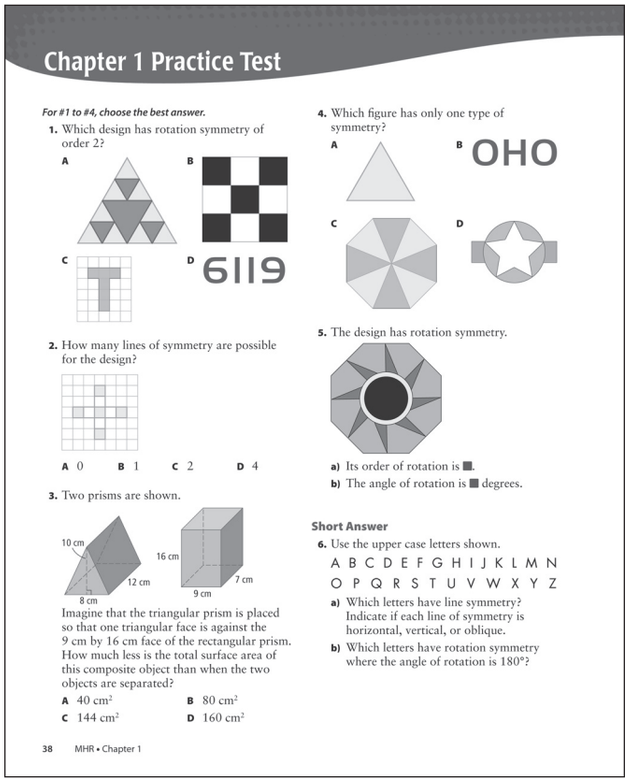
Practice Test 1



Chapter 1 Practice Test

For #1 to #4, choose the best answer.

1. Which design has rotation symmetry of order 2?

A

B

C

D 6119

2. How many lines of symmetry are possible for the design?

A 0 **B** 1 **C** 2 **D** 4

3. Two prisms are shown.

10 cm, 12 cm, 8 cm; 16 cm, 9 cm, 7 cm

Imagine that the triangular prism is placed so that one triangular face is against the 9 cm by 16 cm face of the rectangular prism. How much less is the total surface area of this composite object than when the two objects are separated?

A 40 cm^2 **B** 80 cm^2
C 144 cm^2 **D** 160 cm^2

4. Which figure has only one type of symmetry?

A

B OHO

C

D

5. The design has rotation symmetry.

a) Its order of rotation is ■.
b) The angle of rotation is ■ degrees.

Short Answer

6. Use the upper case letters shown.

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

a) Which letters have line symmetry? Indicate if each line of symmetry is horizontal, vertical, or oblique.
b) Which letters have rotation symmetry where the angle of rotation is 180°?

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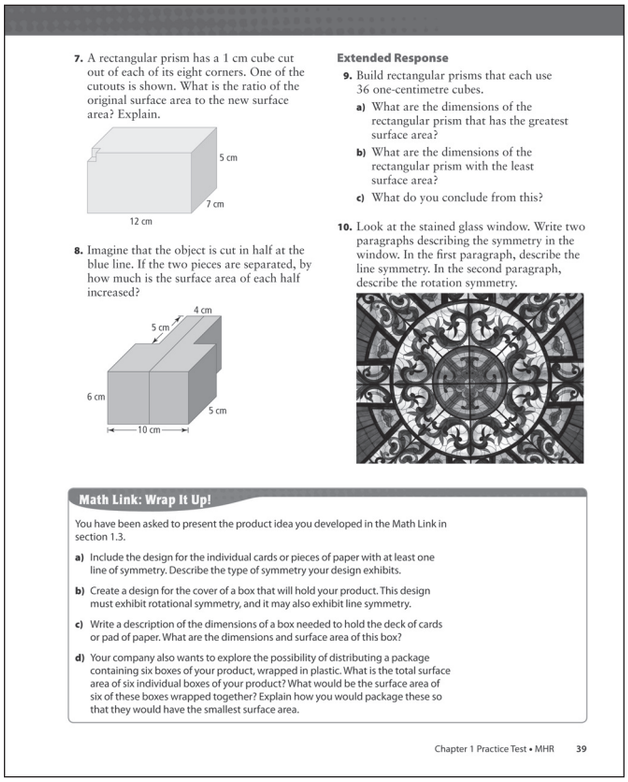

7. A rectangular prism has a 1 cm cube cut out of each of its eight corners. One of the cutouts is shown. What is the ratio of the original surface area to the new surface area? Explain.

5 cm, 7 cm, 12 cm

8. Imagine that the object is cut in half at the blue line. If the two pieces are separated, by how much is the surface area of each half increased?

