Brick Math

Lesson of the Month
from *Decimals Using LEGO® Bricks*

Teacher's Lesson Guide and
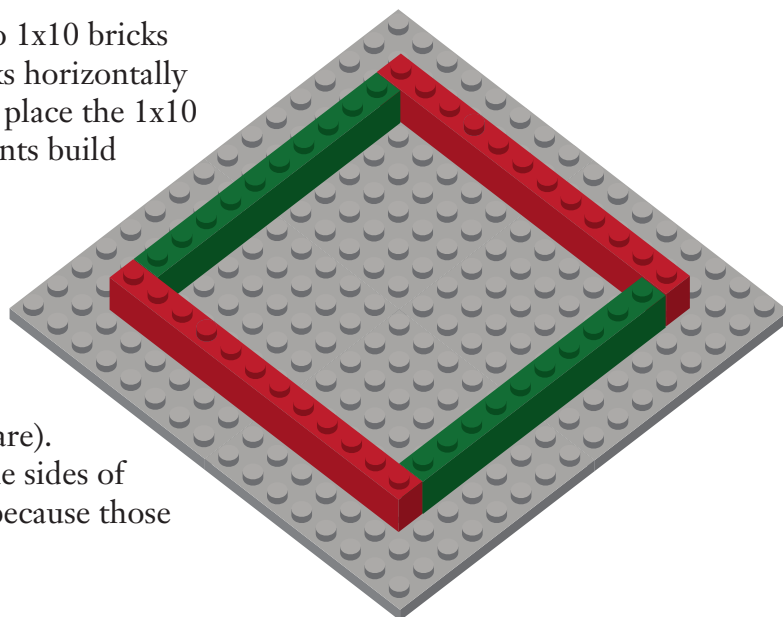Student Workbook Pages

Modeling Decimal Numbers with a Decimal Grid

Decimal Grid Model:

Explain to students that you are going to build a Brick Math decimal grid, a 10 x 10 grid with 100 studs inside, which is used to model decimal numbers.
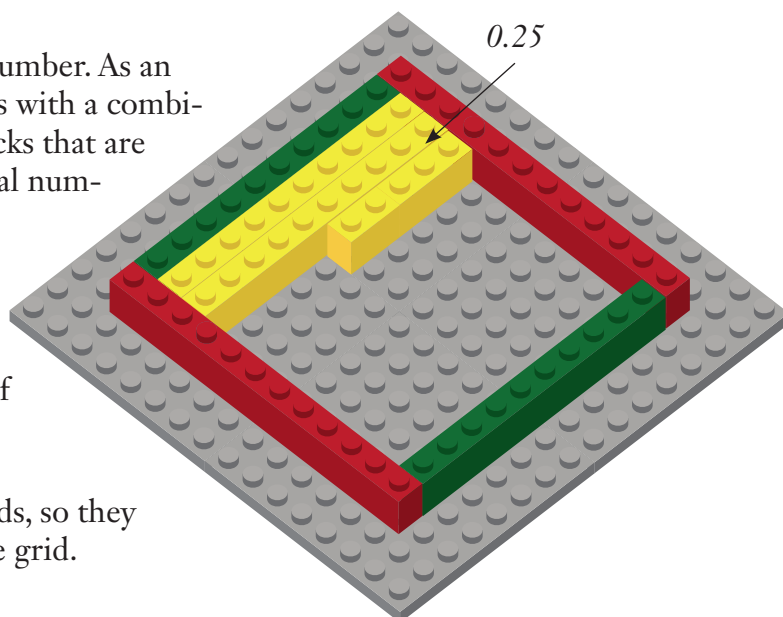
1. Build a rectangle on a baseplate using two 1x10 bricks and two 1x12 bricks. Place the 1x12 bricks horizontally on the top and bottom of the model, and place the 1x10 bricks vertically on each side. Have students build the same model along with you.

2. Ask students to count the number of studs *inside* the rectangle (*answer:* 100 studs). Explain that this is a decimal grid. Have students identify the shape of the grid (*answer:* the grid is a 10 x 10 square). *Note:* Make sure students do not count the sides of the grid (i.e., the 1x10 and 1x12 bricks), because those bricks are not inside the square.
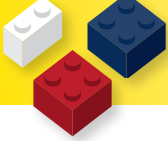
3. Explain that each stud inside the grid represents one hundredth, and each 1x10 column or row of studs represents one tenth, because it contains 10 of the 100 studs.

