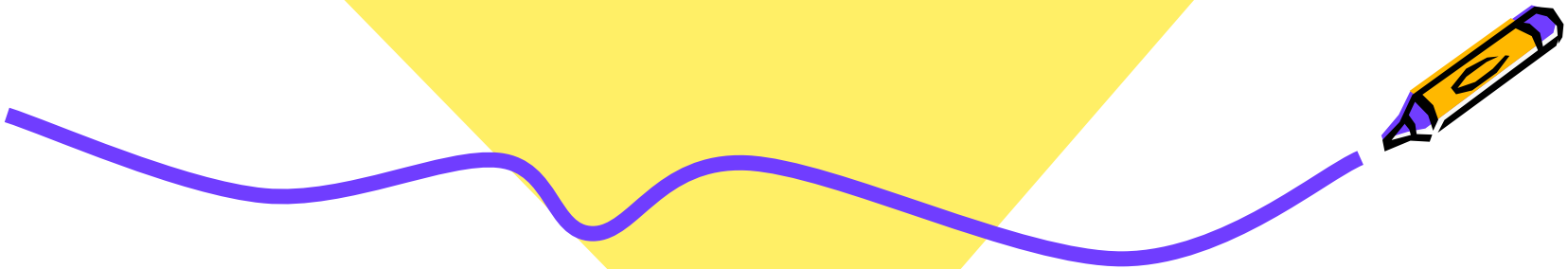
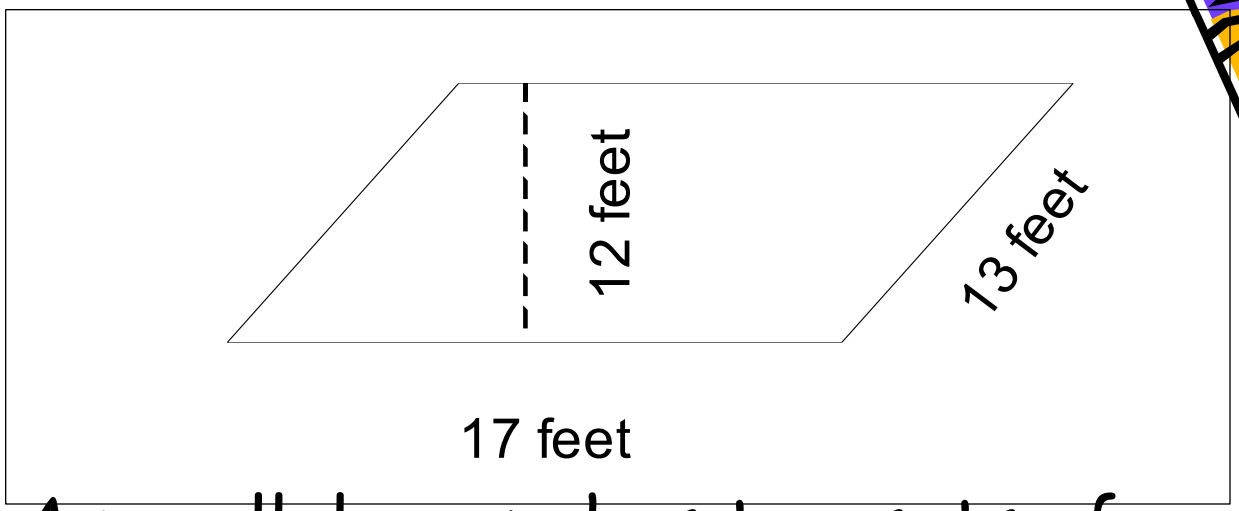
6-9 Parallelograms, Trapezoids and Triangles





- A parallelogram has two sets of parallel lines.
- The perimeter is the lengths of the four sides added.
- P=2b+2s where b is base and s is the slanted height. Notice the 12 feet is not needed to find perimeter.
- P=2(17)+2(13)=34+26=60 feet.

- The formula for area is A=bh where b is the base and h is the height.
- A=(17)(12)=204 ft2.

