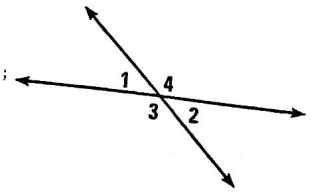
HCCM3
U1: Modeling with Linear Functions
WS 5

15

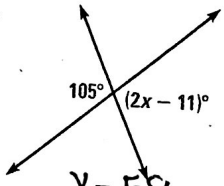
I.

EVALUATING STATEMENTS Decide whether the statement is *always, sometimes,* or *never* true.

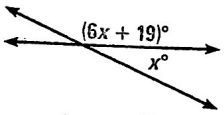
14. If $m\angle 1 = 40°$, then $m\angle 2 = 140°$. N
15. If $m\angle 4 = 130°$, then $m\angle 2 = 50°$. A
16. $\angle 1$ and $\angle 4$ are congruent. S
17. $m\angle 2 + m\angle 3 = m\angle 1 + m\angle 4$ A
18. $\angle 2 \cong \angle 1$ A
19. $m\angle 2 = 90° - m\angle 3$ N



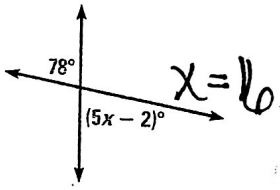
USING ALGEBRA Find the value(s) of the variable(s).

28.


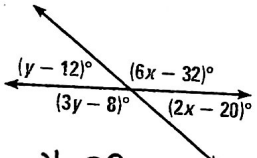
x=58

29.


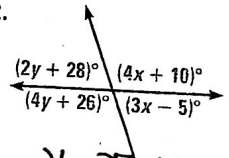
x=23

30.


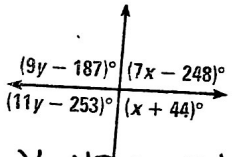
x=16

31.


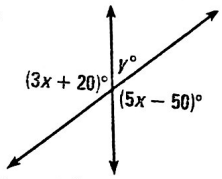
x=29, y=50

32.


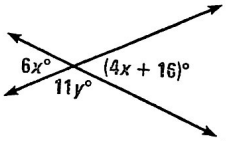
x=25, y=21

33.


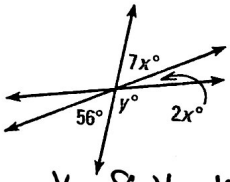
x=48, y=31

34.


x=35, y=55

35.


x=8, y=12

36.


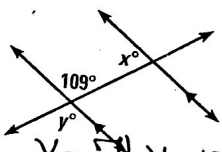
x=8, y=108

II.

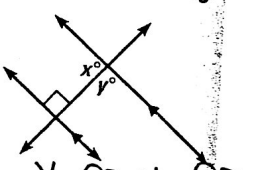
USING PARALLEL LINES Find the values of x and y. Explain your reasoning.
11–16. See margin.

11.

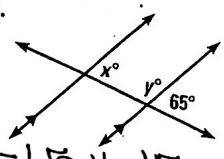

x=113, y=113

12.


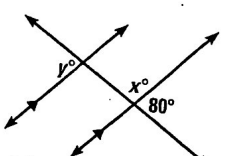
x=71, y=109

13.


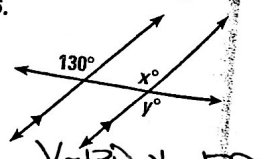
x=90, y=90

14.


x=65, y=115

15.


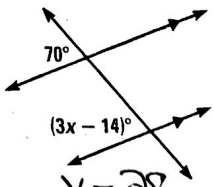
x=100, y=80

16.


x=130, y=130

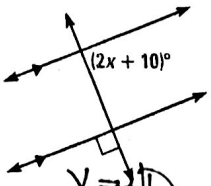
USING ALGEBRA Find the value of x.

21.



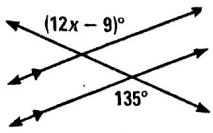
$x = 28$

22.



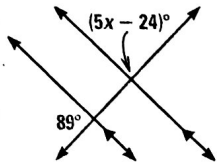
$x = 40$

23.



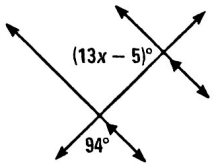
$x = 12$

24.



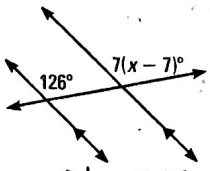
$x = 23$

25.



$x = 7$

26.



