

MYSTERY PICTURE

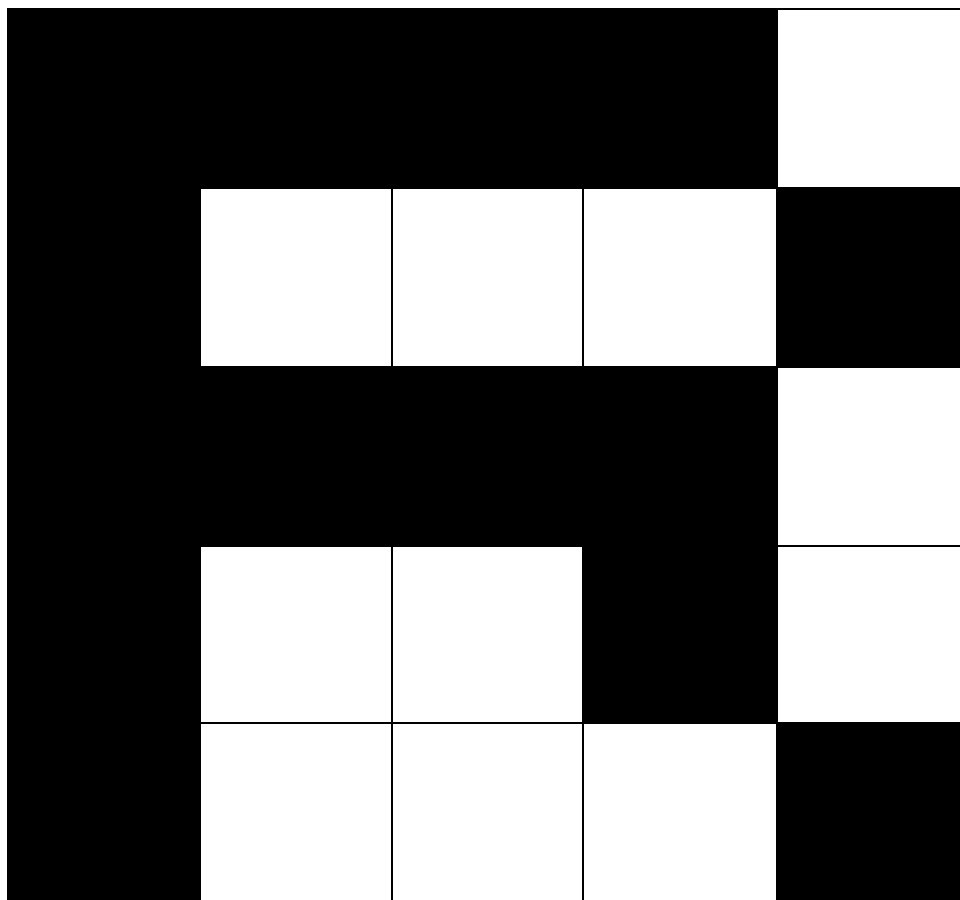


CLASSIFYING QUADRILATERALS

Is It the Most Specific Name?

25 marked quadrilaterals · seven names

FREE



Mystery Picture — how to run it

25–35 minutes

1. **Hand out page 3**, one per student. Pencils. Nothing else is needed.
2. **Say this once:** *“Fill a square only when its name is the most specific name the marks prove. Use only the marks. How the shape looks does not count.”*
3. **When a student finishes, look at the picture.** If it is not the letter R, a square is wrong. The student finds it and checks it again.

Student sheet	page 3, one per student. It shows the seven names as small marked drawings, with the marks that prove each one.
Answers	page 4: the finished picture and the reason for every square.

What the sheet practices. Every square shows a quadrilateral with marks, and a name. The student decides whether that name is the most specific name the marks prove. A square is a special rectangle and a special rhombus. A rectangle and a rhombus are special parallelograms, a rhombus is also a special kite, and a parallelogram is a special trapezoid. So a shape can have several true names, and the most specific one is the lowest of them in that list.