4. Show students how to model a decimal number. As an example, model 0.25 by covering 25 studs with a combination of bricks. *Note:* If possible, use bricks that are all the same color to represent the decimal number inside the decimal grid.
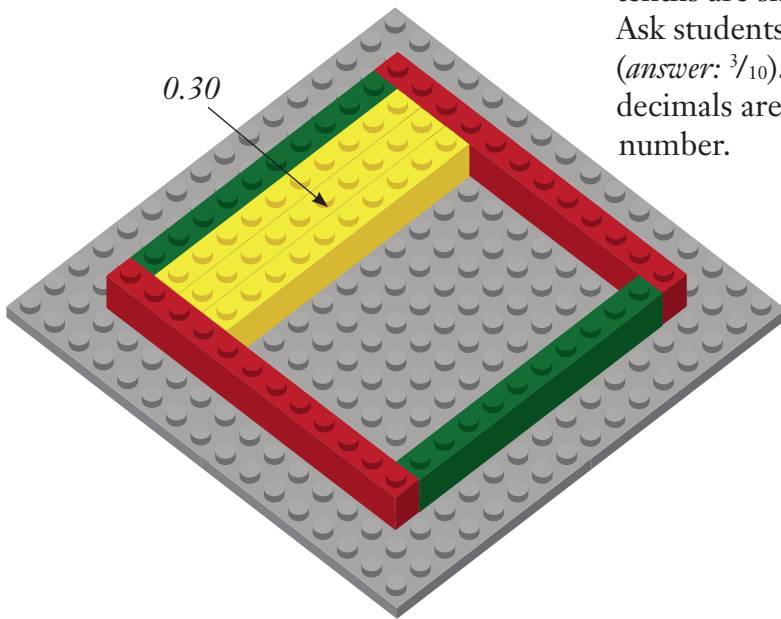
5. Ask students to model 0.30 in a decimal grid using three 1x10 bricks. *Note:* Remind students not to count the sides of the model.
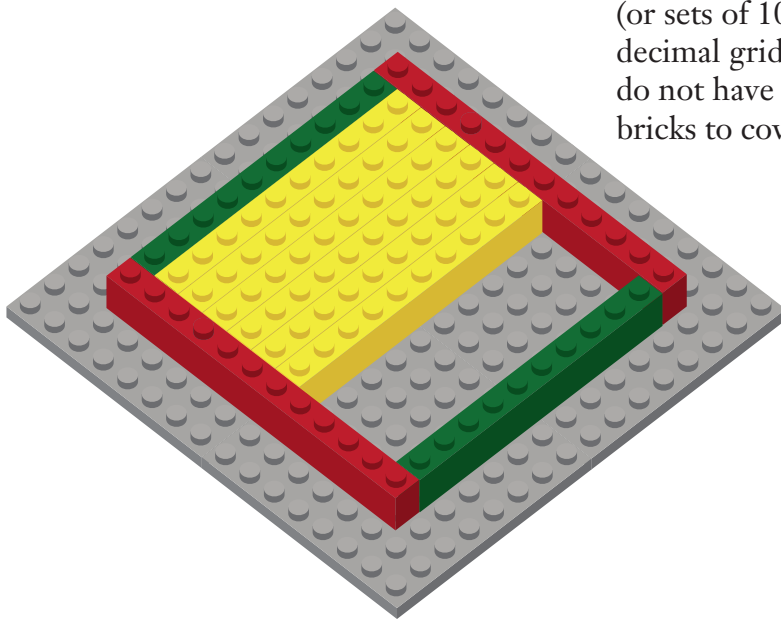
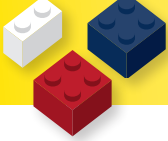Point out that each 1x10 brick has 10 studs, so they willl cover 30 of the 100 total studs in the grid.

0.25

0.30

Ask students how to express this as a fractional part of the whole grid (*answer:* $^{30}/_{100}$). Ask students how many tenths are shown in the model (*answer:* 3 tenths). Ask students how 3 tenths are written as a fraction (*answer:* $^{3}/_{10}$). *Note:* Make sure students understand that decimals are another way to write a fractional part of a number.

6. Have students build 0.6 using the grid model. Have them draw their model and explain their thinking, then write a fraction for the decimal. To get students started with the process of modeling, ask how many 1x10 bricks (or sets of 10 studs) are needed to show 6 tenths in the decimal grid (*answer:* six 1x10 bricks). *Note:* If students do not have six 1x10 bricks, use a combination of smaller bricks to cover 60 studs.

