

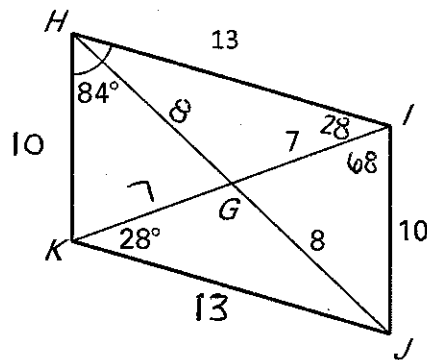
# Geometry

Name Key

## 8.2 & 8.3 Worksheet

Use the diagram of parallelogram HIKJ to find each indicated measure.

1.  $KJ = 13$
2.  $KH = 10$
3.  $GH = 8$
4.  $HJ = 16$
5.  $m\angle KIH = 28^\circ$
6.  $m\angle JIH = 96^\circ$
7.  $m\angle KJI = 84^\circ$
8.  $m\angle HKI = 68^\circ$
9. Perimeter of  $\triangle KHJ = 39$

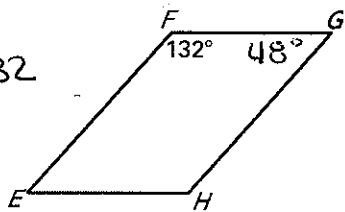


Consecutive  $\Delta$ s Supplementary

10. Find  $m\angle G$

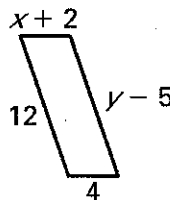
$$\Delta A = 180 - 132$$

$$\Delta G = 48^\circ$$



$$\Delta G = 48^\circ$$

11. Solve for the variables in the parallelogram.



$$x+2 = 4$$

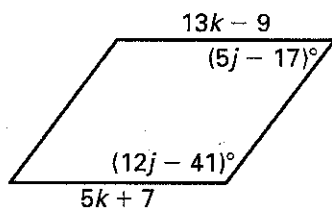
$$x = 2$$

$$y-5 = 12$$

$$y = 17$$

Opposite sides  $\equiv$

12. Solve for the variables in the parallelogram.



$$13k-9 = 5k+7$$

$$8k = 16$$

$$k = 2$$

$$5j-17+12j-41=180$$

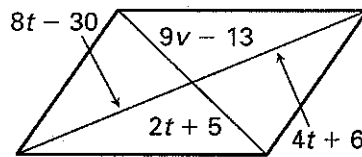
$$17j-58=180$$

$$17j = 238$$

$$j = 14$$

Consec.  $\Delta$ s sup. / opp. sides  $\equiv$

13. Solve for the variables in the parallelogram.



$$8t-30 = 4t+6$$

$$4t = 36$$

$$t = 9$$

$$9v-13 = 2t+5$$

$$9v-13 = 2(9)+5$$

$$9v-13 = 18+5$$

$$9v-13 = 23$$

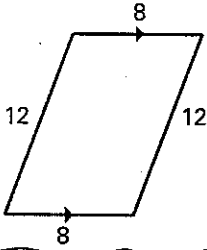
$$9v = 36$$

$$v = 4$$

Diagonal's bisect each other!

Is the quadrilateral a parallelogram? Explain why or why not.

14.

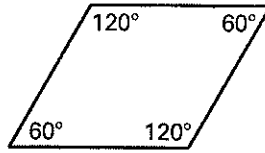


YES → one pair of sides both // and  $\cong$

OR

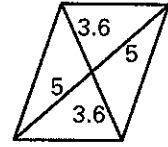
YES → both pairs opp. sides  $\cong$

15.



Yes... both pairs of opposite  $\Delta$ s  $\cong$

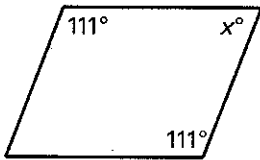
16.



Yes... diagonals bisect each other

For what value of  $x$  is the quadrilateral a parallelogram?

17.

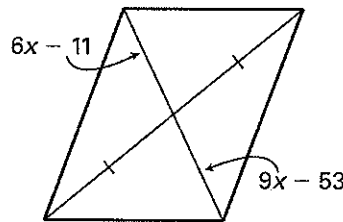


$$x + 111^\circ = 180^\circ$$

$$x = 69^\circ$$

\* Consec  $\Delta$ s supp.

18.



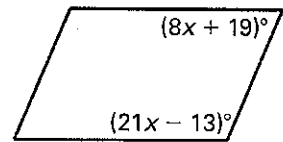
$$6x - 11 = 9x - 53$$

$$42 = 3x$$

$$14 = x$$

\* diagonals bisect each other

19.



$$8x + 19 + 21x - 13 = 180$$

$$29x + 6 = 180$$

$$29x = 174$$

$$* x = 6$$

But this does not mean the quad. is a parallelogram! ... needs more info!

20. **VERIFY** that the points Q (-2, 8) U (2, 7) A (5, 1) D (1, 2) represent the vertices of a parallelogram. *Plotting the points on a graph does not prove that this is a parallelogram!*

$$QU = \sqrt{(-2-2)^2 + (8-7)^2} = \sqrt{16+1} = \sqrt{17}$$

$$AD = \sqrt{(5-1)^2 + (1-2)^2} = \sqrt{16+1} = \sqrt{17}$$

$$QD = \sqrt{(-2-1)^2 + (8-2)^2} = \sqrt{9+36} = \sqrt{45} = 3\sqrt{5}$$

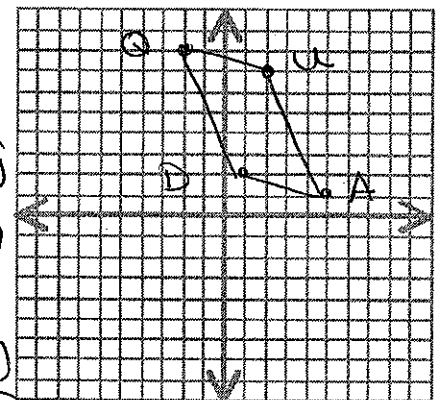
$$UA = \sqrt{(2-5)^2 + (7-1)^2} = \sqrt{9+36} = \sqrt{45} = 3\sqrt{5}$$

$$m_{QU} = \frac{7-8}{2-(-2)} = \frac{-1}{4}$$

$$m_{QD} = \frac{8-2}{-2-1} = \frac{6}{-3} = -2$$

$$m_{AD} = \frac{2-1}{1-5} = \frac{-1}{-4} = \frac{1}{4}$$

$$m_{UA} = \frac{7-1}{2-5} = \frac{6}{-3} = -2$$



\* Both pair opp sides  $\cong$  OR Both Pair opp sides // OR 1 pair opp sides both // +  $\cong$