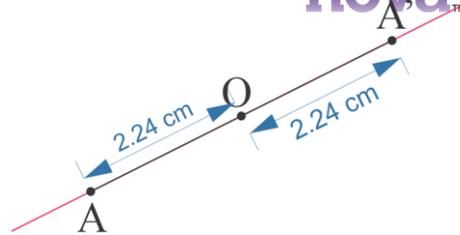**Math 5b, homework 20.**

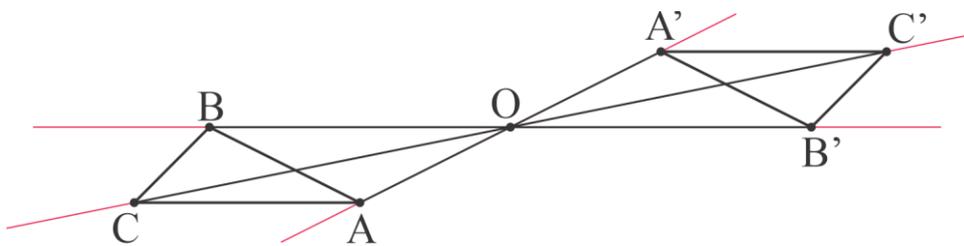<div align="center">Point symmetry.</div>

How to construct a point, symmetrical corresponding to a
given point, center of symmetry?
- Connect point A with the center of symmetry O to
  obtain segment [AO].
- Extend the line (AO) and construct another
 segment equal in length to [AO].

Triangles ABC and A′B′C′ are centrally symmetric with respect to point O.

Line (reflection/mirror) symmetry.

How can you construct a point symmetric to a given point
with respect to a line of symmetry?
- Draw a perpendicular from point A to the line of
  symmetry and mark the intersection point O.
- On the opposite side of the line, mark point A′ on the same perpendicular so that AO =
  OA′.
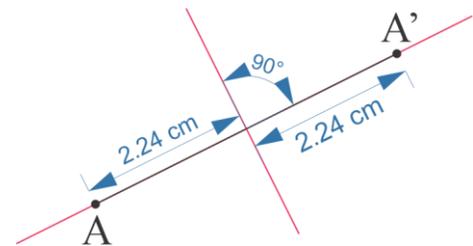
Triangles ABC and A′B′C′
are mirror-symmetric with
respect to the line of
symmetry.
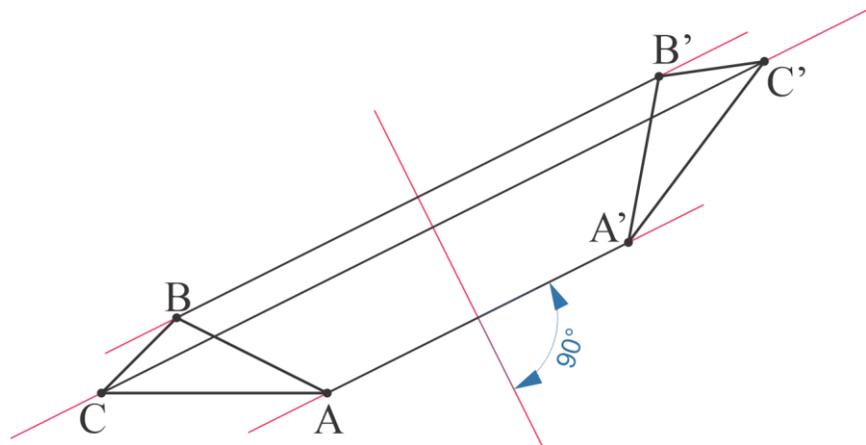
1. How many axes of symmetry do the figures in the picture have? Check with mirror. hich figures have central (point) symmetry?
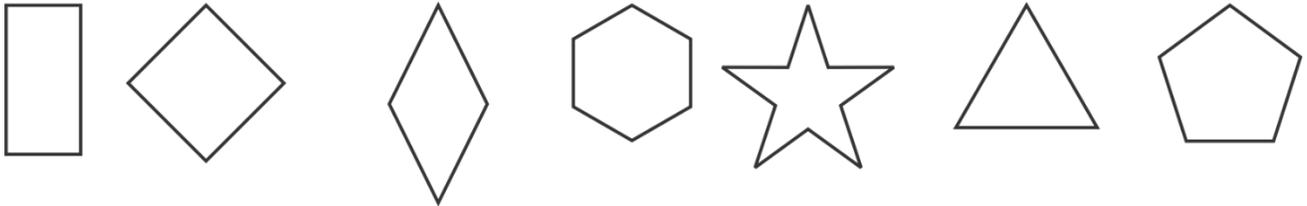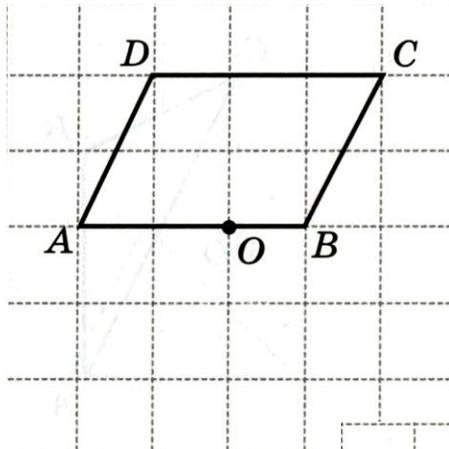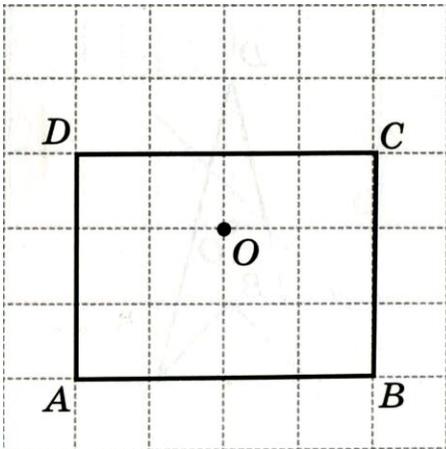
2. Which letters of the alphabet have axes of symmetry? Which letters have central (point) symmetry?
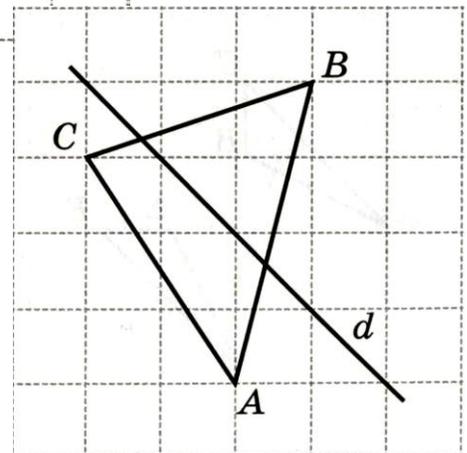
A B C D E F G H I J

K L M N O P Q R S T

U V W X Y Z

For problems 3 and 4 copy the pictures to your notebook (use ruler).

3. Draw a quadrilateral that is symmetric to the given quadrilateral with respect to point **O**.

4. Draw a triangle that is symmetric to the given line *d*.

5. Product of the ages of all Mary's brothers is 1664. The oldest brother is twice as old as the youngest brother. How many brothers does Mary have? How old they are?

6. Find the value of the expression:

$$x(1 + y) - y(xy - 1) - xy^2 \quad \text{if} \ \ x + y = -1 \ \ \text{and} \ \ xy = 1$$