5

SUGGESTED BRICKS

Size	Number
1x1	50
1x2	24
1x3	8
1x4	8
1x6	2
1x8	4
1x12	2
1x16	2
2x2	8
2x3	4
2x4	9
2x6	3
2x8	2

Note: Using a baseplate will help keep the bricks in place. One baseplate is suggested for these activities.

Note: Students may need to work together to make larger models.

FACTORS

Students will learn/discover:
- What factors are
- How to find all the factors of numbers
- How to make models of factor families

Why is this important?
Students need to be able to identify all the factors of numbers before they can work on equivalent fractions, simplifying fractions, and addition or subtraction of unlike denominators. Adding and subtracting fractions with unlike denominators requires a common denominator. Finding a common denominator requires knowing factors.

Vocabulary:
- **Numerator:** The digit of the fraction that shows the amount of the whole being used; the numerator is on the top of the fraction
- **Denominator:** The digit of the fraction that shows the whole; the denominator is on the bottom of the fraction
- **Like denominators:** Denominators in a math sentence or problem that are the same
- **Factors:** Numbers that are multiplied together to get another number; example: 2 and 3 are factors of 6, and 2 and 4 are factors of 8

**How to use the companion student book, *Basic Fractions Using LEGO® Bricks–Student Edition*:**
- After students build their models, have them draw the models and explain their thinking in the Student Edition. Recording the models on paper after building them with bricks helps reinforce the concepts being taught.
- Discuss the vocabulary for each lesson with students as they work through the Student Edition.
- Use the chapter assessments in the Student Edition to gauge student understanding of the content.

Part 1: Show Them How

Problem #1: Model how to find all the factors of 16

1. Place one 2x8 brick or one 1x16 brick on a baseplate. Have students draw this model and write the multiplication fact (*answer:* 1 x 16 = 16).
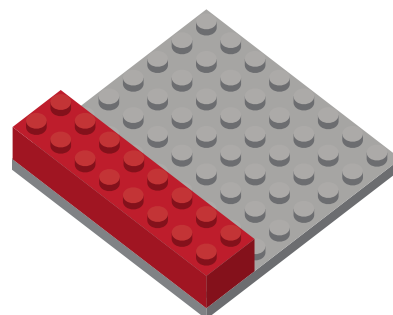
2. Find two bricks that are the same and, when placed next to the 16-stud brick, are equivalent in size and show two halves of the 16-stud brick. Use two 2x4 bricks or two 1x8 bricks. Have students draw this model and write the multiplication fact (*answer:* 2 x 8 = 16).
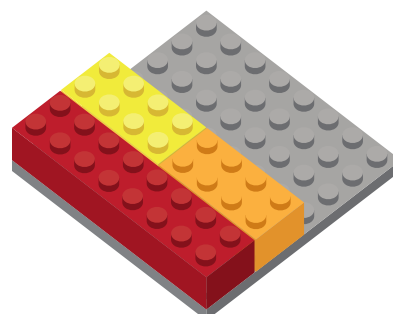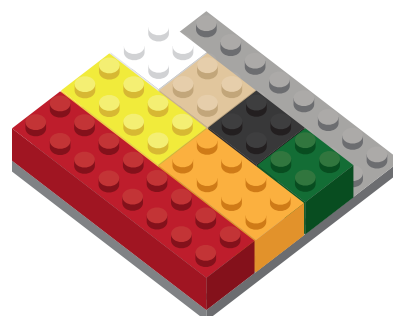
3. Ask students: Can you find three bricks of equal size equivalent to the size of the 16-stud brick?

Let students look and think, and discover that the answer is no.
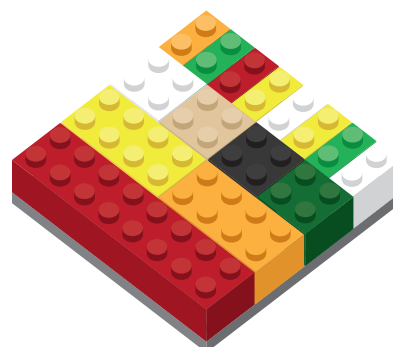
4. Ask students: Can you find four bricks of equal size equivalent to the size of the 16-stud brick?
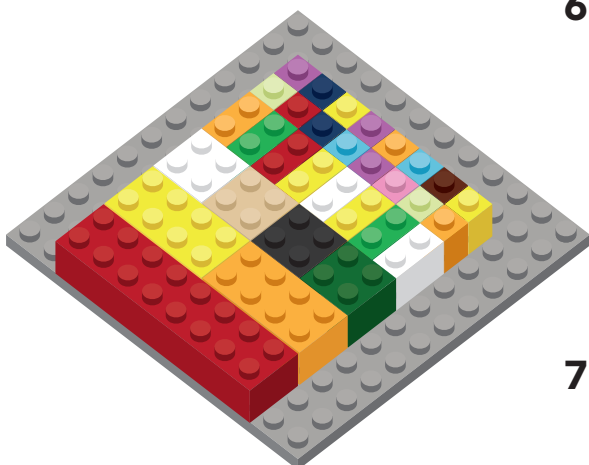
Let students look and think, and discover that the answer is four 2x2 bricks or four 1x4 bricks. Have students draw this part of the model and write the multiplication fact (*answer:* 4 x 4 = 16).

5. Ask students: Can you find the next number of equal-sized bricks that are equivalent to the size of the 16-stud brick?

Let students discover that five, six, and seven bricks don't work. Let them discover that the answer is eight 1x2 bricks. Have students draw this part of the model and write the multiplication fact (*answer:* 8 x 2 = 16).

6. Ask students: Can you find the next number of equal-sized bricks that are equivalent to the size of the 16-stud brick?

Let students discover that the answer is sixteen 1x1 bricks. Have students draw this part of the model and write the multiplication fact (*answer:* 16 x 1 = 16).

7. Name all the factors of 16 by looking at the bricks on the baseplate.

Answer: 16, 8, 4, 2, and 1.