The definitions this sheet uses. A trapezoid has at least one pair of parallel sides, so every parallelogram is a trapezoid. A kite has two pairs of congruent sides next to each other, so every rhombus is a kite. Some textbooks use other definitions, so tell the class which ones this sheet uses.

Two kinds of square stay white. In five squares the name is true but too general. For example, the marks prove a square and the name says rectangle, or the marks prove a parallelogram and the name says trapezoid. In six squares the marks do not prove the name at all. For example, four congruent sides are marked on a shape drawn as a square, and the name says square. No right angle is marked, so only rhombus is proved. These shapes are drawn to look like the name on purpose.

Some filled squares look more special than their name. In six filled squares the drawing looks like a more special shape than the marks prove. A student who trusts the drawing gets twelve squares wrong. Guessing does not work: every simple guessing rule gets at least eleven squares wrong.



This is the free lesson this activity came from. The worksheet, the full answers and the lesson plan are on it, at three levels of difficulty.

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Mystery Picture

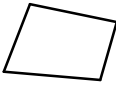
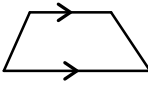
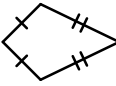
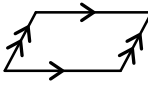
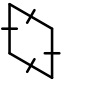
Read the marks

Name _____

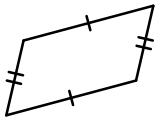
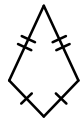
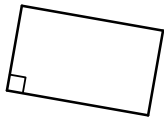
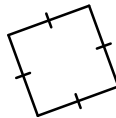
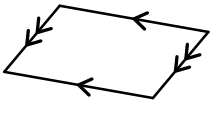
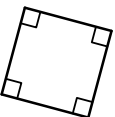
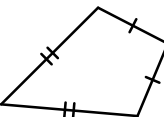
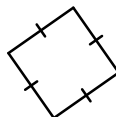
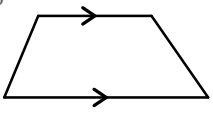
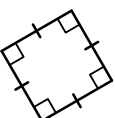
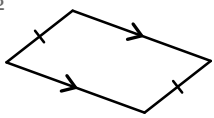
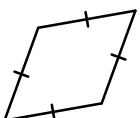
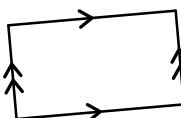
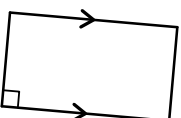
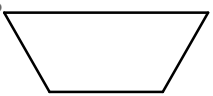
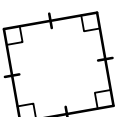
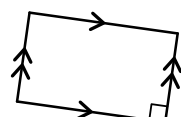
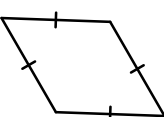
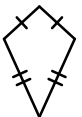
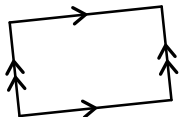
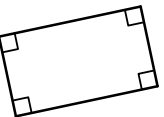
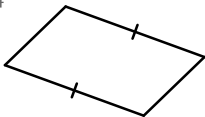
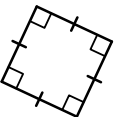
Period _____

Date _____

Each square shows a quadrilateral with marks, and a name under it. Is the name the most specific name the marks prove? If yes, fill the square with slanted lines. If no, leave it white. Leave a square white when the marks prove a more specific name. Also leave it white when the marks do not prove the name. Use only the marks. Do not trust how the shape looks. When you finish, look at the picture. If part of it is missing, or one square does not fit, check that square again.

 quadrilateral Four sides.	 trapezoid At least one pair of parallel sides.	 kite Two pairs of congruent sides next to each other.	 parallelogram Both pairs of opposite sides parallel, or both pairs congruent.	 rectangle Four right angles, or a parallelogram with one right angle.	 rhombus Four congruent sides.	 square Four congruent sides and four right angles.
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A square is a **special** rectangle and a **special** rhombus. A rectangle and a rhombus are **special** parallelograms. A rhombus is also a **special** kite. A parallelogram is a **special** trapezoid.