60 of 100 studs are covered
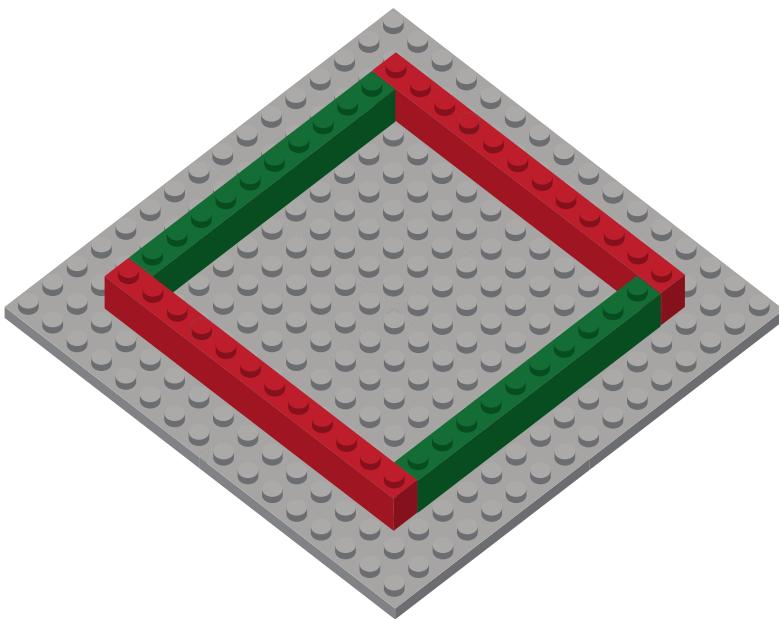*The fraction is $^{6}/_{10}$ or $^{60}/_{100}$*

Modeling Decimal Numbers with a Decimal Grid

Decimal Grid Model:
One way to model decimal numbers is with a Brick Math decimal grid, a 10 x 10 grid with 100 studs inside the grid.
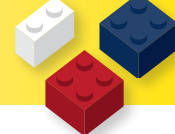
1. Build a rectangle on a baseplate using two 1x10 bricks and two 1x12 bricks as shown. Place the 1x12 bricks horizontally on the top and bottom of the model, and place the 1x10 bricks vertically on each side.
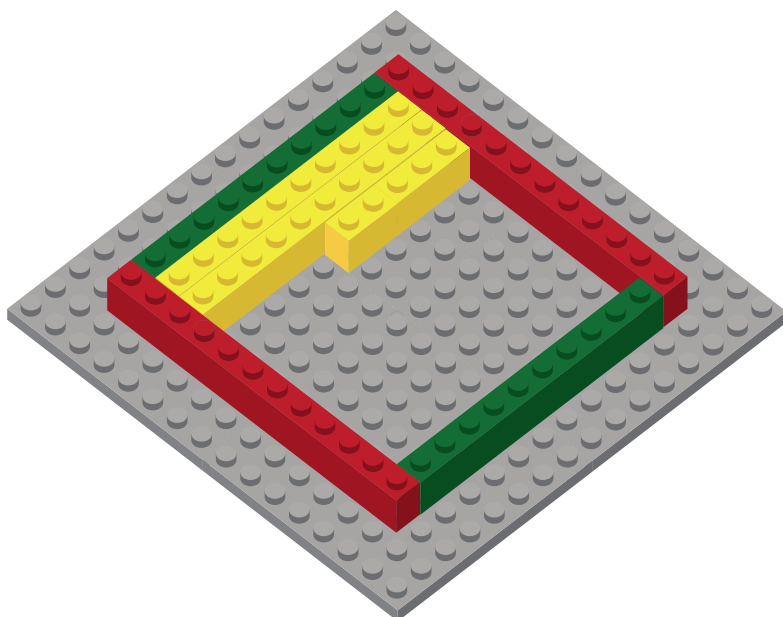

2. How many studs are *inside* the grid? _____

What is the shape of the grid? _____

3. Each stud inside the grid represents one hundredth, and each 1x10 column or row of studs represents one tenth, because it contains 10 of the 100 studs.

4. Model 0.25 by covering 25 studs with bricks as shown. *Note:* If possible, use bricks that are all the same color to represent the decimal number inside the decimal grid.
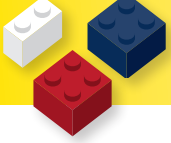
5. Model 0.30 in a decimal grid using three 1x10 bricks. *Note:* Do not count the sides of the model.

Since each 1x10 brick has 10 studs, 30 of the 100 total studs in the grid are covered. How can you write this as a fractional part of the whole grid? _____

How many tenths are shown in your model? _____

Write those tenths as a fraction. _____

6. Model 0.6 in a decimal grid. Draw your model and explain your thinking. *Note:* If you do not have enough 1x10 bricks, use a combination of smaller bricks.

Write a fraction for the decimal. _____

_____

_____

_____