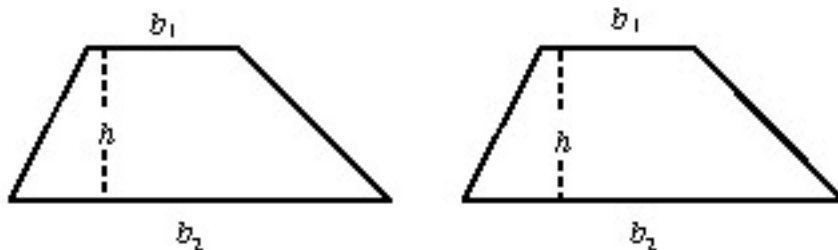
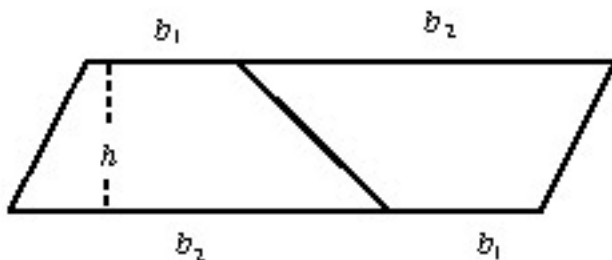


The Area of a Trapezoid

Cut two identical trapezoids. Let b_1 be the length of the shorter base of the trapezoid, b_2 the length of the other base, and h its height (see figure).

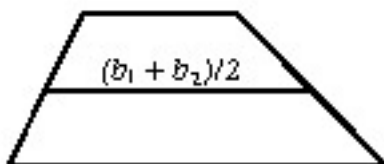
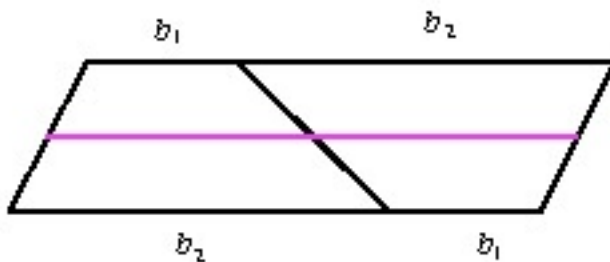


Turn one of the trapezoids so that both together form a parallelogram. *What is the length of the base of the parallelogram in terms of b_1 and b_2 ? What is its height? What is the area of the parallelogram? Relate the area of the trapezoid to the area of the parallelogram. Write a formula for the area of the trapezoid.*



Another interpretation for the formula.

For each trapezoid, draw the line that passes through the midpoints of the non parallel sides of the trapezoid. This line is called the median. Turn one trapezoid to form a parallelogram. *What do you observe about the two medians of the trapezoids?*



Give a convincing argument that the length of the median of the trapezoid has a length of $(b_1 + b_2) / 2$. Explain why another interpretation of the formula for the area of the trapezoid is to multiply the length of this median times the height.