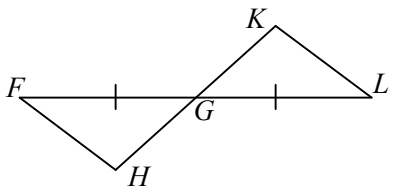
Identifying Triangle Congruency

Name: _____
Date: _____

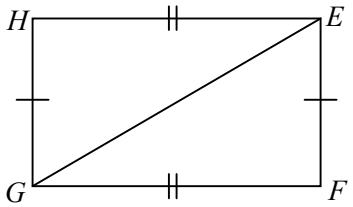
For each example, choose the proper triangle congruency postulate theorem to use to prove triangles congruent.

1.

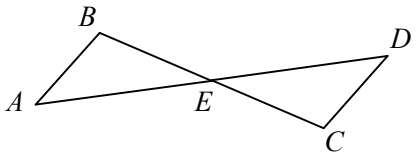


$\overline{FH} \parallel \overline{KL}$

2.



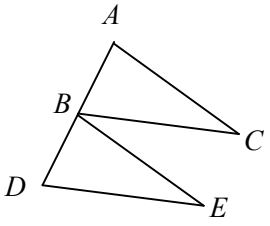
3.



$\overline{AE} \cong \overline{DE}$

$\overline{BE} \cong \overline{CE}$

4.

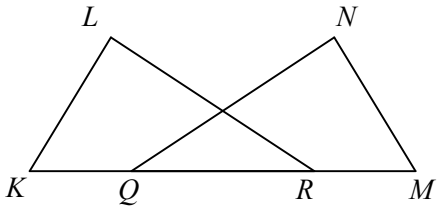


B is the midpoint of $\overline{AD}$

$\overline{BC} \parallel \overline{DE}$

$\angle C \cong \angle E$

5.

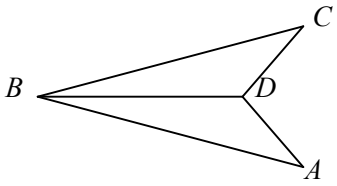


$\angle MQN \cong \angle KRL$

$\overline{KQ} \cong \overline{MR}$

$\angle K \cong \angle M$

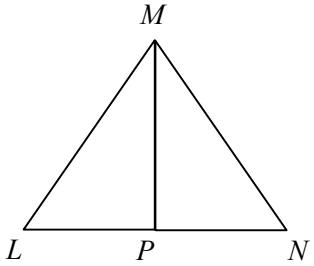
6.



$\angle ABD \cong \angle CBD$

$\angle A \cong \angle C$

7.



ΔLMP and ΔNMP are right triangles

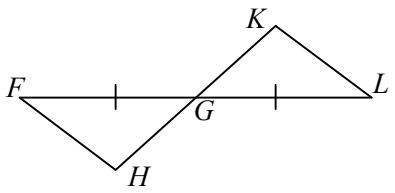
P is the midpoint of $\overline{LN}$

Identifying Triangle Congruency

Name: _ANSWER KEY____
Date: _____

For each example, choose the proper triangle congruency postulate theorem to use to prove triangles congruent.

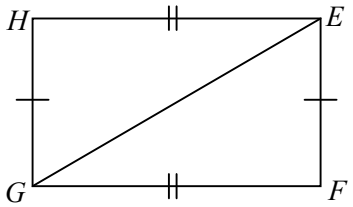
1.



$\overline{FH} \parallel \overline{KL}$

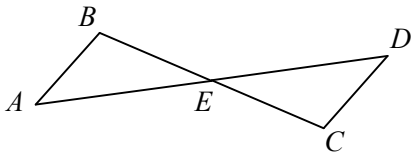
ANSWER: ASA

2.



ANSWER: SSS

3.

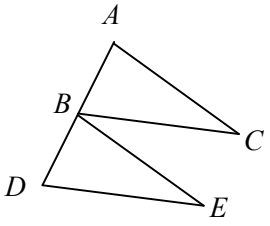


$\overline{AE} \cong \overline{DE}$

$\overline{BE} \cong \overline{CE}$

ANSWER: SAS

4.



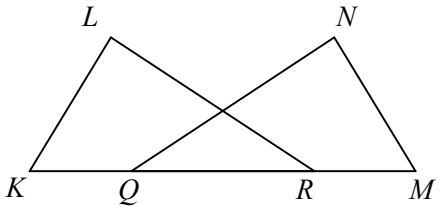
B is the midpoint of $\overline{AD}$

$\overline{BC} \parallel \overline{DE}$

$\angle C \cong \angle E$

ANSWER: AAS

5.