$x = 25$

Lesson 1

I. 14) Never ~ vertical ∠'s are ≅

15) Always ~ linear pair ∠'s are supplementary

16) Sometimes ~ linear pair ∠'s could be ≅ if both were 90°

17) Always ~ linear pair ∠'s are supplementary ∴ sum is 180°

18) Always ~ vertical ∠'s are ≅

19) Never ~ linear pair ∠'s are supplementary ∴ $m\angle 2 = 180° - m\angle 3$

28) Vertical ∠'s ≅

$105 = 2x - 11$

$116 = 2x$

$58 = x$

29) linear pair supple.

$6x + 19 + x = 180$

$7x = 161$

$x = 23$

30) Vertical ∠'s ≅

$78 = 5x - 2$

$80 = 5x$

$16 = x$

31) linear pair supple.

$6x - 32 + 2x - 20 = 180$

$8x - 52 = 180$

$8x = 232$

$x = 29$

$y - 12 + 3y - 8 = 180$

$4y - 20 = 180$

$4y = 200$

$y = 50$

32) linear pair supple.

$4x + 10 + 2x - 5 = 180$

$7x + 5 = 180$

$7x = 175$

$x = 25$

$2y + 28 + 4y + 26 = 180$

$6y + 54 = 180$

$6y = 126$

$y = 21$

33) linear pair supple.

$7x - 248 + x + 44 = 180$

$8x - 204 = 180$

$8x = 384$

$x = 48$

$9y - 187 + 11y - 253 = 180$

$20y - 440 = 180$

$20y = 620$

$y = 31$

34) Vert ∠'s ≅

$3x + 20 = 5x - 50$

$70 = 2x$

$35 = x \rightarrow$

linear pair supple

$3x + 20 + y = 180$

$105 + 20 + y = 180$

$125 + y = 180$

$y = 55$

35) Vertical ∠'s ≅

$6x = 4x + 16$

$2x = 16$

$x = 8 \rightarrow$

linear pair supple.

$6x + 11y = 180$

$48 + 11y = 180$

$11y = 132$

$y = 12$

36) Vertical ∠'s ≅

$56 = 7x$

$8 = x$

$\rightarrow$

Adjacent ∠'s that form a straight line add up to 180°

$7x + 2x + y = 180$

$72 + y = 180$

$y = 108$

II 11) Linear pr. supple. $67+X=180$, $X=113$ → Alt. ext. ∠s ≅: $X=Y$, $113=Y$

12) Vert. ∠s ≅: $Y=109$ → Same side int. ∠s supple. $X+109=180$, $X=71$

13) Same side int. ∠s supple. $X+90=180$, $X=90$ → Alt. int. ∠s ≅: $Y=90$

14) Linear pr. supple. $Y+65=180$, $Y=115$ → same side int. ∠s supple. $X+Y=180$, $X+115=180$, $X=65$

15) Linear pr. supple. $X+80=180$, $X=100$ → Alt. ext. ∠s ≅: $Y=80$

16) Corresponding ∠s ≅: $130=X$ → Vertical ∠s ≅: $X=Y$, $130=Y$

21) Corresponding ∠s ≅: $70=3X-14$, $84=3X$, $28=X$

22) Vertical ∠s ≅, then same side int. ∠s are supple. $2X+10+90=180$, $2X+100=180$, $2X=80$, $X=40$

23) Alt. ext. ∠s are ≅: $12X-9=135$, $12X=144$, $X=12$

24) Vertical ∠s ≅, then same side int. ∠s are supple. $5X-24+89=180$, $5X+65=180$, $5X=115$, $X=23$

25) Vertical ∠s ≅, then same side int. ∠s are supple. $13X-5+94=180$, $13X+89=180$, $13X=91$, $X=7$

26) Corresponding ∠s are ≅: $7(X-7)=126$, $7X-49=126$, $7X=175$, $X=25$

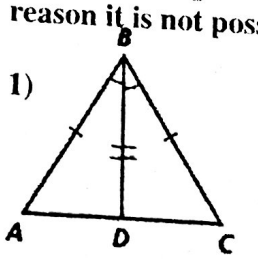
Geometry
Worksheet – Congruent Triangles

NAME Key

Date _____ **HR** _____

a) Determine whether the following triangles are congruent.
b) If they are, name the triangle congruence (pay attention to proper correspondence when naming the triangles) and then identify the Theorem or Postulate (SSS, SAS, ASA, AAS, HL) that supports your conclusion.
c) Be sure to show any additional congruence markings you used in your reasoning.
d) If the triangles cannot be proven congruent, state "not possible." Then given the reason it is not possible.

