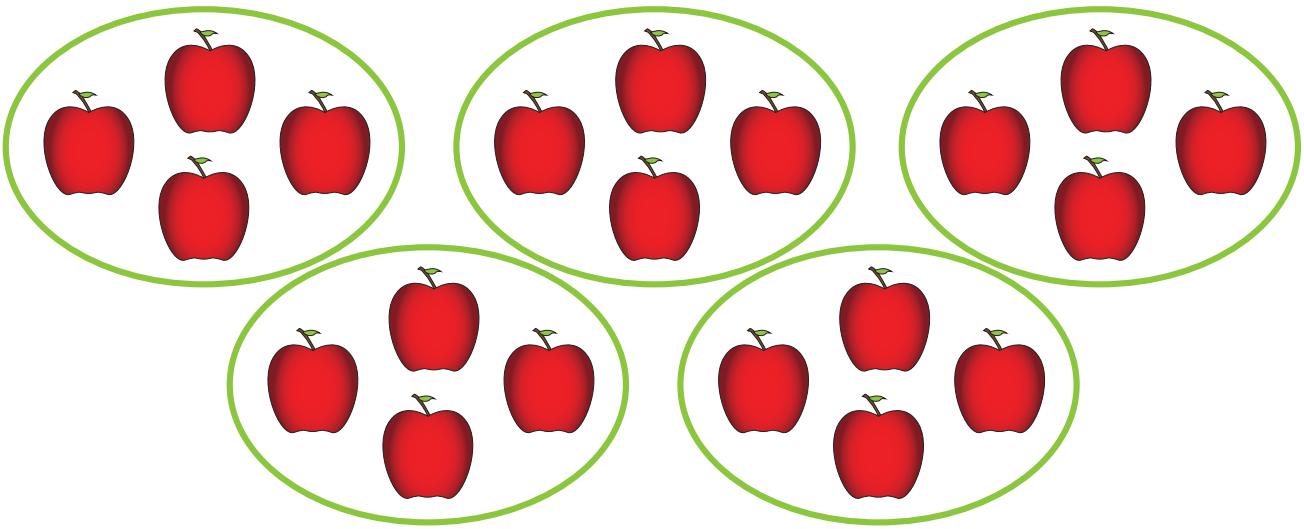
Dividing Decimals by Whole Numbers

Let's use an example to review what it means to divide with whole numbers. If we have 20 apples that need to be divided between 5 people, we want to see how many apples each person will get. So, the dividend, or 20, is the amount that is being divided. The divisor, or 5, is the number of groups that we are evenly splitting the dividend into. And, the quotient is the amount that will be in each group after dividing. For this example, the quotient is 4, because each person will get 4 apples. We can use a picture, or model, to show this division:

20 apples ÷ 5 people = 4 apples for each person

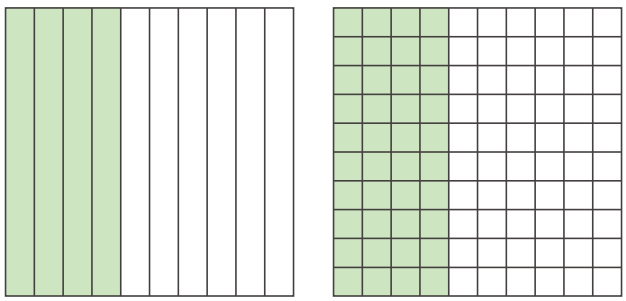


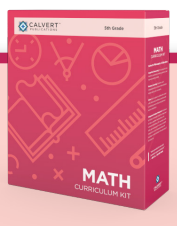
We can apply this same idea to dividing decimal numbers. In this lesson, we'll explore how to divide a decimal number into groups. We'll use models and long division to help us find quotients.

Dividing Decimal Numbers Using a Grid

Remember that a decimal number can be represented using a grid.
For example, the decimal number 0.4 can be represented on a tenths grid by shading in four tenths. Or, it can be represented on a hundredths grid by shading in forty hundredths.

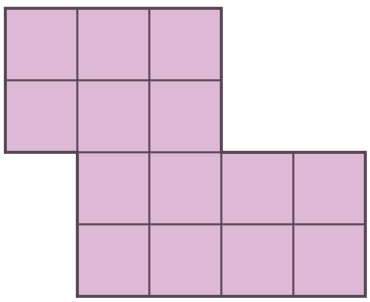
0.4 **0.40**





Finding the Area of Plane Figures

Our next measurement was *area*, which is measured in *square units*. We learned that area is the number of square units inside of a figure. For many plane figures, we could just count the number of squares inside the figure.



This figure has an area of 14 square units because there are 14 squares inside of the figure.

We learned that for some figures, there is a shorter way to find the area. We developed formulas for rectangles (using the length and width), and for parallelograms, and triangles (using the *base* and *height*).

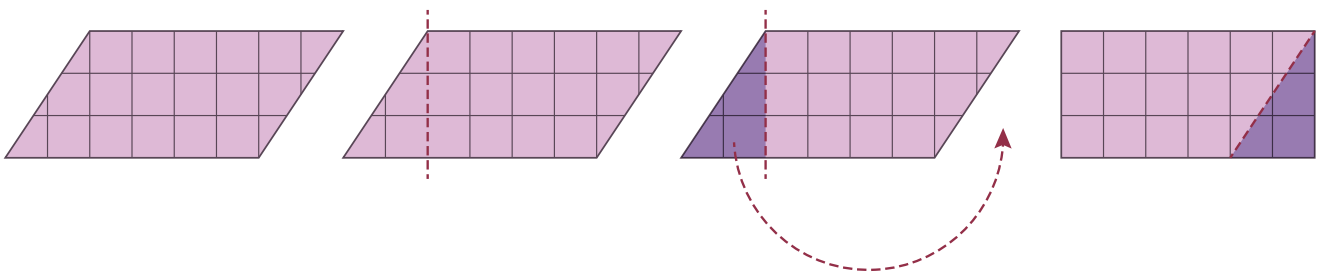
Rectangles: $A = lw$

Parallelograms: $A = bh$

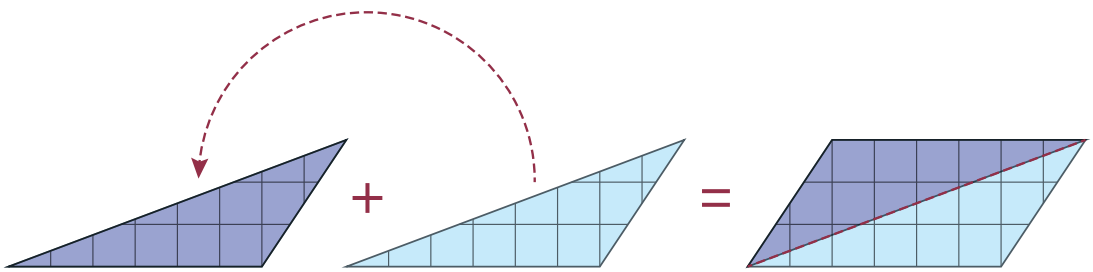
Triangles: $A = \frac{bh}{2}$

We found that each of these formulas are related. Rectangles are made up of rows of squares, so we can multiply the length (the number of squares in one row) by the width (the number of rows) to find the area.

Parallelograms can be converted to rectangles using the same length (base for parallelograms) and width (height for parallelograms).



If a triangle's area is doubled, it will form a parallelogram. So, to find its area we take half of the area of a parallelogram with the same base and height.



We used these formulas to find the area of figures that could be broken up into rectangles, parallelograms, and/or triangles.