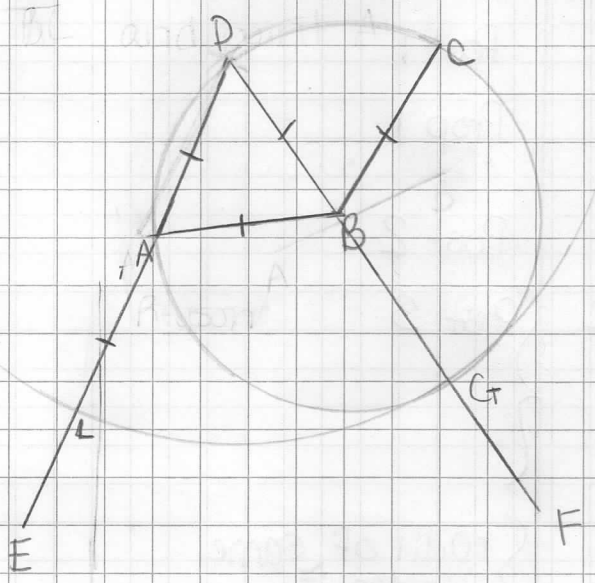
Honors Geometry HW. assigned 9/5/17
due 9/6/17

(1a) Lincoln learned how to demonstrate by studying Euclid.

(1b) It was important for him to show logical reasoning and demonstration because he was a lawyer who needed to persuade both juries and judges of the logic of his cases.

(1c) Logical reasoning is important in many jobs
- auto engineer
- parenting

(2)



(a) Point D is located on ⊙CAG

(b) It is located here because the directions said to place point A the same distance from point B as C was.

This would make $\overline{AB}$ a radius of circle point B at center and radius $\overline{BC}$ as well as $\overline{BD}$.

BD would be a radius because it is the same length as both $\overline{BA}$ & $\overline{BC}$

