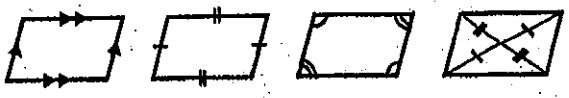
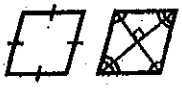
Name _____ **Properties of Parallelograms**

Remember

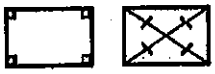
1. A **parallelogram** is a quadrilateral (four-sided polygon) with these properties:
   - its opposite sides are parallel
   - its opposite sides are congruent
   - its opposite angles are congruent
   - its diagonals bisect each other



2. A **rhombus** is a parallelogram with four congruent sides. Its diagonals are perpendicular to each other and bisect opposite angles.

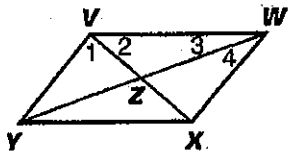


3. A **rectangle** is a parallelogram with four right angles. Its diagonals are congruent.



4. A **square** is a parallelogram with four congruent sides and four right angles. A square is both a rhombus and a rectangle.

Use the properties to solve for the missing measures. Shade your answers below to reveal the answer to this riddle: *What keeps a square from moving?*



1. Given: *VWXY* is a parallelogram. $VW = 14$ $WX = 9$ $VZ = 5.5$ $m\angle VYX = 52°$ $m\angle 2 = 40°$ $m\angle 3 = 20°$

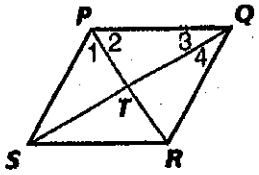
   a. $XY =$ _____ **c.** $m\angle VWX =$ _____ **e.** $m\angle 4 =$ _____

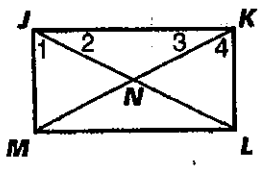
   b. $VX =$ _____ **d.** $m\angle YVW =$ _____ **f.** $m\angle 1 =$ _____

2. Given: *PQRS* is a rhombus. $PQ = 4$ $m\angle PQR = 60°$

   a. $QR =$ _____ **c.** $m\angle 2 =$ _____ **e.** $ST =$ _____

   b. $m\angle 3 =$ _____ **d.** $PT =$ _____ **f.** $m\angle SPQ =$ _____





3. Given: *JKLM* is a rectangle. $JK = 16$ $KL = 12$ $m\angle 1 = 53°$

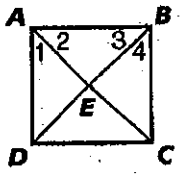
   a. $m\angle JKL =$ _____ **c.** $m\angle 2 =$ _____ **e.** $m\angle JNK =$ _____

   b. $JL =$ _____ **d.** $m\angle 4 =$ _____ **f.** $MN =$ _____

4. Given: *ABCD* is a square. $AB = 8$

   a. $BC =$ _____ **c.** $m\angle 2 =$ _____ **e.** $EC =$ _____

   b. $m\angle ABC =$ _____ **d.** $AC =$ _____ **f.** $m\angle BDC =$ _____



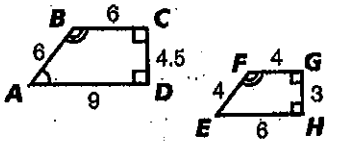
52°	32°	70°	9°	3	4	$2\sqrt{3}$	$12\sqrt{3}$	30°	1	25°	53°	9	45°	90°	$7\sqrt{3}$	$8\sqrt{2}$	135°							
14	11	88°					10°	$\sqrt{5}$	90°	37°		20	10	180°		136°	8	5						
128°			$3\sqrt{5}$	7	60°	0	2	144°	120°	5°	50°	106°	19		45°		$\sqrt{5}$	$4\sqrt{2}$	$5\sqrt{2}$					

Name _____

Similar Figures

Remember

1. An equation that sets two ratios equal to one another is a *proportion.*
2. Two figures are **similar** if their corresponding angles are congruent and the lengths of their corresponding sides are proportional.