$\angle MQN \cong \angle KRL$

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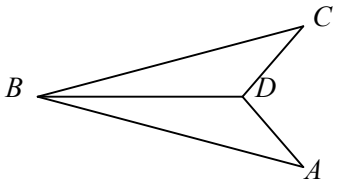
$\angle K \cong \angle M$

ANSWER: ASA

6.

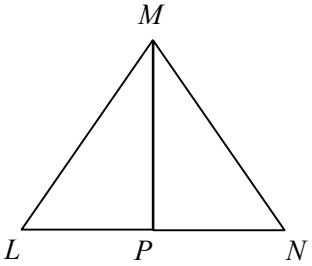


$\angle ABD \cong \angle CBD$

$\angle A \cong \angle C$

ANSWER: AAS

7.



ΔLMP and ΔNMP are right triangles

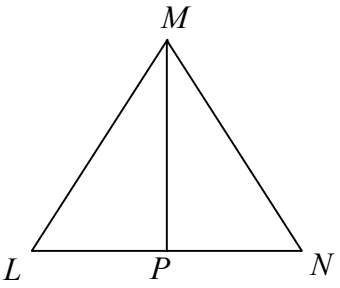
P is the midpoint of $\overline{LN}$

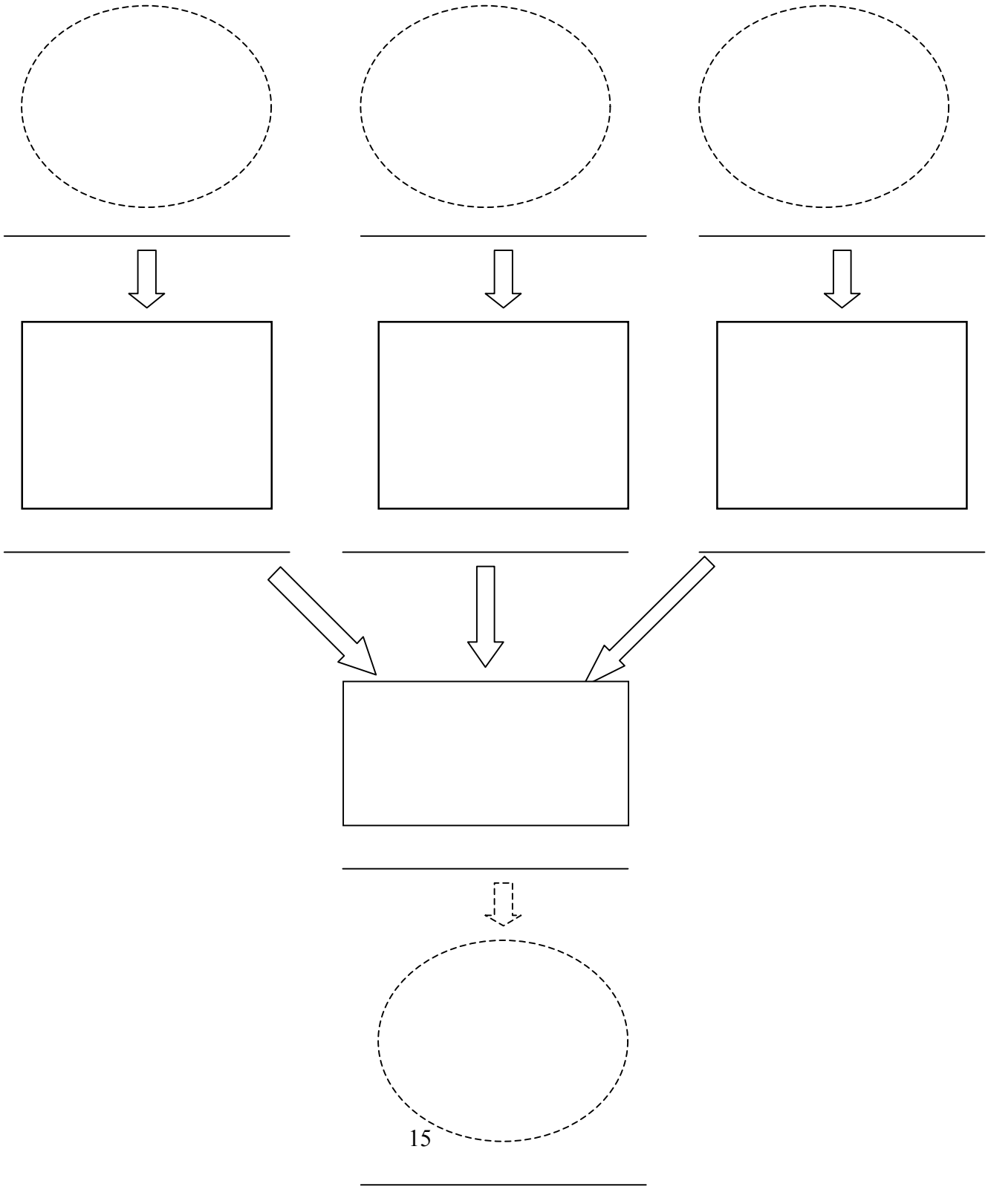
ANSWER: HL or SAS

Proof #2

Given: $\angle MPL$ and $\angle MPN$ are right angles
$\overline{LP} \cong \overline{NP}$