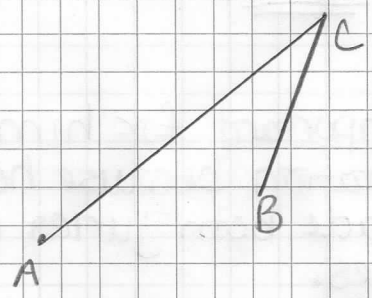
③

D/

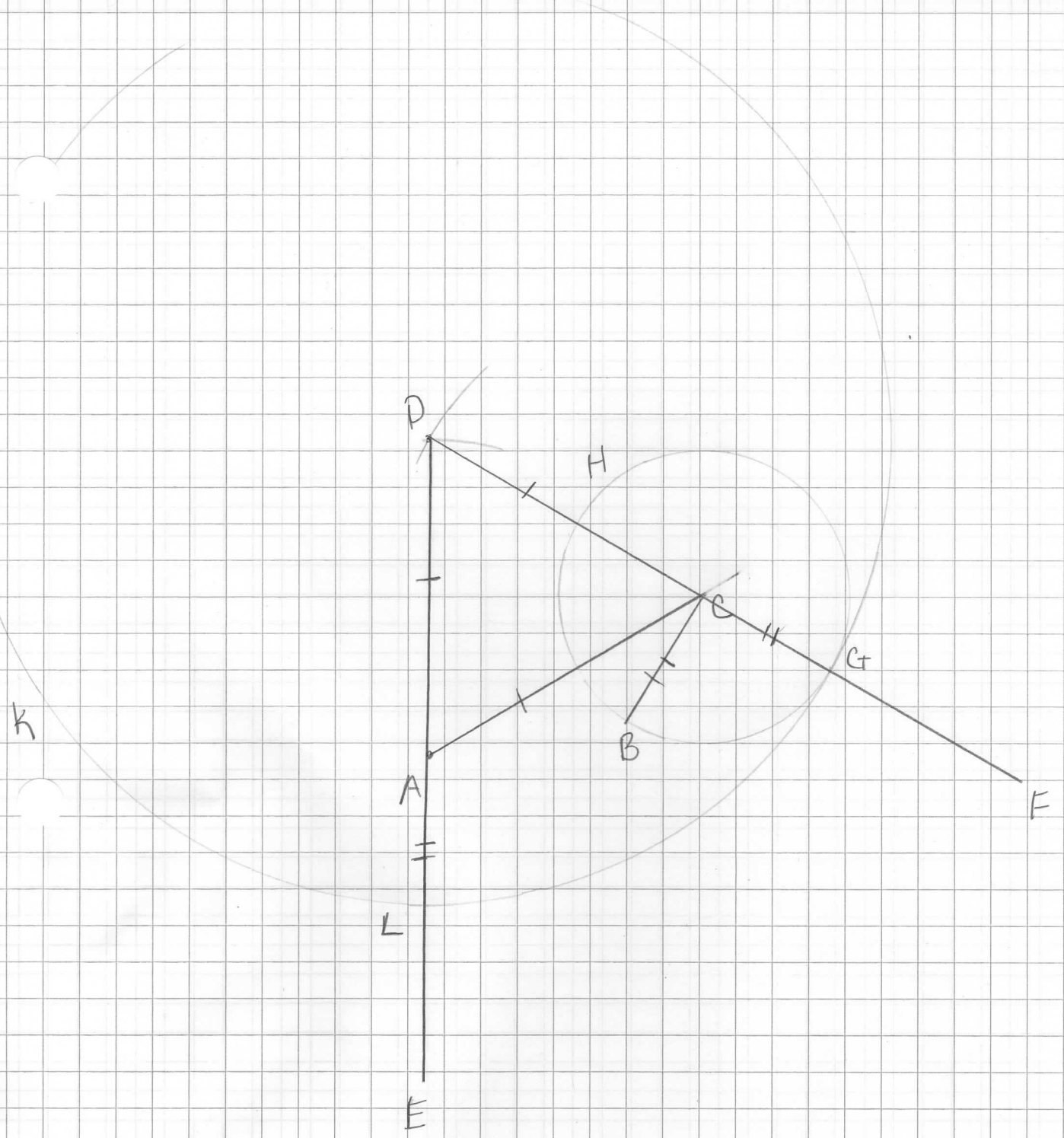
Construction will be too big

see next page.

Given $\overline{BC}$ and Point A



Statement	Reason
Let there be $\overline{BC}$ and point A	Given
Construct $\overline{AC}$	Post 1
Construct eq $\triangle$ ACD with $\overline{AC} \cong \overline{DC} \cong \overline{DA}$	Prop 1
Extend lines $\overline{DC}$ and $\overline{DA}$	Post 2
Construct $\odot$ BGH center C radius $\overline{BC}$	Post 3
$\odot$ GKL center D radius DG	
$\overline{CG} \cong \overline{BC}$	radii of same circles $\cong$
$\overline{DG} \cong \overline{DL}$	
$\overline{DG} - \overline{DC} = \overline{CG}$	CN 3
$\overline{DL} - \overline{DA} = \overline{AL}$	
$\therefore \overline{AL} = \overline{CG} = \overline{BC}$	CN 1


D
H
C
G
K
B
A
F
L
E

Statements of Logic Worksheet

1. Write the converse, the inverse, and the contrapositive of each statement and determine the truth of each new statement.

a. If each side of a triangle has a length of 10, then the triangle's perimeter is 30.

conv. If the triangle's perimeter is 30, then each side of the the triangle has a length of 10. (NOT TRUE)

invers If each side of a triangle is not 10, the ~~is~~ the triangle's perimeter is not 30. (~~T~~ NOT TRUE)

Contr If the triangle's perimeter is not 30, then each side of the triangle is not 10. (TRUE)

b. If an angle is acute, then it has a measure greater than 0 and less than 90.

Conv If an angle has a measure greater than Zero and less than 90 then the angle is acute. (T)

invers If the angle is not acute, then the angle is not greater than 0 and less than 90°c (true)

contra. If the angle is not greater than Zero and less than 90° then the ∠ ~~is not~~ acute (T)

2. If a conditional statement and its converse are both true, the statement is said to be *biconditional*. Which of these statements are biconditional?

(a) If two angles are congruent, then they have the same measure.

b. If two angles are straight angles, then they are congruent.

3. Rewrite the following statement in conditional form and write its converse, inverse, and contrapositive: "A square is a quadrilateral with four congruent sides."

If a figure is a square then it is a quadrilateral with 4 congruent sides

converse - If a figure is a quadrilateral with 4 $\cong$ sides, then it is a square (Not true what about a rhombus)

inverse - If a figure is not a square then it is not a quadrilateral w/ 4 $\cong$ sides (Not true)

contrapositive If a figue is not a quadrilateral w 4 $\cong$ sides, then it is not a square. (True)

4. What conclusion can be drawn from the following?

① $\sim c \Rightarrow \sim f$ ② $g \Rightarrow b$ ③ $p \Rightarrow f$ ④ $c \Rightarrow \sim b$