4 cm, 5 cm, 6 cm, 5 cm, 10 cm

Extended Response

9. Build rectangular prisms that each use 36 one-centimetre cubes.

a) What are the dimensions of the rectangular prism that has the greatest surface area?
b) What are the dimensions of the rectangular prism with the least surface area?
c) What do you conclude from this?

10. Look at the stained glass window. Write two paragraphs describing the symmetry in the window. In the first paragraph, describe the line symmetry. In the second paragraph, describe the rotation symmetry.

Math Link: Wrap It Up!

You have been asked to present the product idea you developed in the Math Link in section 1.3.

a) Include the design for the individual cards or pieces of paper with at least one line of symmetry. Describe the type of symmetry your design exhibits.
b) Create a design for the cover of a box that will hold your product. This design must exhibit rotational symmetry, and it may also exhibit line symmetry.
c) Write a description of the dimensions of a box needed to hold the deck of cards or pad of paper. What are the dimensions and surface area of this box?
d) Your company also wants to explore the possibility of distributing a package containing six boxes of your product, wrapped in plastic. What is the total surface area of six individual boxes of your product? What would be the surface area of six of these boxes wrapped together? Explain how you would package these so that they would have the smallest surface area.

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***MathLinks 9*, pages 38–39**

Suggested Timing
40–50 minutes

Materials
- isometric dot paper
- grid paper
- centimetre cubes

Blackline Masters
Master 7 Isometric Dot Paper
Master 8 Centimetre Grid Paper
BLM 1–12 Chapter 1 Test

Planning Notes

Have students start the practice test by writing the question numbers in their notebooks. Have them indicate which questions they need a little help with, a lot of help with, or no help with. Have students first complete the questions they know they can do. Then, have students complete the questions they know something about. Finally, have students do their best on the questions that they still need coaching with.

This practice test can be assigned as an in-class or take-home assignment. Provide students with the number of questions they can comfortably do in one class. These are the minimum questions that will meet the related curriculum outcomes: #1–8, 10.

Provide students with centimetre cubes to complete #9. Students may also benefit from using **Master 7 Isometric Dot Paper** and **Master 8 Centimetre Grid Paper** as they work on the practice test.

Study Guide

Question(s)	Section(s)	Refer to	The student can …
#1	1.2	Example 1	✓ give the order of rotation and angle of rotation for various shapes
#2	1.1	Example 1	✓ identify the line(s) of symmetry for a 2-D shape or design
#3	1.3	Example 1	✓ determine the area of overlap in composite 3-D objects
#4	1.2	Example 2	✓ identify the transformations in shapes and designs involving line or rotation symmetry
#5	1.2	Example 2	✓ give the order of rotation and angle of rotation for various shapes
#6	1.2	Example 1 Example 2	✓ tell if 2-D shapes and designs have rotation symmetry ✓ identify the transformations in shapes and designs involving line or rotation symmetry
#7, 9	1.3	Example 1	✓ solve problems involving surface area
#8	1.3	Example 1	✓ find the surface area for composite 3-D objects
#10	1.1 1.2	Example 1 Example 2	✓ identify the line(s) of symmetry for a 2-D shape or design ✓ tell if 2-D shapes and designs have rotation symmetry

Answers

Chapter 1 Practice Test

1. D **2.** D **3.** B **4.** D

5. a) 8 **b)** 45

6. a) Horizontal lines of symmetry: B, C, D, E, H, I, K, O, X; Vertical lines of symmetry: A, H, I, M, O, T, U, V, W, X, Y; Oblique lines of symmetry: O

b) H, I, N, O, S, X, Z

7. The two surface areas are identical.

8. 60 cm^2

9. a) The dimensions are width = 1 cm, height = 1 cm, depth = 36 cm.

b) The dimensions are width = 3 cm, height = 3 cm, depth = 4 cm.

c) Example: A very long side can often increase surface area more than having sides of equal or near-equal value.

10. There are vertical, horizontal, and two oblique lines of symmetry. There is also rotation symmetry, of order 8 with an angle of rotation of 45°.

Assessment	Supporting Learning
Assessment *as* Learning	
Chapter 1 Self-Assessment Have students review their earlier responses in the What I Need to Work On section of their Foldable.	• Have students use their responses on the practice test and work they completed earlier in the chapter to identify areas in which they may need to reinforce their understanding of skills or concepts. Before the chapter test, coach them in the areas in which they are having difficulties.
Assessment *for* Learning	
Chapter 1 Test After students complete the practice test, you may wish to use **BLM 1–13 Chapter 1 Test** as a summative assessment.	• Consider allowing students to use their Foldable and thematic map. • Since the Math Link: Wrap It Up! and Challenges provide additional reinforcement of chapter content, you may wish to have students complete these activities before doing the Chapter 1 Practice Test and **BLM 1–13 Chapter 1 Test**. • Consider using the Challenges on pages 40–41 to assess the knowledge and skills of students who have difficulty with tests.