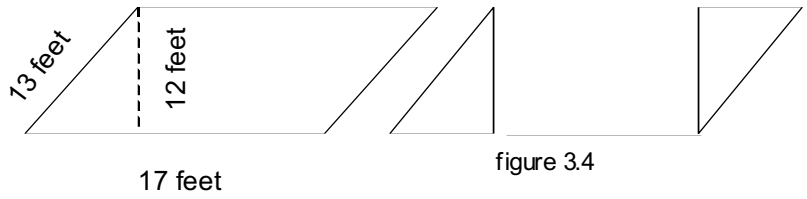


figure 3.4

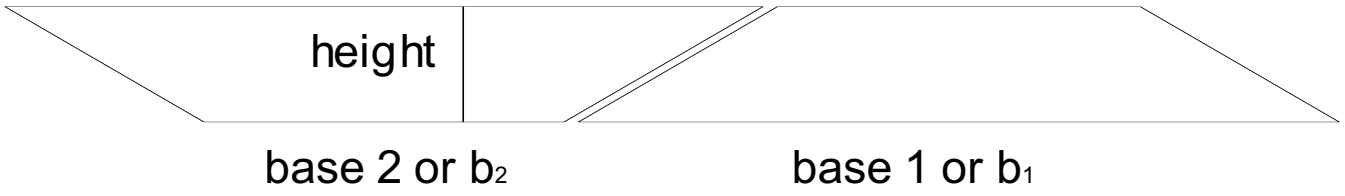
- To see the formula visually, cut the end triangle off a parallelogram
- Move the triangle to the other side
- The resulting rectangle has the same area as the parallelogram.
- To find the area of a rectangle multiply the base times the height.

Trapezoids

- Trapezoids have one set of parallel lines and one set of lines that are not parallel.
- The parallel lines are the bases.
- The height is perpendicular between the bases.
- The slant heights may be the same or they may be different.

Trapezoids

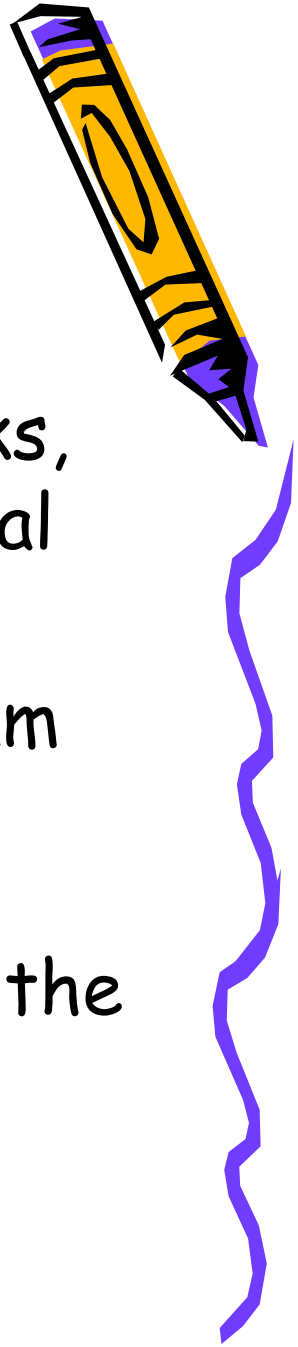
- To find the perimeter, add all four sides.
- $P = b_1 + b_2 + s_1 + s_2$



- To see how the formula for area works, visualize two of the same trapezoids put together as shown.
- Notice a parallelogram with twice the area of the desired trapezoid.
- The area of the trapezoid is $\frac{1}{2}$ the area of the parallelogram with height the same as that of the trapezoid, and a base that is the sum of the two bases of the trapezoid.

Triangles

- To find the perimeter of a triangle add all three sides.
- P= a+b+c where a, b and c are the lengths of the sides.
- The area of a triangle is $A = \frac{1}{2}$ bh where b is the base and h is the height perpendicular to the base.



- To illustrate why the area formula works, make a parallelogram out of two identical triangles.
- The height and base of the parallelogram is the same as that of the triangle. The area of the parallelogram is base times height and is twice the desired area of the triangle.