Write contrapositives

$f \Rightarrow c$

$\sim b \Rightarrow \sim g$

$\sim f \Rightarrow \sim p$

$b \Rightarrow \sim c$

① $\sim c \Rightarrow \sim f$

$\sim f \Rightarrow \sim p$

$\therefore \sim c \Rightarrow \sim p$

write contrapositive

$p \Rightarrow c$

④ $c \Rightarrow \sim b$

$\sim b \Rightarrow \sim g$

contrapositive $g \Rightarrow b$

② $g \Rightarrow b$

$b \Rightarrow \sim c$

$\sim c \Rightarrow \sim f$

$\sim f \Rightarrow \sim p$

$\therefore g \Rightarrow \sim p$

contrapositive

$p \Rightarrow \sim g$

③ $p \Rightarrow f$

$f \Rightarrow c$

$c \Rightarrow \sim b$

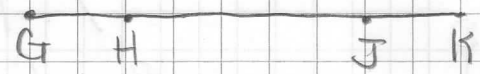
$\sim b \Rightarrow \sim g$

$\therefore p \Rightarrow \sim g$

Honors Geometry HW Assigned 9/8/17
Due 9/11/17

page 87-88

(6)



Given: $\overline{GH} \cong \overline{JK}$

$\overline{GH} = x+10$ $\overline{HJ} = 8$ $\overline{JK} = 2x-4$

Find $\overline{GJ}$

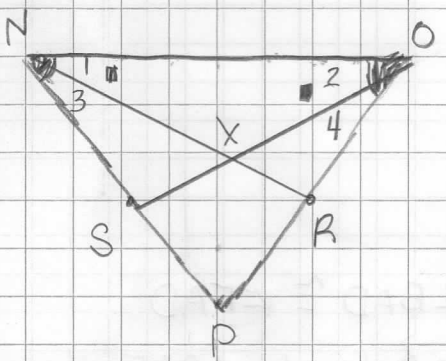
$x+10 = 2x-4$
$x-x+10 = 2x-x-4$
$10 = x-4$
$10+4 = x-4+4$
$14 = x$

$GH = (14)+10$
$= 24$

$\overline{GJ} = \overline{GH} + \overline{HJ}$

$= 24+8+24$
$= \boxed{32}$

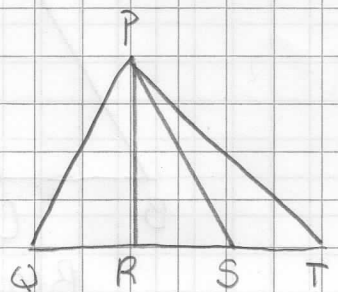
(7) Given: $\angle PNO \cong \angle PON$
$\angle 1 \cong \angle 2$



Conclusion? $\angle 3 \cong \angle 4$

Why $\angle 3 = \angle PNO - \angle 1$
$\angle 4 = \angle PON - \angle 2$

(9)



Given: $\overline{QR} \cong \overline{ST}$ $QS = 5x+17$

$RT = 10-2x$

$RS = 3$

Find: QS & QT

$ST = 10-2x-3 = 7-2x$
$QR = 5x+17-3 = 5x+14$

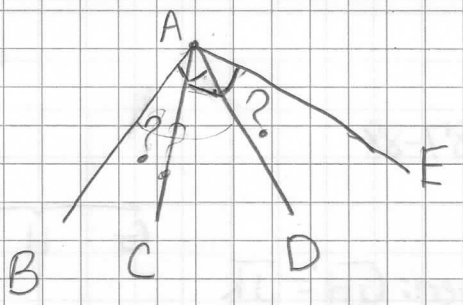
$7-2x = 5x+14$
$7-2x+2x = 5x+2x+14$
$7 = 7x+14$
$7-14 = 7x+14-14$
$-7 = 7x$ $x = -1$

$QS = 5(-1)+17 = -5+17 = \boxed{12}$

$RT = 10-(2)(-1) = 10+2 = \boxed{12}$

(10) Given: $\angle BAD$ is a rt $\angle$
$\overline{CA} \perp \overline{AE}$

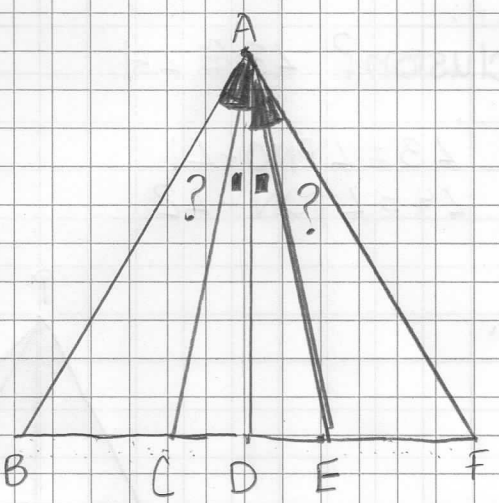
Prove: $\angle BAC \cong \angle EAD$



Statement	Reason
$\angle BAD$ is a rt $\angle$	Given
$\angle CAE$ is a rt $\angle$	def of $\perp$
$\angle BAD \cong \angle CAE$	all rt $\angle$s are $\cong$
$\angle CAD = \angle CAD$	reflexive prop of $=$
$\angle BAD - \angle CAD \cong \angle CAE - \angle CAD$	CN 3
$\therefore \angle BAC \cong \angle EAD$	

