Formal Geometry **Chapter 2 Worksheets** **Name**_____

Algebraic Proofs Worksheet
(SHOW ALL WORK ON YOUR OWN PAPER!)

For #1 – 3, complete each algebraic proof.

1) Given: $5(2x-4)+7=37$
Prove: $x=5$

2) Given: $\frac{2}{5}y-8=14$
Prove: $y=55$

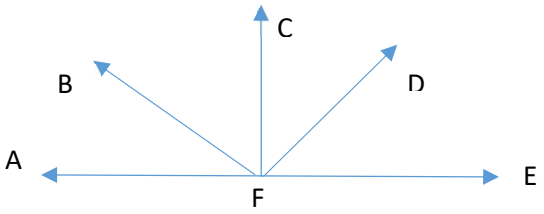
3) Given: $\frac{8-2x}{4}=32$
Prove: $x=-60$

4) (not a proof):
If $16+4x$ is 10 more than 14, what is the value of x?

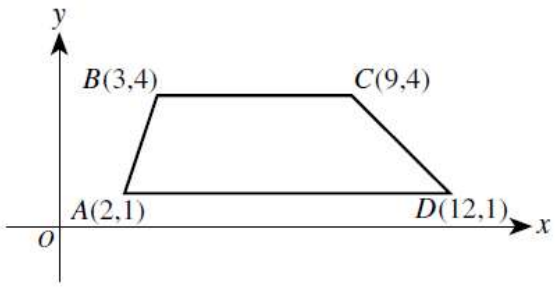
5) Given $f=cd^3, f=450,$ and $d=10,$ what is c? Exact answers only (no decimals.)

6) In the diagram, $m\angle CFE=90$ and $\angle AFB\cong\angle CFD$. Which of the following conclusions does not have to be true?

A) $m\angle AFC=90$
B) $\overline{BF}$ bisects $\angle AFD$.
C) $m\angle CFD=m\angle AFB$
D) $\angle CFE$ is a right angle.



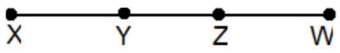
7) Trapezoid $ABCD$ is graphed in the standard (x,y) coordinate plane below.



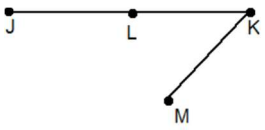
What is the slope of $\overline{CD}$?

A. -3
B. -1
C. 1
D. $\frac{5}{21}$
E. $\frac{3}{2}$

8) Given: Y is the midpoint of $\overline{XZ}$.
Z is the midpoint of $\overline{YW}$.
Prove: $\overline{XY}\cong\overline{ZW}$

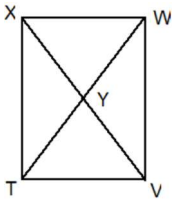


9) Given: L is the midpoint of $\overline{JK}$.
$\overline{MK}\cong\overline{JL}$
Prove: $\overline{LK}\cong\overline{MK}$



10) Given: ∠TXW is a right angle.
∠TVW is a right angle.

Prove: $\angle TXW\cong\angle TVW$



11. A pilot is flying an airplane on a straight path from Norfolk to Madison. On the trip, the pilot stops to refuel exactly halfway in between at Columbus and decides to program the autopilot for the rest of the trip. The pilot knows the coordinates for Norfolk are $(36.9, -76.3)$ and the coordinates for Columbus are $(39.9, -83.0)$. What coordinates should the pilot use for Madison?

A. $(-1.5, -3.3)$ **C.** $(33.9, -69.6)$

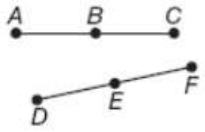
B. $(61.5, 56.6)$ **D.** $(42.9, -89.7)$

12) Given : $\overline{AB} \cong \overline{DE}$

B is the midpoint of $\overline{AC}$

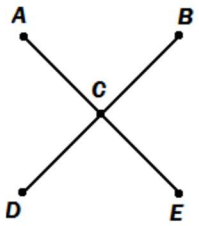
E is the midpoint of $\overline{DF}$

Prove : $\overline{BC} \cong \overline{EF}$



13) Given: **C is the midpoint of $\overline{AE}$**
C is the midpoint of $\overline{BD}$
$\overline{BC} \cong \overline{EC}$

Prove: **$\overline{AC} \cong \overline{DC}$**



Selected Answers:

1) Given: $5(2x-4)+7=37$ Prove: $x=5$		2) Given: $\frac{2}{5}y-8=14$ Prove: $y=55$	
$5(2x-4)+7=37$ $10x-20+7=37$ $10x-13=37$ $10x=50$ $x=5$	Given Distributive Prop Combine Like Terms Addition Prop = Division Prop =	$\frac{2}{5}y-8=14$ $\frac{2}{5}y=22$ $y=55$	Given Addition Prop = Multi Prop =

3) see proof in class 4) 2 5) $\frac{9}{20}$

6) B 7) B

8) Given: Y is the midpoint of $\overline{XZ}$.
Z is the midpoint of $\overline{YW}$.

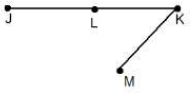
Prove: $\overline{XY} \cong \overline{ZW}$

1) Y is the midpoint of $\overline{XZ}$. Z is the midpoint of $\overline{YW}$.	1) Given
2) $\overline{XY} \cong \overline{YZ}$ and $\overline{YZ} \cong \overline{ZW}$	2) If a point is a midpoint, then it creates two congruent segments.
3) $\overline{XY} \cong \overline{ZW}$	3) Transitive

10) see proof in class

9) Given: L is the midpoint of $\overline{JK}$.
$\overline{MK} \cong \overline{JL}$

Prove: $\overline{LK} \cong MK$



1) L is the midpoint of $\overline{JK}$. $\overline{MK} \cong \overline{JL}$	1) Given
2) $\overline{LK} \cong \overline{JL}$	2) If a point is a midpoint, then it creates two congruent segments.
3) $\overline{LK} \cong MK$	3) Transitive

11) D 12) see proof in class

13) see proof in class