

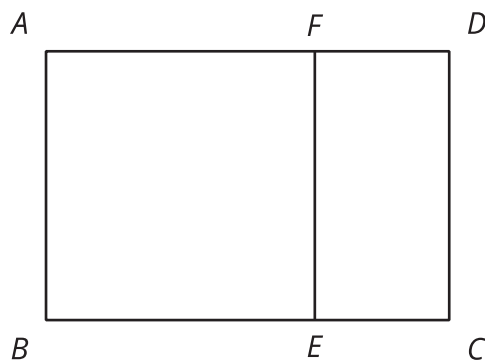


# Rectangle Madness

Let's cut up rectangles.

## 10.1 Squares in Rectangles

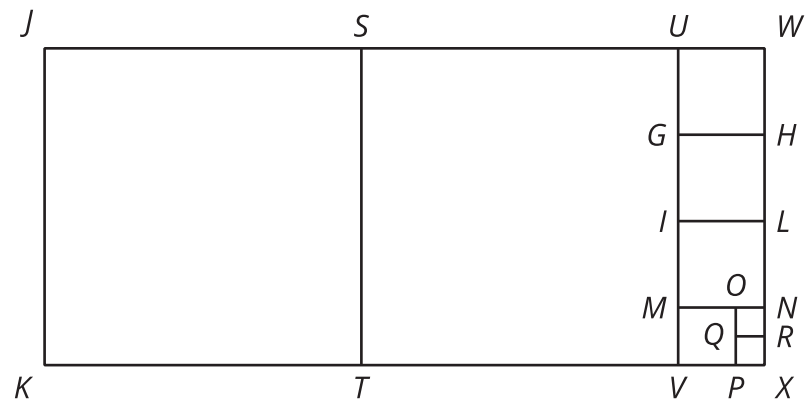
1. Rectangle  $ABCD$  is not a square. Rectangle  $ABEF$  is a square. Use the possible segment lengths to find the missing segment length.



- If segment  $AF$  is 5 units long and segment  $FD$  is 2 units long, how long would segment  $AD$  be?
- If segment  $BC$  is 10 units long and segment  $BE$  is 6 units long, how long would segment  $EC$  be?
- If segment  $AF$  is 12 units long and segment  $FD$  is 5 units long, how long would segment  $FE$  be?
- If segment  $AD$  is 9 units long and segment  $AB$  is 5 units long, how long would segment  $FD$  be?

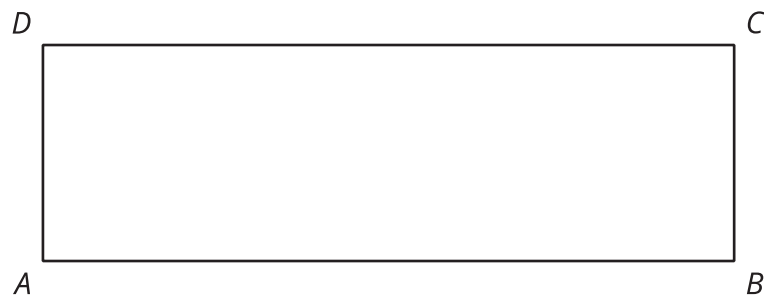


2. Rectangle  $JKXW$  has been decomposed into squares.



Segment  $JK$  is 33 units long and segment  $JW$  is 75 units long. Find the areas of all of the squares in the diagram.

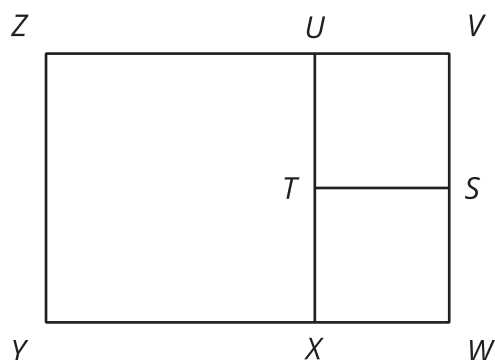
3. Rectangle  $ABCD$  is 16 units by 5 units.



- In the diagram, draw a line segment that decomposes  $ABCD$  into two regions: a square that is the largest possible and a new rectangle.
- Draw another line segment that decomposes the *new* rectangle into two regions: a square that is the largest possible and another new rectangle.
- Keep going until rectangle  $ABCD$  is entirely decomposed into squares.
- List the side lengths of all the squares in your diagram.



💡 Are you ready for more?



1. The diagram shows rectangle  $VWYZ$  which has been decomposed into 3 squares. What could the side lengths of this rectangle be?
2. How many different side lengths can you find for rectangle  $VWYZ$ ?
3. What are some rules for possible side lengths of rectangle  $VWYZ$ ?



## 10.2

## More Rectangles, More Squares

1. Draw a rectangle that is 21 units by 6 units.
  - a. In your rectangle, draw a line segment that decomposes the rectangle into a new rectangle and a square that is as large as possible. Continue until the diagram shows that your original rectangle has been entirely decomposed into squares.
  - b. How many squares of each size are in your diagram?
  - c. What is the side length of the smallest square?





2. Draw a rectangle that is 28 units by 12 units.
- a. In your rectangle, draw a line segment that decomposes the rectangle into a new rectangle and a square that is as large as possible. Continue until the diagram shows that your original rectangle has been decomposed into squares.
- b. How many squares of each size are in your diagram?
- c. What is the side length of the smallest square?
3. Write each of these fractions as a mixed number with the smallest possible numerator and denominator:
- a.  $\frac{16}{5}$
- b.  $\frac{21}{6}$
- c.  $\frac{28}{12}$
4. What do the fraction problems have to do with the earlier rectangle decomposition problems?