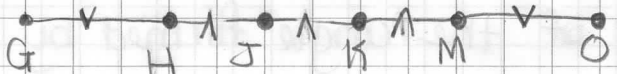
(11) Given $\angle BAD \cong \angle FAD$
$\overrightarrow{AD}$ bisects $\angle CAE$

Prove: $\angle BAC \cong \angle FAE$



Statement	Reason
$\angle BAD \cong \angle FAD$	Given
$\angle CAD \cong \angle DAE$	Def of $\angle$ bisector
$\angle BAD - \angle CAD \cong \angle FAD - \angle DAE$	CN 3
$\therefore \angle BAC \cong \therefore FAE$	

(12)



Given: J & K are trisection points of $\overline{HM}$

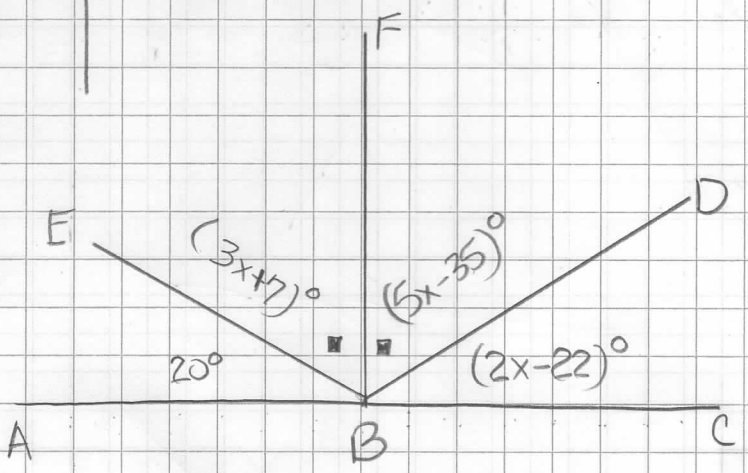
$\overline{GH} \cong \overline{MO}$

Prove $\overline{GJ} \cong \overline{KO}$

Statement	Reason
J & K are trisection Points of $\overline{HM}$	Given
$\overline{HJ} \cong \overline{JK} \cong \overline{KM}$	Def of trisection
$\overline{GH} \cong \overline{MO}$	Given
$\overline{GH} + \overline{HJ} \cong \overline{MO} + \overline{KM}$	CN2
$\therefore \overline{GJ} \cong \overline{KO}$	

(17)

Given:
$\overrightarrow{BF}$ bisects $\angle DBE$



So $3x+7 = 5x-35$

$3x-3x+7 = 5x-3x-35$

$+7 = 2x-35$

$+7+35 = 2x-35+35$

$42 = 2x$

$\frac{42}{2} = \frac{2x}{2}$

$21 = x$

(a) Does $\overrightarrow{BF}$ bisect $\angle CBA$?

does $2x-22=20$

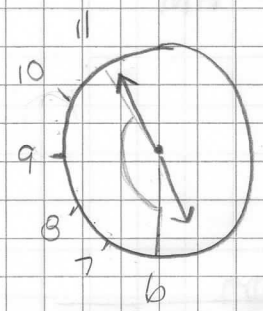
$2(21)-22 =$ yes

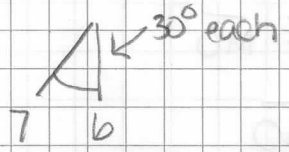
$42-22 = 20°$

(b) What did you discover about $\angle ABC$ and $\overrightarrow{BF}$ $\angle ABC = 180°$

$\overrightarrow{BF} \perp \overrightarrow{AC}$

(19) Find the measure of the angle formed by the hands of a clock at 5:55.





between 6 & 11 = $150°$

extra degree between 6 and small hand $= 30° - \left(\frac{30}{1}\right)\left(\frac{55}{60}\right)^{\circ}$

$= 30° - \frac{55°}{2}$

$= \frac{60}{2} - \frac{55}{2} = \frac{5}{2} = 2\frac{1}{2}$

$150° + 2.5° =$ **$152.5°$ or $150° 30'$**