

Break Apart Rectilinear Figures

Logan and his class are learning about paper airplanes. To make the best plane, you need a rectangular piece of paper.

At the end of the week, the class will have a contest to see whose plane flies the farthest.

When Logan gets home, he finds scrap paper with some pieces cut out. Let's help Logan break apart the scrap paper into rectangular shapes.

Remember the formula for finding area? Area is equal to length times width.

When you have an odd-shaped figure, you can decompose it, or break it apart, into smaller rectangular shapes. Then, you find the area of each of those shapes to find the total area. Total area is equal to length times width of shape A, plus length times width of shape B.

Logan is going to practice making his planes but needs to see which pieces of scrap paper have the largest area. When breaking apart a rectangular shape, there can be multiple ways to do this and still get the same area. Let's look at this piece of paper.

We can break this paper apart horizontally or vertically. Both still take up the same amount of total space!

If we break the paper apart horizontally, what are the measurements of the two sections? The long side can be broken into 2 inches and 9 inches. The top section is 6 inches by 2 inches, and the bottom section is 8 inches by 9 inches. The area of the top section is 6 inches times 2 inches for an area of 12 square inches. The area of the bottom section is 8 inches times 9 inches for an area of 72 square inches. To find the total area, we add 12 square inches plus 72 square inches equals 84 square inches.

Let's see what happens when we break the paper apart vertically. What are the measurements of the two sections? The bottom can be broken into 6 inches and 2 inches. The left section is 6 inches by 11 inches, and the right section is 2 inches by 9 inches. The area of the left section is 6 inches times 11 inches for an area of 66 square inches. The area of the right section is 2 inches times 9 inches for an area of 18 square inches. To find the total area, we add 66 square inches plus 18 square inches is equal to 84 square inches. The total area is the same!

Let's try this on another piece of scrap paper. This shape can be cut vertically, with the new measure of the bottom as 2 inches and 5 inches. The shape can be cut horizontally, with the new measure of the side as 4 inches and 5 inches. Either way, the total area is still 55 square inches.

Logan is ready to use his scrap paper to make his paper airplanes. Have you ever made a paper airplane?
