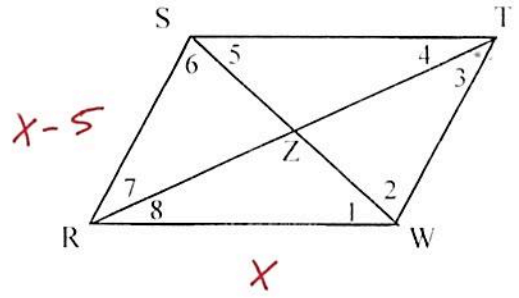
10.1 - 10. 2 Parallelograms
Pre-AP Geometry Homework

Name Key
Period _____ Date _____

Figures are not drawn to scale. Show all your work to receive full credit

RSTW is a parallelogram. Use the properties of parallelograms to complete each statement.

1. $\overline{RW} \parallel$ $\overline{TS}$
2. $\angle RST \cong \angle$ TWR
3. $\overline{SZ} \cong$ $\overline{WZ}$
4. $\angle 6 \cong \angle$ 2
5. $\angle STW$ is supplementary to $\angle$ TWR (or TSR)
6. The perimeter of parallelogram RSTW is 48cm.
   If RS is 5cm less than RW, find the lengths of ST and TW

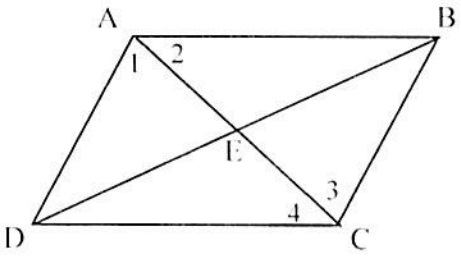


$X + X-5 + X + X-5 = 48$

ST = 14.5 cm
TW = 9.5 cm

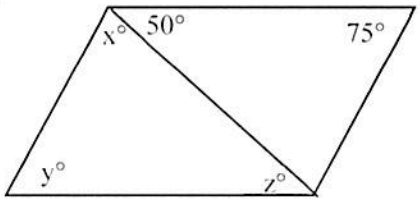
ABCD is a parallelogram. Use the properties of parallelograms to find the indicated length, angle measure, or value of x.

7. If $m\angle ADC = 83°$, then $m\angle DAB =$ 97°
8. If AD = 23, then CB = 23
9. If $m\angle 3 = 65°$ and $m\angle 4 = 48°$, then $m\angle 2 =$ 48°
10. If AE = 8x + 7 and CE = 11x – 8, then x = 5
11. If DC = 17 – 4x and AB = 3x – 11, then x = 4
12. If ED = 3x + 6 and DB = 48, then x = 6
13. If $m\angle DAB + m\angle BCD = 214°$ and $m\angle ABC = x$, then x = 73°



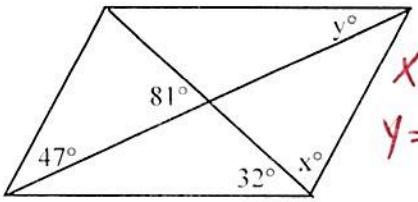
Find the values of the variables in each parallelogram.

14.



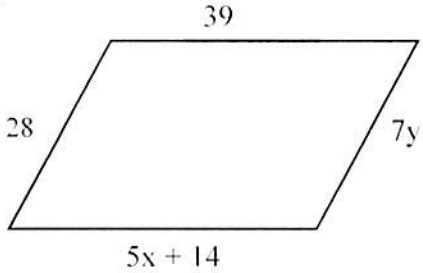
X = 55
Y = 75
Z = 50

15.



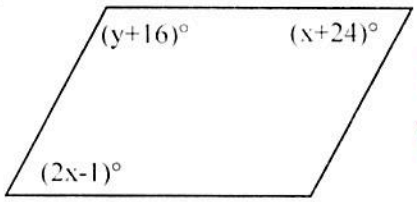
X = 52
Y = 49

16.



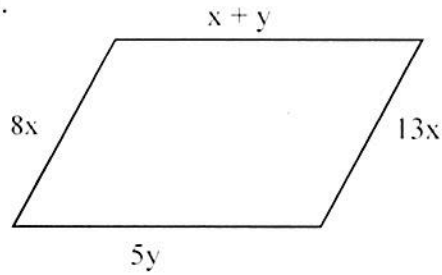
X = 5
Y = 4

17.



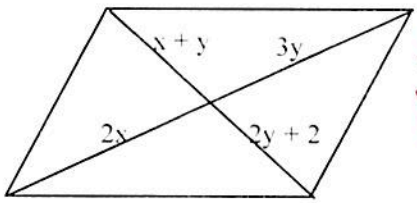
X = 25
Y = 115

18.



X = 12
Y = 3

19.

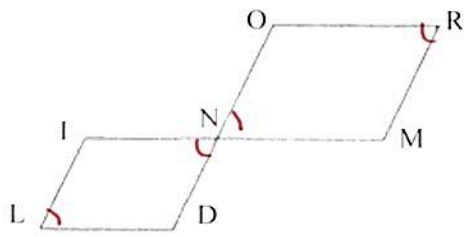


X = 6
Y = 4

TRY THIS OUT...