1)

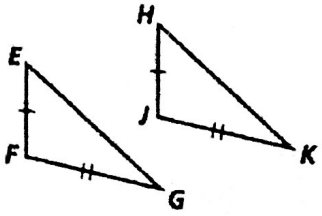


Congruence:

$\Delta ABD \cong \Delta$ CBD

Reason: SAS

2)



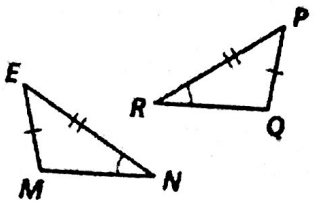
Congruence:

$\Delta EFG \cong \Delta$ _____

Not possible

Reason:

3)



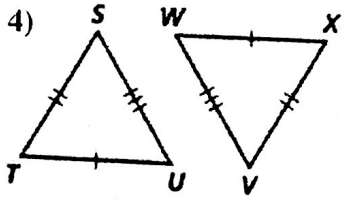
Congruence:

$\Delta EMN \cong \Delta$ _____

Not possible

Reason: SSA is not a way to prove Δ's $\cong$

4)

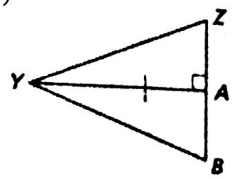


Congruence:

$\Delta STU \cong \Delta$ VXW

Reason: SSS

5)



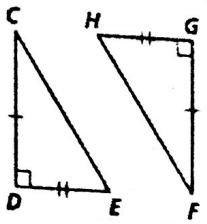
Congruence:

$\Delta YZA \cong \Delta$ _____

Not possible

Reason:

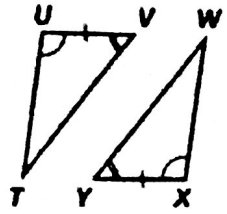
6)



Congruence:

$\Delta CDE \cong \Delta$ FGH

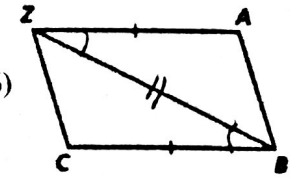
Reason: SAS

25) 

Congruence:

$\Delta TUV \cong \Delta$ WXY

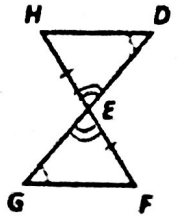
Reason: ASA

26) 

Congruence:

$\Delta BCZ \cong \Delta$ _____

Reason: Not possible

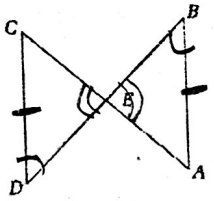
27) 

Congruence:

$\Delta EFG \cong \Delta$ EHD

Reason: AAS

Use the given information to mark the diagram appropriately. Name the triangle congruence (pay attention to proper correspondence when naming the triangles) and then identify the Theorem or Postulate (SSS, SAS, ASA, AAS, HL) that would be used to prove the triangles congruent. If the triangles cannot be proven congruent, state "not possible."

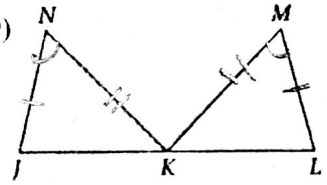
28) 

Given: $\overline{CD} \cong \overline{AB}$; $\angle B \cong \angle D$

Congruence:

$\Delta CDE \cong \Delta$ ABE

Reason: AAS

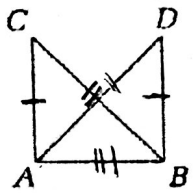
29) 

Given: $\overline{JN} \cong \overline{LM}$; $\overline{NK} \cong \overline{MK}$; $\angle N \cong \angle M$

Congruence:

$\Delta JKN \cong \Delta$ LKM

Reason: SAS

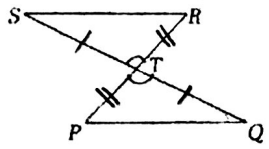
30) 

Given: $\overline{AC} \cong \overline{BD}$; $\overline{AD} \cong \overline{BC}$

Congruence:

$\Delta ABC \cong \Delta$ BAD

Reason: SSS

31) 

Given: $\overline{SQ}$ and $\overline{PR}$ bisect each other

Congruence:

$\Delta RST \cong \Delta$ PQT

Reason: SAS