

Key

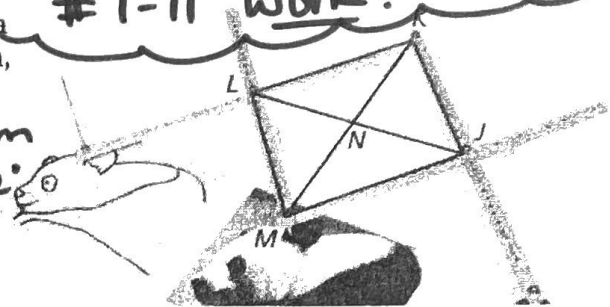
\* Check blog video for # 1-11 work.

7-1 Properties of Parallelograms

A pantograph is used to copy drawings. Its legs form a parallelogram. In  $\square JKLM$ ,  $LM = 17$  cm,  $KN = 13.5$  cm, and  $m\angle KJM = 102^\circ$ . Find each measure.

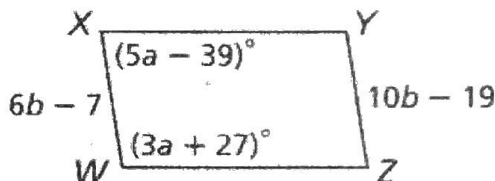
1.  $KM$  27cm
2.  $KJ$  17cm
3.  $MN$  13.5cm
4.  $m\angle JKL$   $78^\circ$
5.  $m\angle JML$   $78^\circ$
6.  $m\angle KLM$   $102^\circ$
7. Three vertices of  $\square ABCD$  are  $A(-3, 1)$ ,  $B(5, 7)$ , and  $C(6, 2)$ . Find the coordinates of vertex  $D$ .

$(-2, -4)$

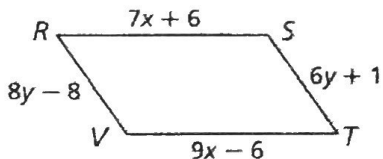


$WXYZ$  is a parallelogram. Find each measure.

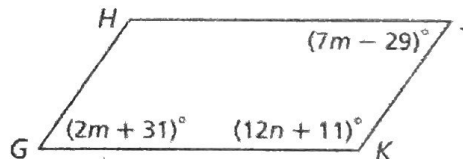
8.  $WX \parallel$
9.  $YZ \parallel$
10.  $m\angle X$   $81^\circ$
11.  $m\angle W$   $99^\circ$



12. Show that  $RSTV$  is a parallelogram for  $x = 6$  and  $y = 4.5$ .

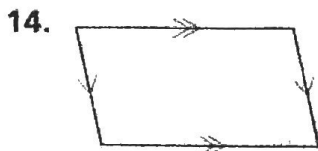


13. Show that  $GHJK$  is a parallelogram for  $m = 12$  and  $n = 9.5$ .

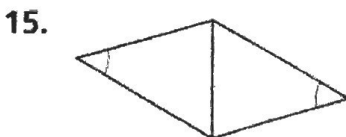


\* See blog video for # 12 & 13.

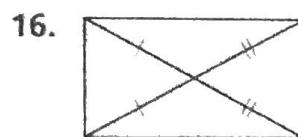
Determine if each quadrilateral must be a parallelogram. Justify your answer.



yes



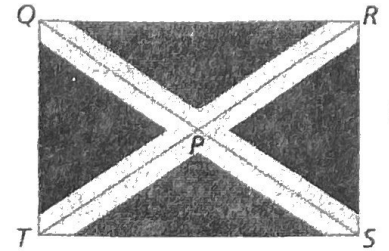
NO



NO

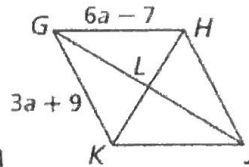
**\* check blog video for work \***

The flag of Jamaica is a rectangle with stripes along the diagonals. In rectangle  $QRST$ ,  $QS = 80.5$ , and  $RS = 36$ . Find each length.



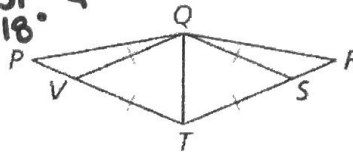
18.  $SP$  40.25    19.  $QT$  36    20.  $TR$  80.5    21.  $TP$  40.25

$GHIK$  is a rhombus. Find each measure.