Prove: $\triangle LMP \cong \triangle NMP$

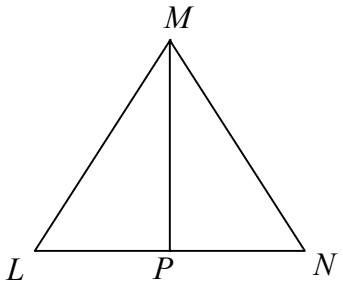


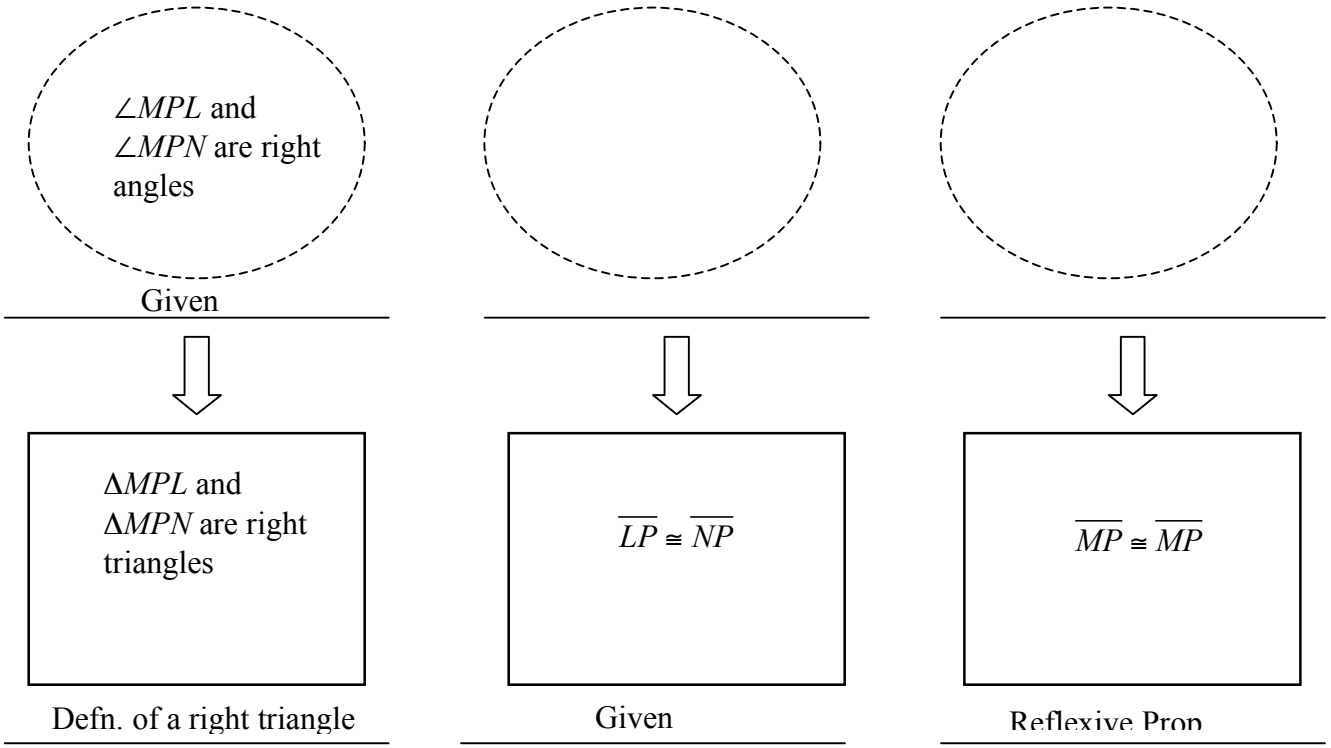


Proof #2 ANSWER KEY

Given: $\angle MPL$ and $\angle MPN$ are right angles
$\overline{LP} \cong \overline{NP}$

