Classifying Two-Dimensional Figures

Classifying Two-Dimensional Figures: Apply, Compare, and Design

Name _____ **Date** _____ **Score** _____ / 6

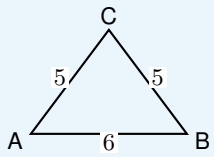
QUICK REVIEW

Classify a closed figure with straight sides first by its side count. Then use equal lengths, right-angle squares, and matching arrows on parallel sides. All right angles are marked in the shape diagrams. One figure can belong to more than one group.

Worked example

Use the marked lengths to classify ABC by its sides.

1. AC and BC are each labeled 5, giving an equal pair.
2. AB is 6, and $6 \neq 5$. Exactly 2 sides are equal, so the triangle is isosceles but not equilateral.
Answer: Isosceles, not equilateral.

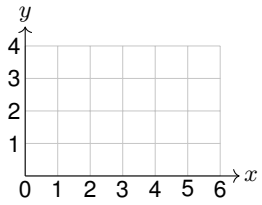


Practice Problems

Show your thinking.

1. A brace needs a triangle with a right angle and two equal sides. Plan A has two equal legs meeting at $90°$. Plan B is a right triangle with sides $3, 4, 5$. Which plan works? Classify both by sides and angles.

2. Plot $A(1,1), B(5,1), C(4,3), D(2,3)$ and connect them in order, closing the figure. Is it a trapezoid with exactly one parallel pair or a parallelogram? Name the parallel sides.



3. Two equilateral triangles of side 3 cm are joined along one full side, with no overlap. Their angles are $60°$. Classify the outer boundary as specifically as you can.

4. A supplier offers six equal trim pieces for any hexagonal sign. This sign has six straight sides, including a 3 cm side and a 4 cm side. Do unequal lengths disqualify it? Can the same-size pieces each exactly cover one side without cutting?

5. A four-sided frame has four right angles. In order its sides are 7 cm, 4 cm, 7 cm, and one missing label. Recover the label and give the most specific class.

6. One closed sign has sides $6, 6, 6$ cm. Another has sides $3, 6, 3, 6$ cm and four right angles. Both have the same perimeter. Does that put them in the same specific shape group? Name each.

Answer Key

1. A only. A is isosceles right; B is scalene right.
2. Trapezoid with only $AB \parallel CD$.
3. Rhombus, not a square.
4. It still qualifies as a hexagon. One length cannot fit every side exactly.
5. Missing length 4 cm; rectangle, not square.
6. No. The first is an equilateral triangle; the second is a rectangle.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

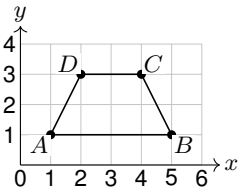
1. Plan A has 2 equal sides and a 90° corner, so both tests pass.

2. Plan B also has a 90° corner, but $3 < 4 < 5$. It is scalene, so it fails the equal-side test.

Problem 2

1. AB stays at $y = 1$, and CD stays at $y = 3$. They are both horizontal.

2. From bottom to top, AD goes 1 unit right while BC goes 1 unit left. They are not parallel, so there is just 1 parallel pair.



Problem 3

1. The 2 joined sides are inside the panel. The boundary has $3 + 3 - 2 = 4$ sides, each 3 cm long.

2. The 4 equal sides make a rhombus. Each unjoined tip has a 60° angle, so it is not a square.

Problem 4

1. The hexagon name requires 6 sides, not equal lengths. Unequal lengths do not change that side count.

2. $3 \neq 4$, so at least 2 different trim lengths are needed for exact fits without cutting.

Problem 5

1. The 4 right angles make the frame a rectangle. Opposite sides of a rectangle are equal.

2. The missing side is opposite the 4 cm side, so it is 4 cm. Because $7 \neq 4$, the frame is not a square.

Problem 6

1. The perimeters agree: $6 + 6 + 6 = 18$ cm and $3 + 6 + 3 + 6 = 18$ cm.

2. The first has 3 equal sides. The second has 4 sides and 4 right angles. Equal perimeters do not erase those differences.

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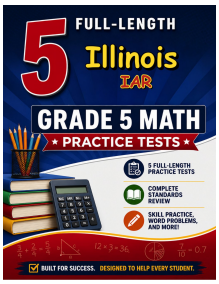

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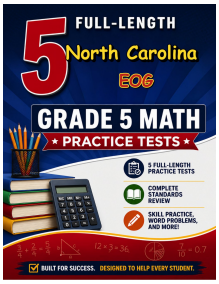

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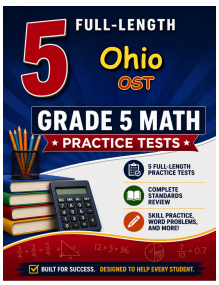

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