

Answer Key - Relating Rotations to Symmetry

21. The blue figure coincides with the green figure for three rotations: 0° , 120° , and 240° .

22. a) 6-fold b) 5-fold c) 2-fold or point symmetry d) 3-fold

23. Designs will vary.

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25. One way to make a cyclic design is to divide a circle into equal sectors, draw a design in one of them, and copy the design in each sector as it would look if rotated through an angle equal to $360^\circ/n$ if n is the number of sectors.

26. It is possible to create cyclic designs of any order n where n is an integer greater than 1.

27. The two lines AC and $A'C$ are equal in length.

28. This relation will hold in all 2-fold cyclic designs because a point A and its image A' under 180° rotation about C will be the endpoints of a diameter of the circle with center C passing through A .

29. Designs b, c, and e have point symmetry.

30. Designs will vary.