Prove: $\triangle LMP \cong \triangle NMP$



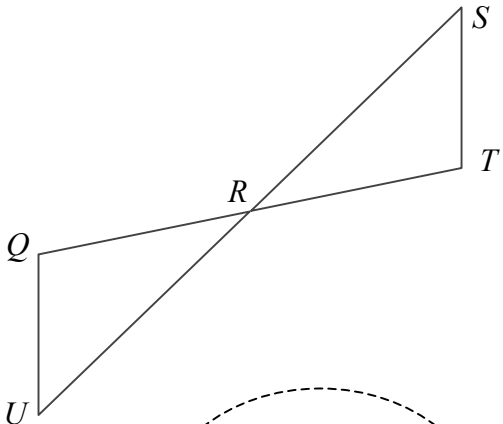


Proof #3

Proof #4

Given: $\overline{QU} \,//\, \overline{TS}$, R is the midpoint of $\overline{QT}$

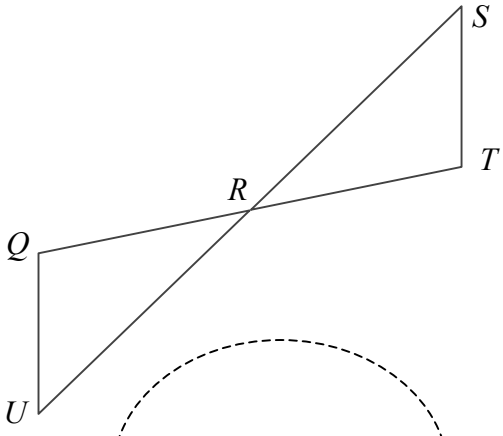
Prove: $\Delta RQU \cong \Delta RTS$



Proof #4 ANSWER KEY

Given: $\overline{QU} \parallel \overline{TS}$, R is the midpoint of $\overline{QT}$

Prove: $\Delta RQU \cong \Delta RTS$



$\overline{QU} \parallel \overline{TS}$	R is the midpoint of QT	
Given	Given	
$\angle Q \cong \angle T$	$\overline{QR} \cong \overline{TR}$	$\angle QRU \cong \angle TRS$
Alternate Interior Angles	Definition of a Midpoint	Vertical Angles

$\triangle RQU \cong \triangle RTS$

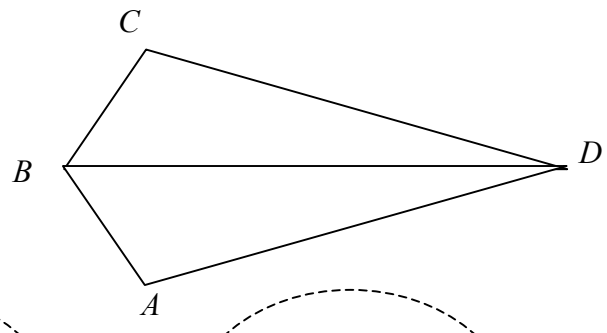
ASA

_____

Proof #7

Given: $\angle CBD \cong \angle ABD$
$\angle C \cong \angle A$

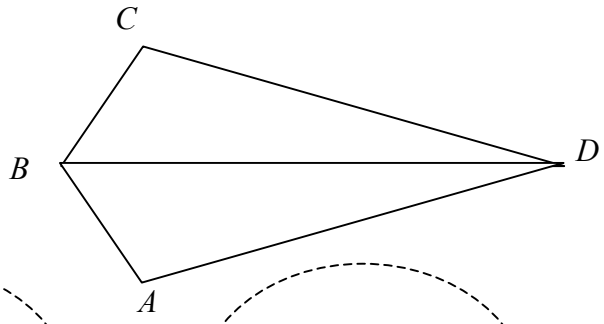
Prove: $\angle CDB \cong \angle ADB$ using triangle congruence



Proof #7 ANSWER KEY

Given: $\angle CBD \cong \angle ABD$
$\angle C \cong \angle A$

Prove: $\angle CDB \cong \angle ADB$ using triangle congruence



$\angle CBD \cong \angle ABD$	$\angle C \cong \angle A$	$\overline{BD} \cong \overline{BD}$
Given	Given	Reflexive Property

