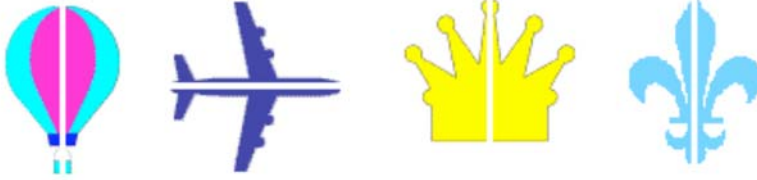


Answer Key - Relationships Between Reflection and Symmetry

16. The white lines show the lines of symmetry for the different



shapes.

17. Only a and c have bilateral symmetry. Their lines of symmetry are shown below.



18. The line of symmetry for the cutout shape will be along the fold line.

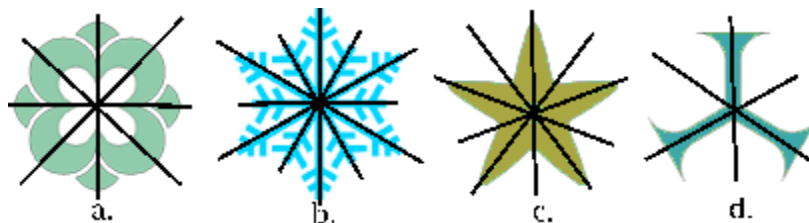
19. Yes. The lines of symmetry will be parallel to the mirror line and will go through the center of the shape.

20. Designs will vary.

21. Designs will vary.

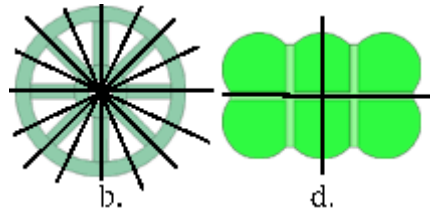
22. a. four-fold b. six-fold c. five-fold d. three-fold

The lines of symmetry are shown below. All designs have rotational symmetry. The center of the design is the rotocenter. For each design, the order of rotational symmetry is equal to the order of dihedral symmetry.



23. All the mirror lines of a specific design intersect at one point in the center of the design. Each mirror line divides the design in half and passes through the center of the design; therefore the point of intersection of any two mirror lines will be the center of the design. In any dihedral design, the mirror lines will always intersect at the center point of the design.

24. a. five-fold cyclic b. eight-fold cyclic and eight-fold dihedral c. two-fold cyclic d. two-fold cyclic and two-fold dihedral. Mirror lines for b. and d. are shown in the figure below.



25. Designs will vary. All will have cyclic symmetry.

26. Dihedral designs will always have cyclic symmetry. A design with only cyclic symmetry will appear to have a clockwise or counterclockwise direction and will look different if seen in a mirror.

27. The number of mirror lines of a dihedral design will always equal the degree of rotational symmetry.

28. The center of rotation will always be the point where the mirror lines intersect.

29. Dihedral designs appear stable and balanced, whereas cyclic designs look dynamic and directed.