Secondary Math 2   Name_____
6-5 Special Parallelograms   Period_____

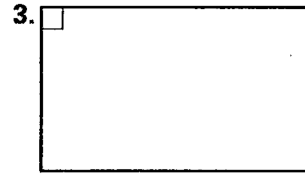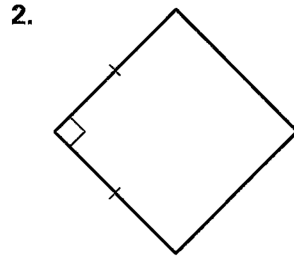Each figure is a parallelogram. Identify the special type and explain your reasoning.

1.

2.

3.

4.

5.

6.
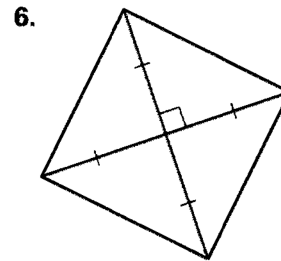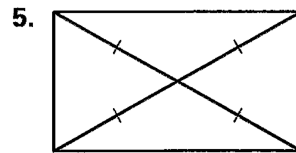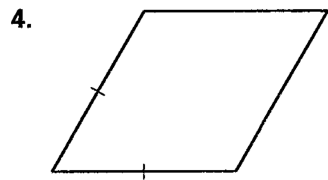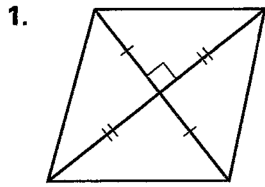
Knowing that GKJH is a square answer questions 7-12

7. $\overline{GK} \cong$ ____ $\cong$ ____ $\cong$ ____

8. $\angle KGH \cong \angle$ ____ $\cong \angle$ ____ $\cong \angle$ ____ $\cong \angle$ ____ $\cong \angle$ ____ $\cong \angle$ ____ $\cong \angle$ ____

9. $\angle GEK$, $\angle$ ____ , $\angle$ ____ , $\angle$ ____ , $\angle$ ____ , $\angle$ ____ , $\angle$ ____ , and $\angle$ ____ are right angles.

10. $\overline{GK} \parallel$ ____ and $\overline{GH} \parallel$ ____

11. $\overline{GE} \cong$ ____ $\cong$ ____ $\cong$ ____

12. $\angle$ __KGE__ $\cong \angle$ ____ $\cong \angle$ ____ $\cong \angle$ ____ $\cong \angle$ ____ $\cong \angle$ ____ $\cong \angle$ ____ $\cong \angle$ ____

Find the value of *x*.

13. MNOP is a square

$3x + 14$

$5x - 8$
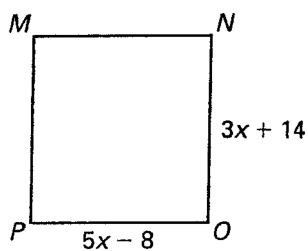
14. ABCD is a rhombus.

$3x°$
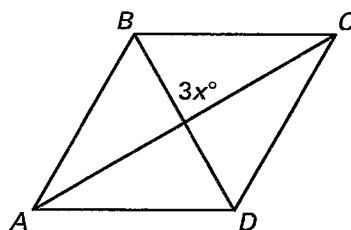
15. EFGH is a rectangle.

$5x - 13$

$2x + 17$
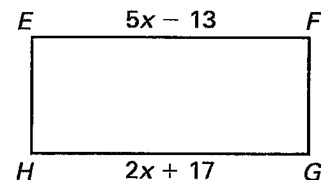
Find the value of x. Be sure to check for extraneous solutions:

16. SBIO is a square.

$(5x^2)°$

17. BMYR is a rhombus.

$3x^2 + 28x$

$2x^2 + 14x + 32$
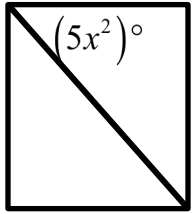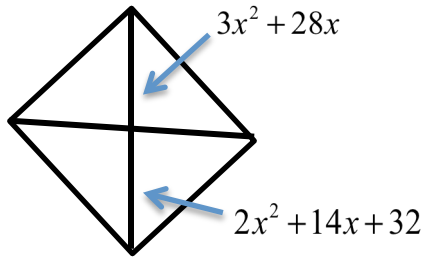
18. LCRA is a rectangle.
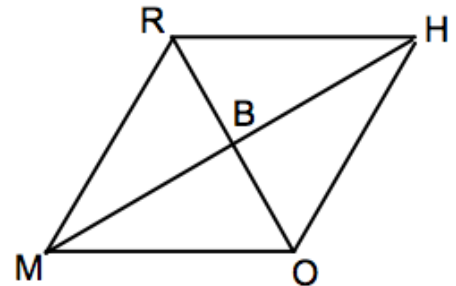
$(x^2 + 10x + 37)°$

$(2x + 25)°$
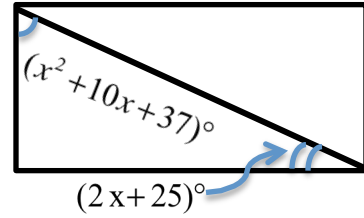
19. Prove that one of the diagonals of a rhombus bisect the one of the vertex angles.
($\angle RMB \cong \angle BMO$ hint: use $\triangle RBM$ and $\triangle OBM$)

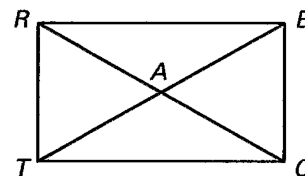Given: RHOM is a rhombus with the diagonals that meet at B
Prove: $\angle RMB \cong \angle BMO$

20. Given that the diagonals in this parallelogram are congruent prove that the parallelogram is a Rectangle.

Given: RECT is a parallelogram, $\overline{RC} \cong \overline{TE}$
Prove: $\angle TRE \cong \angle REC \cong \angle ECT \cong \angle CTR$

Answer Key (not all odds):

1. Rhombus: the diagonals bisect each other perpendicularly
3. Rectangle: In a ‖gram opp $\angle's$ are $\cong$ so the opp $\angle$ of the marked angle is also right. In a ‖gram consecutive $\angle's$ are supplementary so the consecutive $\angle's$ of the marked angle are also right. This makes all angles in the ‖gram right.
5. Rectangle: Diagonals are congruent
7. $\overline{GK} \cong \overline{KJ} \cong \overline{JH} \cong \overline{HG}$
11. $\overline{GE} \cong \overline{JE} \cong \overline{KE} \cong \overline{HE}$
13. x=11
15. x=10
17. x = -16, x = 2