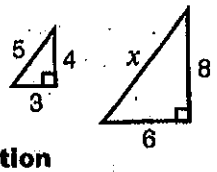


$\square ABCD \sim \square EFGH$

↑

is similar to

Example: These triangles are similar. Find the missing length.



$\frac{3}{6} = \frac{5}{x}$ **Set up a proportion with corresponding sides.**

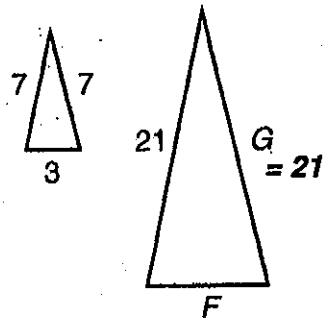
$\frac{3}{6} \times \frac{5}{x}$ **Cross multiply.**

$3x = 30$

$x = 10$ **Divide to solve for the variable.**

Use proportions to solve for the missing sides in the similar figures below. Then use the answer code to reveal the mathematician who developed the symbol for similarity ~.

1.



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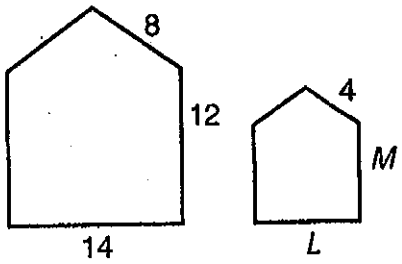

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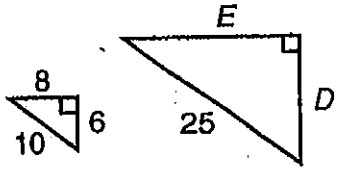

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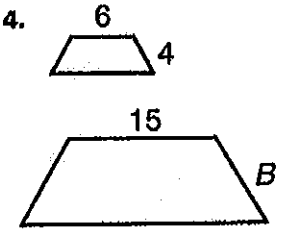

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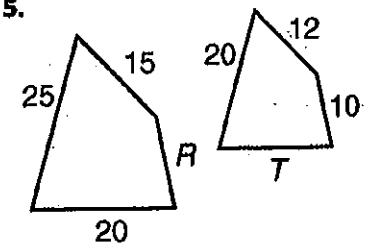

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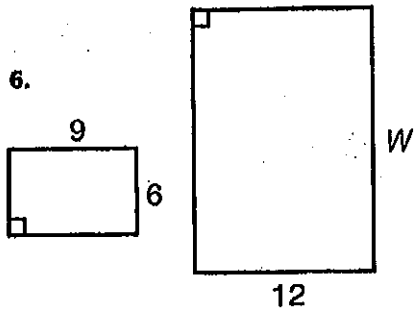

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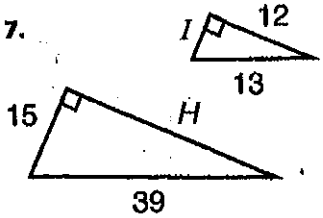

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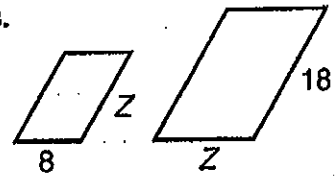

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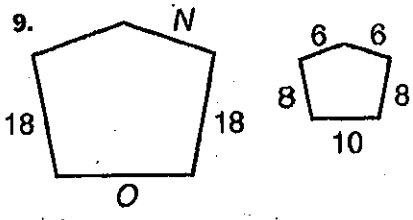

G									
21	22.5	16	16	9	12.5	5	20	15	

18	5	7	36	20	7	6	

7	20	5	10	13.5	5	12	