear of hobo attack.

  no conclusion

Law of Detachment

Introduction to Proofs

Given: $3x + 12 = 8x - 18$

Prove: $x = 6$

Statements	Reasons
$3x + 12 = 8x - 18$	Given
$-12 \quad -12$	Subtraction Property of Equality (SPE)
$3x = 8x - 30$	
$-8x \quad -8x$	Subtraction Property of Equality (SPE)
$-5x = -30$	
$\frac{}{-5} \quad \frac{}{-5}$	Division Property of Equality (DPE)
$x = 6$	

Given: $3k + 5 = 17$

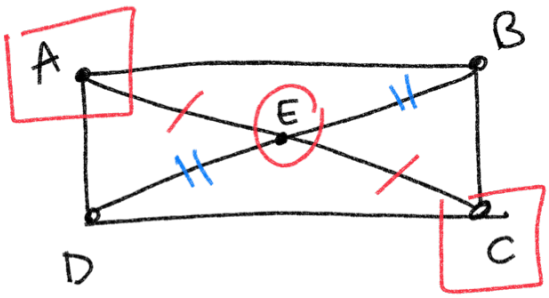
Prove: $k = 4$

Statements	Reasons
$3k + 5 = 17$	Given
$-5 \quad -5$	Subtract PoE
$\frac{3k}{3} = \frac{12}{3}$	
$k = 4$	Division PoE

Given: $3(5x+1) = 13x+5$

Prove: $x = 1$

Statements	Reasons
$3(5x+1) = 13x+5$	Given
$15x+3 = 13x+5$	Distributive Property
$\Rightarrow \quad -3 \qquad -3$	or
	Multiplication P.o.E
$15x = 13x+2$	Subtract P.o.E
$\Rightarrow -13x \quad -13x$	
$\frac{2x}{2} = \frac{2}{2}$	Subtract P.o.E
	Division P.o.E
$x = 1$	

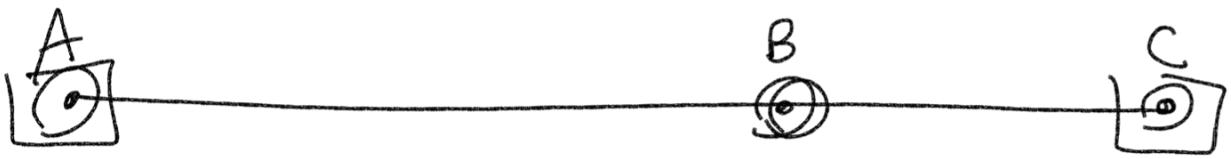


Given: E is the midpoint of $\overline{AC}$ and $\overline{BD}$

$\overline{ED} \cong \overline{EC}$

Prove: $\overline{AE} \cong \overline{BE}$

Statements	Reasons
E is midpoint of $\overline{AC}$ and $\overline{BD}$	Given
$\overline{AE} \cong \overline{EC}$	Definition of midpoint
$\overline{BE} \cong \overline{ED}$	Definition of midpoint
$\overline{ED} \cong \overline{EC}$	Given
$\overline{AE} \cong \overline{ED}$	Syllogism (Transitive Prop. or substitution
$\overline{AE} \cong \overline{BE}$	Trans or substitution



Given: $\overline{AB} = 2x+3$

$\overline{BC} = x$

$\overline{AC} = 24$

Prove: $x = 7$

Statements	Reasons
$\overline{AB} = 2x+3$	} Given
$\overline{BC} = x$	
$\overline{AC} = 24$	
$\overline{AB} + \overline{BC} = \overline{AC}$	Segment Addition Postulate (SAP)
$2x+3 + x = 24$	substitution
$3x + 3 = 24$	simplify "combine like terms"
$-3 \quad -3$	subtraction PoE
$\frac{3x}{3} = \frac{21}{3}$	Division PoE
$x = 7$	