Divide Shapes into Equal Parts

Study the example showing how to divide a shape into equal parts. Then solve problems 1–5.

**Example**

Show two different ways to divide a square into 4 equal parts.

Each part is \( \frac{1}{4} \) of the square.

Each equal part is the same shape.

The 4 equal parts are rectangles.  

The 4 equal parts are squares.

1. Show another way to divide a square into 4 equal parts. Then complete the sentence.

   [Drawing of a square divided into four equal parts]

   Each part is _____ of the square.

2. Divide the rectangle below into 2 equal parts. Then complete the sentence.

   [Drawing of a rectangle]

   Each part is _____ of the rectangle.
Solve.

3 The rectangle below at the left is divided into 8 equal parts.

![Rectangle divided into 8 equal parts]

a. Draw lines on the rectangle at the right to show a different way to divide the rectangle into 8 equal parts.

b. What fraction of the rectangle is each part? ______

4 Draw a rectangle and divide it into 4 equal parts. What fraction of the rectangle is each part?

![Rectangle divided into 4 equal parts]

Each part is ______ of the rectangle.

5 Liam is making a game board. He wants the game board to have 20 equal sections. Show one way that he could divide the board into 20 equal sections. How many rows are there and how many equal parts in each row?

**Show your work.**

![Game board divided into 20 equal sections]

**Solution:** _______________________________________

__________________________________________________
Find a Line of Symmetry

Study the example showing how to find a line of symmetry. Then solve problems 1–5.

Example

Which shape has more lines of symmetry—a rectangle, an equilateral triangle, or a square?

A rectangle has 2 lines of symmetry.

An equilateral triangle has 3 lines of symmetry.

A square has 4 lines of symmetry.

A square has more lines of symmetry than a rectangle and an equilateral triangle.

1. Circle the shapes below that have at least one line of symmetry.

2. Circle the shape below that has a greater number of lines of symmetry.

Vocabulary

line of symmetry a line dividing a shape into two matching parts.
Solve.

3 Circle the shapes below that have exactly 4 lines of symmetry.

![Shapes](image)

4 Look at the rectangle in problem 3. How many lines of symmetry does it have? Explain.

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

5 Choose Yes or No to tell whether the line drawn on each block letter is a line of symmetry.

a. [Image of letter G] □ Yes □ No

b. [Image of letter A] □ Yes □ No

c. [Image of letter M] □ Yes □ No

d. [Image of letter E] □ Yes □ No
Lesson 33  Symmetry

**Example**

Draw all of the lines of symmetry for each star shape. How many lines of symmetry does each shape have? Where do all the lines of symmetry cross?

The 6-pointed star has 6 lines of symmetry. The 5-pointed star has 5 lines of symmetry.

All the lines of symmetry cross at the center point of each shape.

1 Draw all the lines of symmetry on the tree shape below.

![Tree shape](image)

How many lines of symmetry does the tree shape have? ____

2 Draw all the lines of symmetry on the X shape below.

![X shape](image)

How many lines of symmetry does the X shape have? ____
Solve.

3 Draw all the lines of symmetry on each pentagon below. Write how many lines of symmetry each pentagon has.

[Diagram of pentagons]

_____ line(s) of symmetry  _____ line(s) of symmetry

4 Titus drew a hexagon with 6 lines of symmetry. He says that all hexagons have 6 lines of symmetry. Use words and a drawing to explain why Titus’s thinking is incorrect.

5 Draw all the lines of symmetry that the design in each flag below has. Then write how many lines of symmetry that the design in each flag below has.

[Flags diagram]

Line(s) of symmetry  Line(s) of symmetry

_____  _____
Solve the problems.

1. Which figure below shows a correct line of symmetry? Circle the letter for all that apply.

   - A
   - B
   - C
   - D

   Does folding each shape on the line create two matching parts?

2. Part of a figure is shown below. Line X is the line of symmetry for the completed figure. What does the completed figure look like?

   - A
   - B
   - C
   - D

   How does a matching part complete the figure?

Leigh chose C. How did she get that answer?

________________________________________

________________________________________

________________________________________

________________________________________

________________________________________
3. Draw all the lines of symmetry on the figure below. How many lines of symmetry are there?

*Show your work.*

Solution: ________________________________

4. Name a quadrilateral that always has the same number of lines of symmetry. Draw the shape and show the lines of symmetry. Explain why the number of lines of symmetry is always the same.

*Show your work.*

Solution: _____________________________________________________________

___________________________________________

___________________________________________

___________________________________________

___________________________________________

___________________________________________