$\triangle CBD \cong \triangle ABD$

AAS

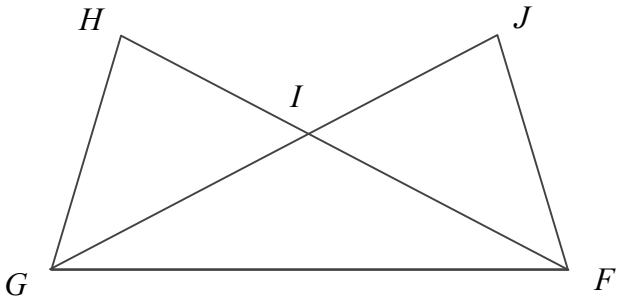
$\angle CDB \cong \angle ADB$

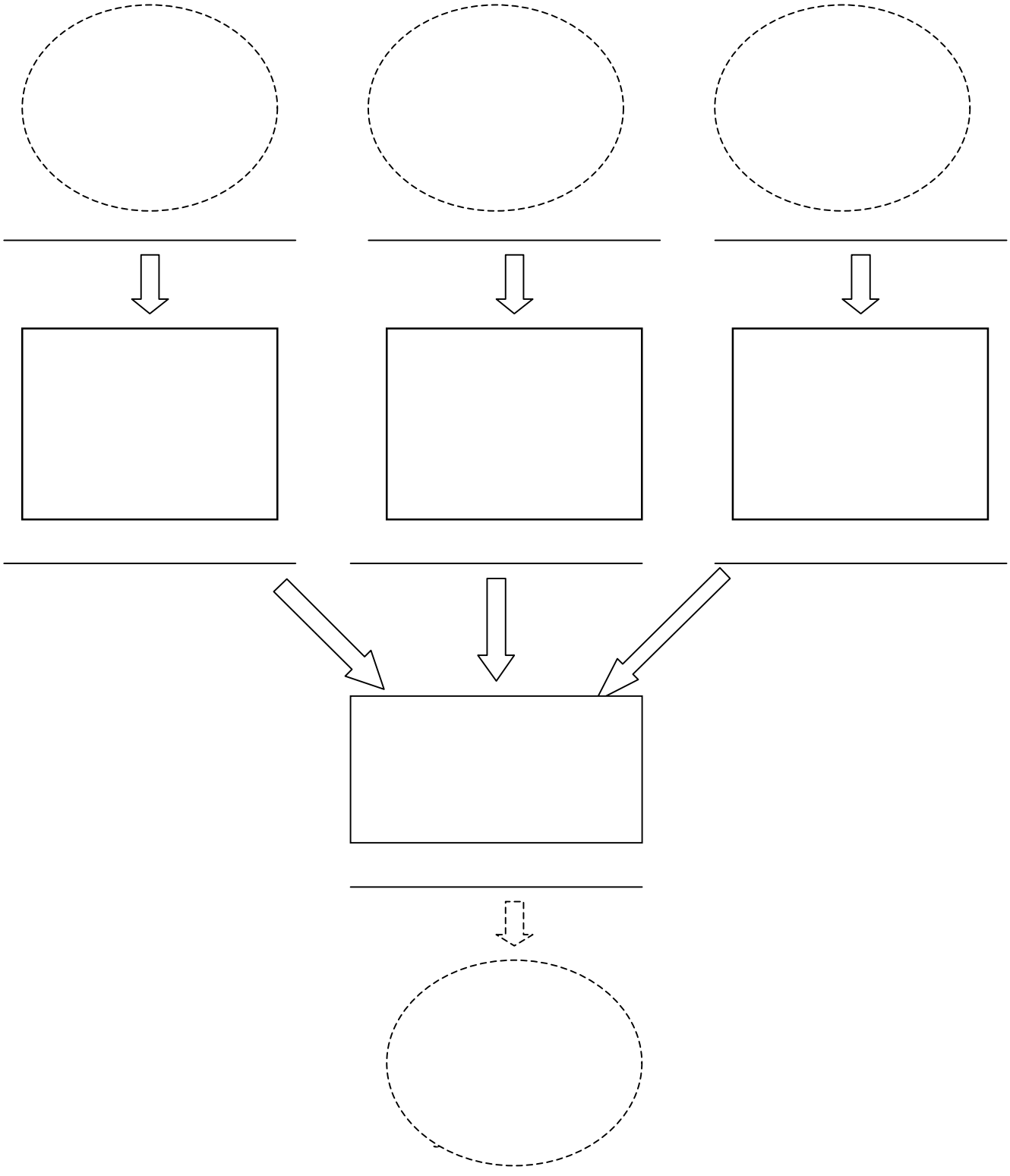
CPCTC

Proof #8

Given: $\overline{HG} \cong \overline{JF}$
$\overline{HF} \cong \overline{JG}$

Prove: $\angle JGF \cong \angle HFG$



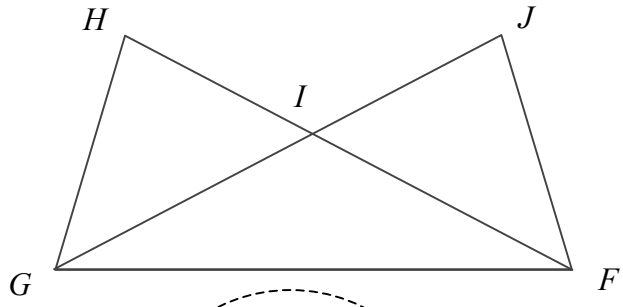


Proof #8 ANSWER KEY

Given: $\overline{HG} \cong \overline{JF}$

$\overline{HF} \cong \overline{JG}$

Prove: $\angle JGF \cong \angle HFG$



$\overline{HG} \cong \overline{JF}$	$\overline{HF} \cong \overline{JG}$	$\overline{GF} \cong \overline{GF}$
Given	Given	Reflexive Property