20. Given: ▱ LIND and ▱ NORM

Prove: ∠L ≅ ∠R



S	R
1. LIND is a ▱ NORM is a ▱	1. Given
2. $\angle R \cong \angle ONM$	2. Prop of ▱ - opp ∠'s ≅
3. $\angle L \cong \angle IND$	3. " " " "
4. $\angle IND \cong \angle ONM$	4. vert. ∠'s
5. $\angle L \cong \angle R$	5. Substitution

For 21-29, determine if the statement is true or false.

F 21. All quadrilaterals are parallelograms.

T 22. All parallelograms are quadrilaterals.

T 23. A square is a parallelogram.

F 24. A parallelogram with a right angle is a square.

T 25. All rectangles are parallelograms.

F 26. All rhombuses are squares.

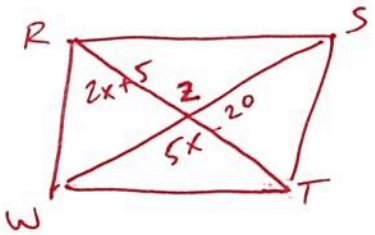
T 27. All squares are rectangles.

F 28. A parallelogram with four congruent sides is a square.

F 29. A parallelogram with perpendicular diagonals is a square.

For #30-37, draw and label a picture for each problem. Solve and show all work.

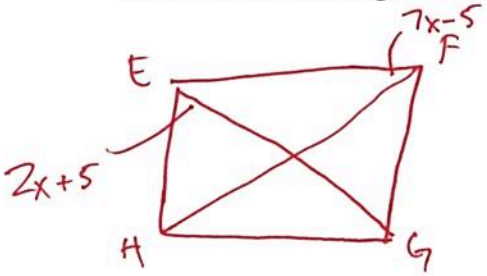
30. RSTW is a rectangle. The diagonals intersect at Z. If RZ = 2x + 5, and SW = 5x – 20, find x and ZW.



$X = 30$

$ZW = 65$

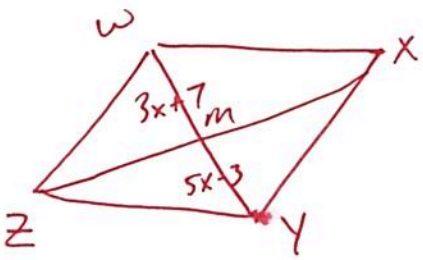
31. EFGH is a rectangle. If m∠HEG = (2x + 5)°, and m∠EFH = (7x - 5)°, find x and m∠FHG.



$X = 10$

$\angle FHG = 65°$

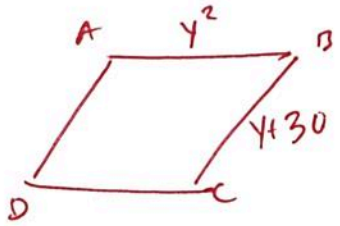
32. WXYZ is a rhombus with diagonals meeting at M. If WM = 3x + 7 and YM = 5x – 3, find WY.



$X = 5$

$WY = 44$

33. ABCD is a rhombus. AB = y^2 and BC = y + 30. Find CD.



$y^2 = y + 30$

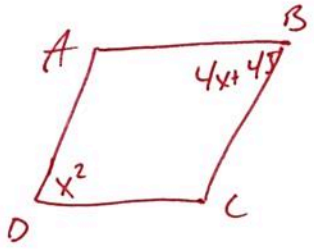
$y^2 - y - 30 = 0$

$(y-6)(y+5) = 0$

$y = 6, -5$

$CD = 36$ or 25

34. ABCD is a rhombus. If m∠ABC = (4x + 45)°, and m∠ADC = (x^2)°, find m∠ABC and m∠BDC.



$x^2 = 4x + 45$

$x^2 - 4x - 45 = 0$

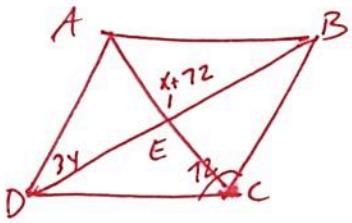
$(x-9)(x+5) = 0$

$x = 9, -5$

$\angle ABC = 25°$ or $81°$

$\angle BDC = 155°$ or $99°$

35. ABCD is a rhombus. The diagonals intersect at E. If m∠DEC = (x + 72)°, m∠ADB = (3y)°, and m∠DCB = 72°, find x, y, m∠ADB and m∠ABC.



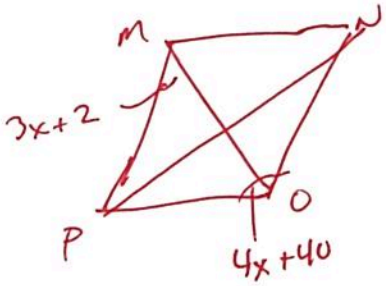
$x = 18$

$y = 18$

$\angle ADB = 54°$

$\angle ABC = 108°$

36. MNOP is a rhombus. If m∠OMP = (3x + 2)°, and m∠NOP = (4x + 40)°, find m∠MPO and m∠NMO.

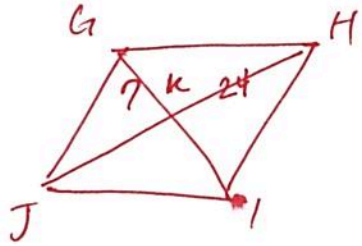


$x = 18$

$\angle MPO = 68°$

$\angle NMO = 56°$

37. GHIJ is a rhombus. The diagonals intersect at K. If GK = 7, and HK = 24, find HI.



$HI = 25$