22.  $HJ$  25  
 23.  $m\angle HJG$  and  $m\angle GHJ$  if  $m\angle JLH = (4b - 6)^\circ$  and  $m\angle JKH = (2b + 11)^\circ$   
 $m\angle HJG = 31^\circ$  &  
 $m\angle GHJ = 118^\circ$

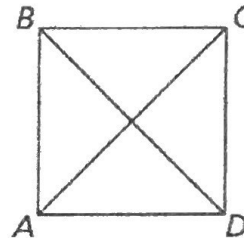
24. Given:  $QSTV$  is a rhombus.  $PT \cong RT$   
 Prove:  $PQ \cong RQ$



**\* see video on blog.**

Determine if the conclusion is valid. If not, tell what additional information is needed to make it valid.

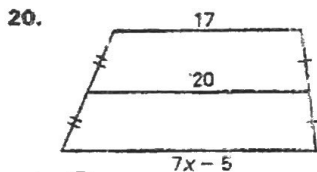
25. Given:  $\overline{AC} \perp \overline{BD}$     **Not valid**  
 Conclusion:  $ABCD$  is a rhombus.



26. Given:  $\overline{AB} \cong \overline{CD}$ ,  $\overline{AC} \cong \overline{BD}$ ,  $\overline{AB} \parallel \overline{CD}$   
 Conclusion:  $ABCD$  is a rectangle.

**valid**

Find the value of  $x$ :



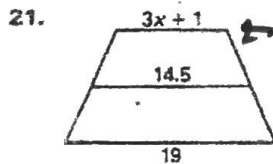
$$\frac{17 + 7x - 5}{2} = 20 \cdot 2$$

$$12 + 7x = 40$$

$$-12 \quad -12$$

$$7x = 28 \quad | \div 7$$

$$x = 4$$



$$\frac{3x + 1 + 19}{2} = 14.5 \cdot 2$$

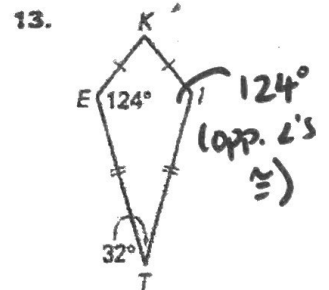
$$3x + 20 = 29$$

$$-20 \quad -20$$

$$3x = 9$$

$$x = 3$$

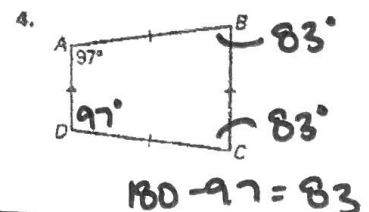
Find the measure of angle  $K$ :



$$360 - 124 - 124 - 32 =$$

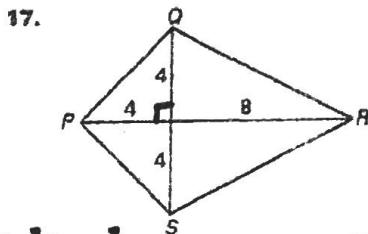
$$m\angle K = 80^\circ$$

Find the measure of angle  $A$ ,  $B$ , &  $C$ :



$$180 - 97 = 83$$

Use the Pythagorean Theorem to find the side lengths of the kite:



$$4^2 + 4^2 = c^2$$

$$16 + 16 = c^2$$

$$\sqrt{32} = \sqrt{c^2}$$

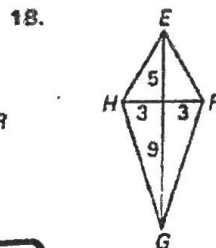
$$4^2 + 8^2 = c^2$$

$$80 = c^2$$

$$\sqrt{80}$$

$$\overline{PQ} \cong \overline{PS}:$$

$$\sqrt{32} = 4\sqrt{2}$$



$$5^2 + 3^2 = c^2$$

$$25 + 9 = c^2$$

$$\sqrt{34} = \sqrt{c^2}$$

$$\overline{EH} \cong \overline{EF} = \sqrt{34}$$

$$3^2 + 9^2 = c^2$$

$$9 + 81 = c^2$$

$$\sqrt{90} = \sqrt{c^2}$$

$$\overline{QR} \cong \overline{RS}:$$

$$\sqrt{80} = 4\sqrt{5}$$

$$\overline{GH} \cong \overline{FG} =$$

$$\sqrt{90} \text{ or } 3\sqrt{10}$$