$\triangle HGF \cong \triangle JFG$

SSS

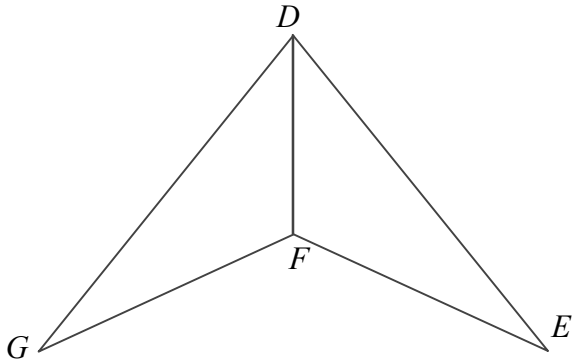
$\angle JGF \cong \angle HFG$

CPCTC

Proof #10

Given: $\overline{DF}$ bisects ∠GDE
$\overline{DG} \cong \overline{DE}$

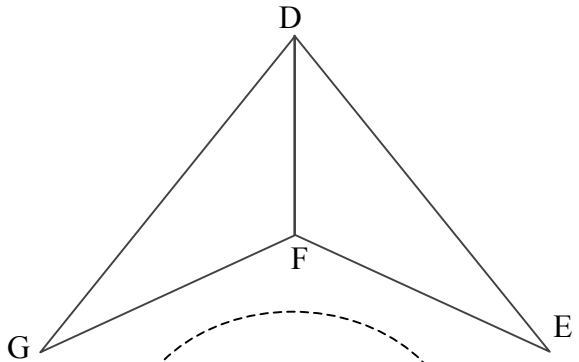
Prove: $\angle G \cong \angle E$



Proof #10 ANSWER KEY

Given: $\overline{DF}$ bisects $\angle GDE$
$\overline{DG} \cong \overline{DE}$

Prove: $\angle G \cong \angle E$



$\overline{DF}$ bisects $\angle GDE$		
Given		
$\angle GDF \cong \angle EDF$	$\overline{DG} \cong \overline{DE}$	$\overline{DF} \cong \overline{DF}$
Defn. of Angle Bisector	Given	Reflexive Property

