Rotational symmetry of plane figures

A. Choose the correct answer:

1. A figure has rotational symmetry if it

a) changes shape when rotated b) looks the same after a certain rotation

c) has only one line of symmetry d) rotates only 360°

2. The order of rotational symmetry of a square is

a) 1 b) 2

c) 4 d) 8

3. A figure with rotational symmetry of order 1

a) looks the same at every rotation

b) has no rotational symmetry except at 360°

c) has infinite lines of symmetry d) has three-fold symmetry

4. Which of the following shapes has rotational symmetry of order more than 1?

a) Scalene triangle b) Circle

c) Letter Z d) Parallelogram

5. A regular hexagon has rotational symmetry of order

a) 3 b) 5

c) 6 d) 12

B. Write the Missing Terms to Complete the Sentences:

1. A figure has rotational symmetry if it looks the same after a rotation of _____ degrees or less.
2. The number of times a shape fits onto itself in one full rotation is called the _____ of rotational symmetry.
3. A circle has _____ order of rotational symmetry.
4. A rectangle has rotational symmetry of order _____.
5. The minimum angle of rotation for a regular triangle to coincide with itself is _____ degrees.

C. Mark each sentence with a True (✔) or False (✗):

1. All figures have rotational symmetry of order at least 1._____
2. A square has rotational symmetry of order 2. _____
3. A figure with rotational symmetry of order 1 has no actual rotational symmetry. _____
4. A semicircle has rotational symmetry. _____
5. A regular polygon has rotational symmetry equal to the number of its sides. _____

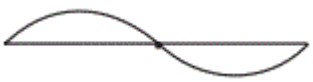
D. Figure out the answers to these questions:

1. What is the order of rotational symmetry of an equilateral triangle? Explain.
2. Does the letter 'S' have rotational symmetry? If yes, what is the order?
3. Identify three shapes that have no rotational symmetry.
4. Draw a regular pentagon and show how it exhibits rotational symmetry.
5. If a shape looks the same after a 120° rotation, what could be its order of symmetry in 360°?

E. Challenge yourself with these questions:

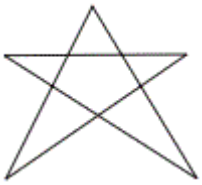
1. Find the order of rotational symmetry of the letters N, Z, and H.
2. Draw a regular octagon and find its angle of rotation for symmetry.
3. List three objects from daily life that show rotational symmetry.
4. Find the smallest angle through which a regular hexagon can be rotated to coincide with itself.
5. Can a shape have both line and rotational symmetry? Give two examples and explain.

F. Which of the following shapes have rotational symmetry about the marked point:

A.  _____

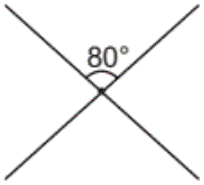
B.  _____

C.  _____

D.  _____

G. Give the order of rotational symmetry for each figure:

A.  _____

B. 

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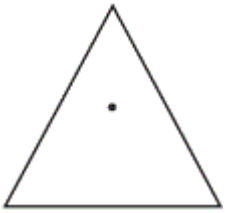
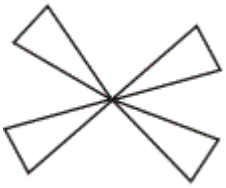
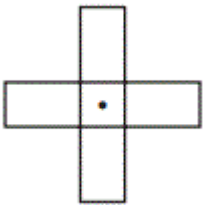
C.  _____

D.  _____

E.  _____