

Student Guide

3-D to 2-D (SG pp. 319–320)
Questions 1–3




- 1.* B, See the lesson.
2–3.* Answers will vary.

3-D to 2-D

Drawing a Cube

You can use geometry to help you learn to draw a cube. Studying the edges, faces, and vertices of a cube will help you draw what you see when you look at a cube. A **cube** is a box that has six faces. All the edges of a cube are the same length.


1. Here are 3 sketches of a cube. Which look like a cube? Which do not? Explain your choice.


A.  B.  C. 

2. Using what you have learned, try to draw a cube.

Use either of these two methods to practice drawing a cube. You can also come up with a method of your own.

Drawing a Cube by Showing Three Faces



Step 1 Draw a square for the front face. 

Step 2 Draw three small, parallel lines going back from the top corners and one side corner. These lines must be the same length. 


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
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

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Step 3 Draw two connecting lines. The first line should be along the top, and the second line should be along the side.  

Drawing a Cube by Showing Its Skeleton

Step 1 Draw a square for the front face. 

Step 2 Above and to the right of the first square, draw another square of the same size. Notice that one corner of each square is in the center of the other square, forming a new, smaller square. 

Step 3 Connect the four corners of the first square with the same corners of the second square.  

3. How are the drawings from the two methods alike?
How are they different?

Use the *Analyze Faces of 3-D Shapes* pages in the *Student Activity Book* to practice relating 2-D and 3-D Shapes.

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*Answers and/or discussion are included in the lesson.

Name _____ Date _____

Analyze Faces of 3-D Shapes

Draw the following 3-D Shapes.

1. Draw a rectangular prism that is not a cube.
2. Draw a triangular prism.

✓ **Check-In: Questions 3-4**
Use the numbered and labeled shapes on the page after Question 4 to answer the following questions.

3. Use the numbers to list the shapes with each property. If there is more than one shape with that property, name them all. Each shape may be listed more than once.

A. parallel triangular faces	_____
B. eight corners	_____
C. six congruent faces	_____
D. opposite faces are congruent	_____
E. no parallel faces	_____
F. triangular faces are not parallel	_____
G. circles as faces	_____
H. at least three rectangular faces	_____
I. odd number of vertices	_____

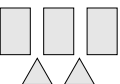
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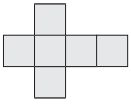
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Name _____ Date _____

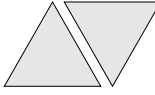
4. Look at the faces of the 3-D shape. Write the number of the shape on the line next to the drawing of the faces.

A.  _____

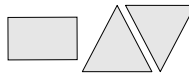
B.  _____

C.  _____

D. Luis is playing Guess My Shape and is only showing some of the faces of a 3-D shape. What shapes could he be showing you? Explain your thinking.



E. Luis shows another shape. What shapes could he be showing you now? Explain your thinking.



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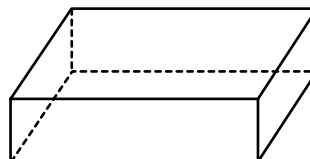
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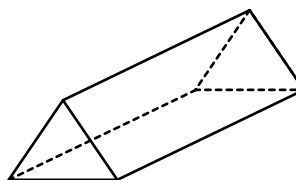
Analyze Faces of 3-D Shapes (SAB p. 455–456)

Questions 1–4

1. Responses will vary.



2. Responses will vary.



3. A. 2, 3

B. 1, 6, 10

C. 1

D. 1, 2, 3, 4, 6, 7, 8, 10, 11, 12

E. 5, 7, 8, 9, 12

F. 7, 8, 12

G. 4, 9

H. 1, 2, 3, 6, 10, 11

I. 7, 8, 9, 12

4. A. 3, triangular prism

B. 1, cube

C. 8, triangular pyramid

D. Possible response: Luis could be showing a triangular prism, a square pyramid, a triangular pyramid, or a hexagonal pyramid. All of these shapes have triangular faces.

E. Possible response: Luis could be showing a triangular prism or a rectangular pyramid. The triangular prism has two congruent triangles and a rectangle as a face.