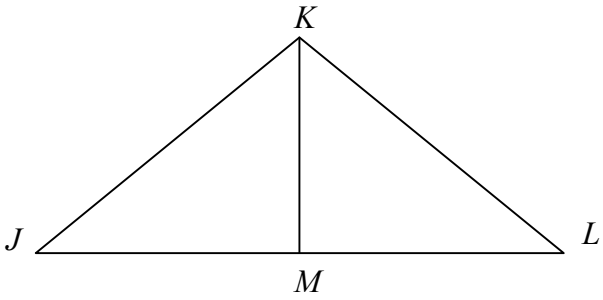
$\triangle DGF \cong \triangle DEF$

SAS

$\angle G \cong \angle E$

CPCTC

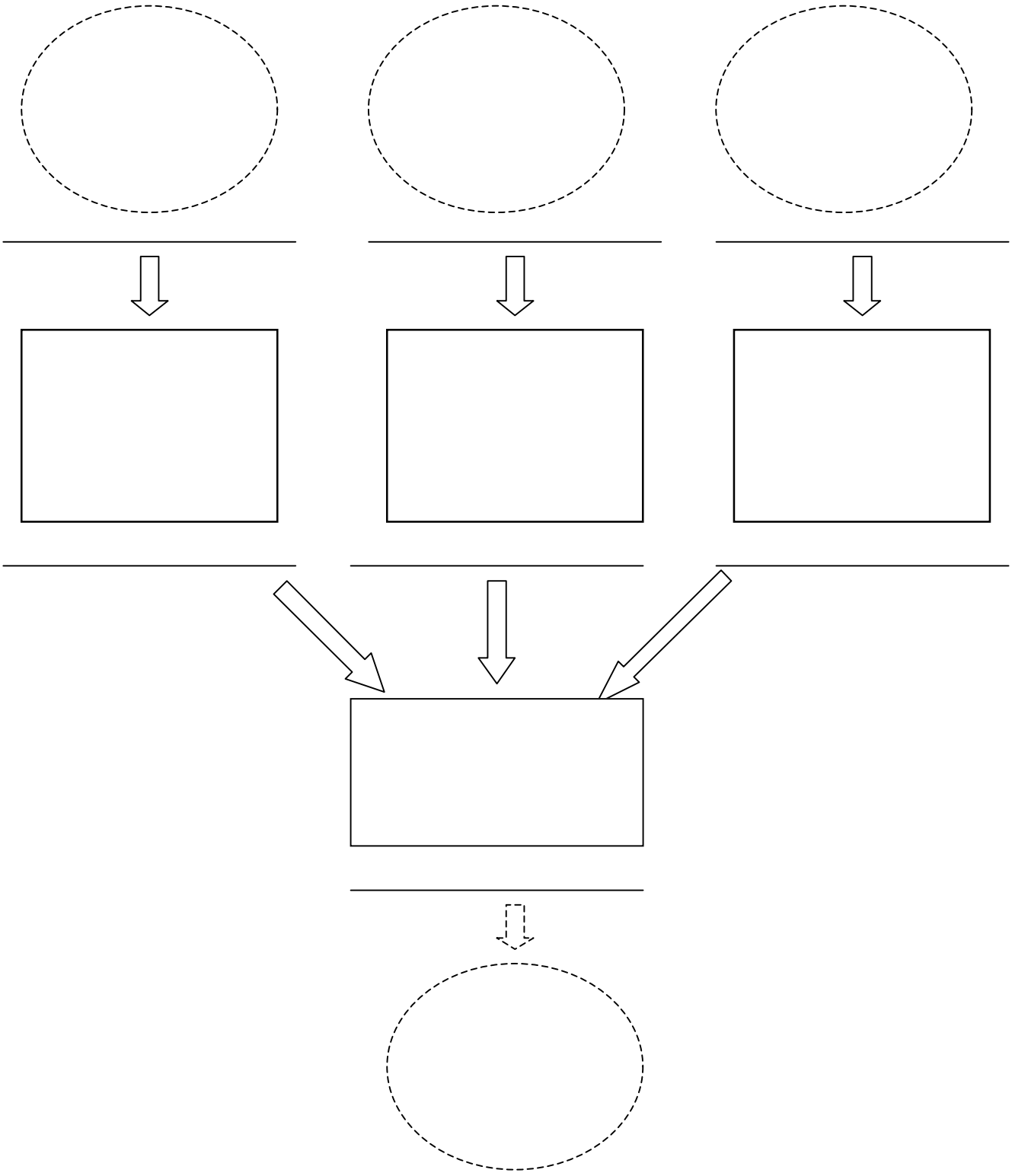
Proof #11



Given: $\triangle JKL$ is an isosceles triangle

$\overline{KM}$ is an angle bisector

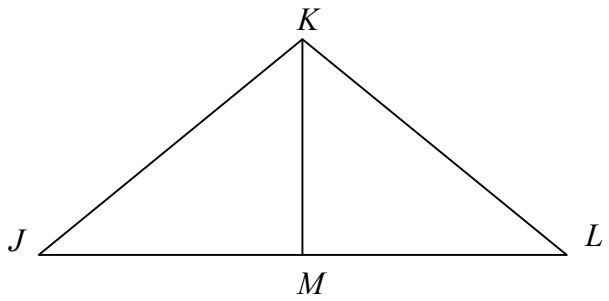
Prove: $\overline{JM} \cong \overline{LM}$



Proof #11 ANSWER KEY

Given: $\triangle JKL$ is an isosceles triangle
$\overline{KM}$ is an angle bisector

