

# Special Parallelograms

## Worksheet

Name \_\_\_\_\_

*Answer Key*

For 1-8, complete the following charts by putting checks in the boxes that are true.

	4 Sides	Opp. Sides $\parallel$	Opp. Sides $\cong$	All Sides $\cong$	Opp. Angles $\cong$	All Angles $\cong$
1. Parallelogram	✓	✓	✓		✓	
2. Rectangle	✓	✓	✓		✓	✓
3. Rhombus	✓	✓	✓	✓	✓	
4. Square	✓	✓	✓	✓	✓	✓

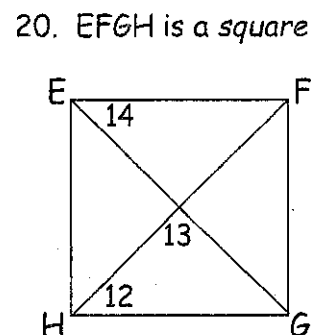
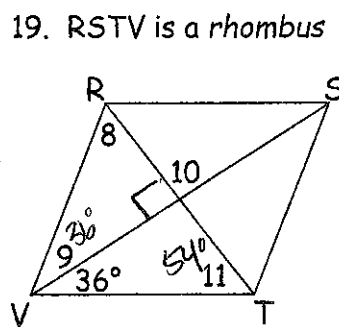
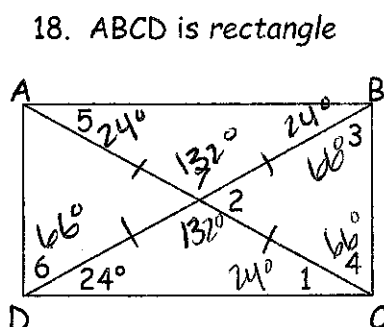
The diagonals ...	bisect each other	are congruent	bisect opposite angles	are perpendicular
5. Parallelogram	✓			
6. Rectangle	✓	✓		
7. Rhombus	✓		✓	✓
8. Square	✓	✓	✓	✓

For 9-17, determine if the statement is true or false.

- F 9. All quadrilaterals are parallelograms.  
T 10. All parallelograms are quadrilaterals.  
T 11. A square is a parallelogram.  
F 12. A parallelogram with a right angle is a square.  
T 13. All rectangles are parallelograms.  
F 14. All rhombuses are squares.  
T 15. All squares are rectangles.  
T 16. A parallelogram with four congruent sides is a square.  
T 17. A parallelogram with perpendicular diagonals is a square.

For 18-21, find the measure of the numbered angles in the figures.

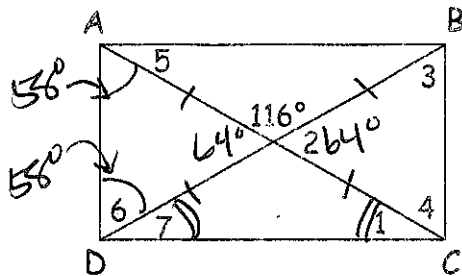
- $m\angle 1 = 24^\circ$   
 $m\angle 2 = 40^\circ$   
 $m\angle 3 = 66^\circ$   
 $m\angle 4 = 66^\circ$   
 $m\angle 5 = 24^\circ$   
 $m\angle 6 = 66^\circ$   
 $m\angle 7 = 132^\circ$   
 $m\angle 8 = 51^\circ$   
 $m\angle 9 = 36^\circ$   
 $m\angle 10 = 90^\circ$   
 $m\angle 11 = 51^\circ$   
 $m\angle 12 = 45^\circ$



- $m\angle 13 = 90^\circ$   
 $m\angle 14 = 45^\circ$

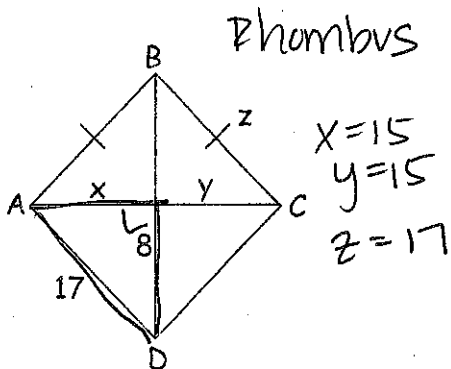
21. ABCD is a rectangle

- $m\angle 1 = 32^\circ$
- $m\angle 2 = 64^\circ$
- $m\angle 3 = 58^\circ$
- $m\angle 4 = 58^\circ$
- $m\angle 5 = 32^\circ$
- $m\angle 6 = 58^\circ$
- $m\angle 7 = 32^\circ$



For 22-23, for the following parallelograms, (a) choose the best name, (b) find the value of each variable.

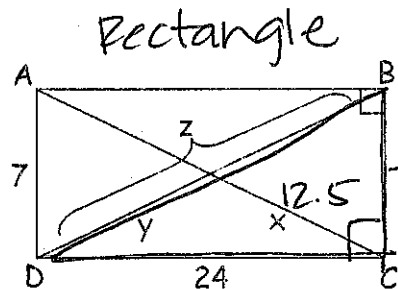
22.



$x = 15$   
 $y = 15$   
 $z = 17$

$8^2 + x^2 = 17^2$   
 $x = 15$

23.



$x = 12.5$   
 $y = 12.5$   
 $z = 25$

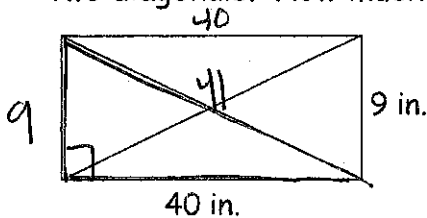
$7^2 + 24^2 = z^2$

24. In quadrilateral MATH,  $\overline{MT}$  and  $\overline{AH}$  bisect each other at R and  $\overline{MR} \cong \overline{HR}$ .

- MATH must be a
- I. parallelogram
  - II. rectangle
  - III. square

- A. I only      B. II only      C. I and II      D. II and III      E. I, II and III

25. Cindy is making the design shown below with silver wire. It consists of a rectangle and its two diagonals. How much wire does she need to make this design?



180 in

$2(9) + 2(40) + 2(41) = 180 \text{ in}$