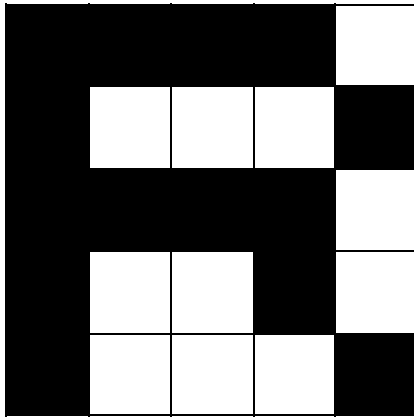
1  parallelogram	2  kite	3  quadrilateral	4  rhombus	5  trapezoid
6  rectangle	7  parallelogram	8  quadrilateral	9  square	10  trapezoid
11  square	12  trapezoid	13  rhombus	14  parallelogram	15  rectangle
16  quadrilateral	17  rectangle	18  kite	19  rectangle	20  kite
21  kite	22  rectangle	23  parallelogram	24  parallelogram	25  square



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Mystery Picture — answers

For the teacher



The finished picture is **the letter R**: a straight stroke down the left side, a closed loop across the top three rows, and a leg that runs from the middle down to the bottom right.

A square is filled when its name is the most specific name its marks prove. “Too general” means the name is true, but the marks prove a more specific one. “Not proved” means the marks do not prove that name.

To check a square with a student, ask: “Which names do the marks prove? Cross out every name they do not prove. Which name that is left is the most special?”

Square	Name printed	Answer	The marks prove	Why
1	parallelogram	FILL	parallelogram	Both pairs of opposite sides are congruent, and that is one of the ways to prove a parallelogram. No right angle is marked.
2	kite	FILL	kite	Two pairs of congruent sides next to each other. Nothing more is marked.
3	quadrilateral	FILL	quadrilateral	One right angle alone proves no special name.
4	rhombus	FILL	rhombus	Four congruent sides. No right angle is marked.
5	trapezoid	white: too general	parallelogram	Both pairs of opposite sides are parallel. Nothing else is marked.
6	rectangle	FILL	rectangle	Four right angles. No sides are marked congruent.
7	parallelogram	white: not proved	trapezoid	An isosceles trapezoid also has one pair parallel and the other pair congruent.
8	quadrilateral	white: too general	kite	Two pairs of congruent sides next to each other. Nothing more is marked.
9	square	white: not proved	rhombus	Four congruent sides. No right angle is marked.
10	trapezoid	FILL	trapezoid	One pair of sides is parallel. Nothing more is marked.
11	square	FILL	square	Four congruent sides and four right angles.
12	trapezoid	FILL	trapezoid	An isosceles trapezoid also has one pair parallel and the other pair congruent.
13	rhombus	FILL	rhombus	Four congruent sides. No right angle is marked.
14	parallelogram	FILL	parallelogram	Both pairs of opposite sides are parallel. Nothing else is marked.
15	rectangle	white: not proved	trapezoid	One pair is parallel. One right angle does not make the other pair parallel.
16	quadrilateral	FILL	quadrilateral	Nothing is marked.
17	rectangle	white: too general	square	Four congruent sides and four right angles.
18	kite	white: not proved	quadrilateral	Nothing is marked.
19	rectangle	FILL	rectangle	A parallelogram with one right angle. No sides are marked congruent.
20	kite	white: too general	rhombus	Four congruent sides. No right angle is marked.
21	kite	FILL	kite	Two pairs of congruent sides next to each other. Nothing more is marked.
22	rectangle	white: not proved	parallelogram	Both pairs of opposite sides are parallel. Nothing else is marked.
23	parallelogram	white: too general	rectangle	Four right angles. No sides are marked congruent.
24	parallelogram	white: not proved	quadrilateral	One pair of congruent opposite sides proves no special name.
25	square	FILL	square	Four congruent sides and four right angles.