Prove: $\overline{JM} \cong \overline{LM}$



$\triangle JKL$ is an isosceles triangle

Given

$\overline{KM}$ is an angle bisector

Given

A: $\angle J \cong \angle L$

Or

B: $\overline{JK} \cong \overline{LK}$

A: Isos. Triangle Theorem
Or
B: Defin. Isos. Triangle

$\angle JKM \cong \angle LKM$

Defn. Angle Bisector

$\overline{KM} \cong \overline{KM}$

Reflexive Property

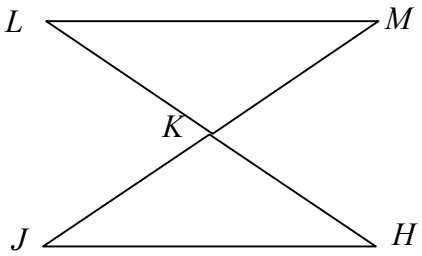
$\triangle JKM \cong \triangle LKM$

A: AAS or B: SAS

$\overline{JM} \cong \overline{LM}$

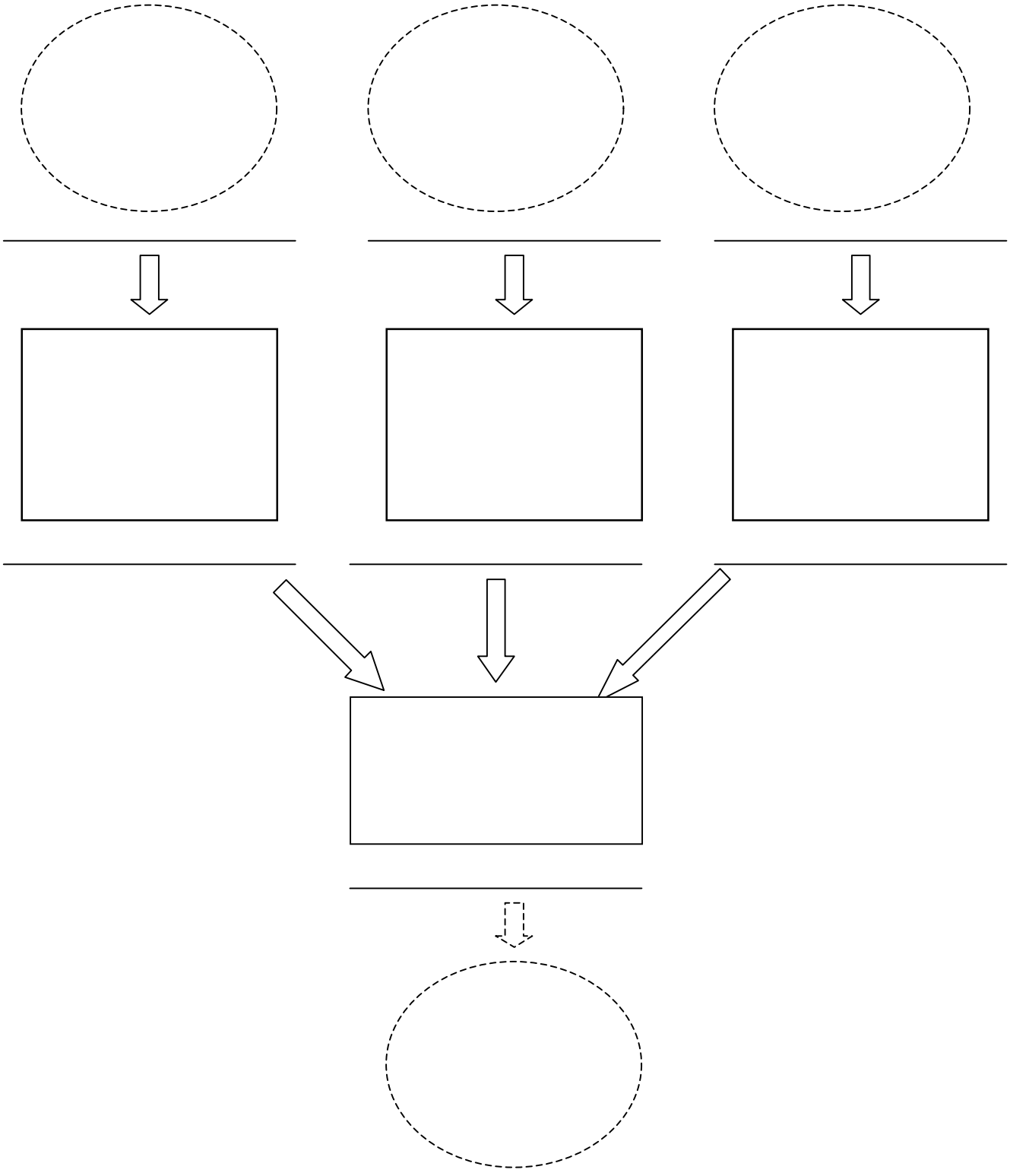
CPCTC

Proof #12

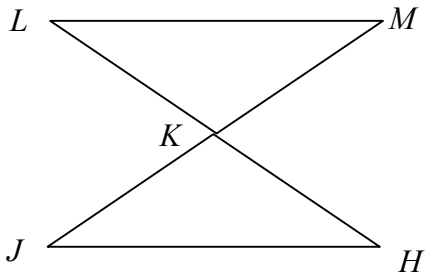


Given: $\overline{LH}$ and $\overline{JM}$ bisect each other at K

Prove: $\overline{HJ} \cong \overline{ML}$



Proof #12 ANSWER KEY



Given: $\overline{LH}$ and $\overline{JM}$ bisect each other at K

Prove: $\overline{HJ} \cong \overline{ML}$

$\overline{LH}$ and $\overline{JM}$ bisect each other at K	$\overline{LH}$ and $\overline{JM}$ bisect each other at K	
$\overline{LK} \cong \overline{HK}$	$\overline{MK} \cong \overline{JK}$	$\angle LKM \cong \angle HKJ$
Defn. of a bisector	Defn. of a bisector	Vertical Angles

$\triangle LKM \cong \triangle HKJ$

SAS

$\overline{HJ} \cong \overline{ML}$

CPCTC