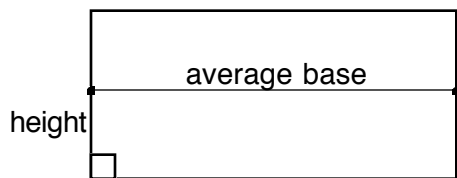
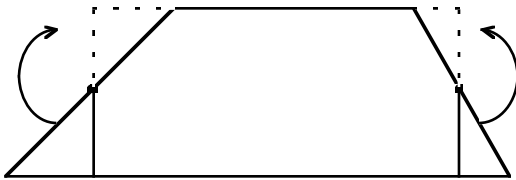
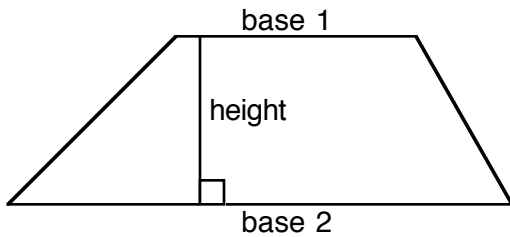


## Appendix A Finding the Area of a Trapezoid

Finding the area of a trapezoid is taught in *Delta* and again in *Geometry*. This lesson is for those who started Math-U-See after the *Delta* level or those who are transferring from the classic *Intermediate* level. It may also be used as a review for other students.

A trapezoid is a quadrilateral (four sided figure) with 2 sides parallel. In the picture notice that the top and bottom are parallel, but the sides are not. The top and bottom are called the bases. Finding the area of a trapezoid is a derivative of finding the area of a rectangle. The area of a rectangle is found by multiplying the base times the height. The formula for the area of a trapezoid is the average base times the height. Consider Figure 1 to see where this formula originates.

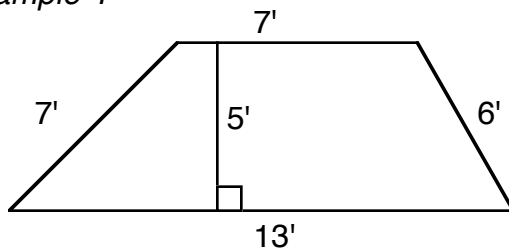
Figure 1



The traditional formula for finding the area of a trapezoid is  $\frac{b_1 + b_2}{2} \times h$

The average base is found by adding the top and bottom bases and dividing by 2. Then this result is multiplied by the height to find the area.

Example 1



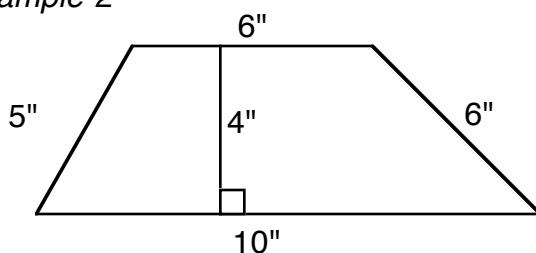
Find the area of the trapezoid.

The average base is  $(7' + 13') \div 2 = 10'$

The height is 5'

The area is  $10' \times 5' = 50$  square feet

Example 2



Find the area of the trapezoid.

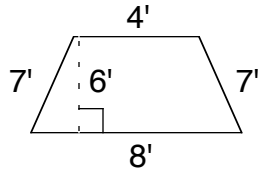
The average base is  $(6'' + 10'') \div 2 = 8''$

The height is 4''

The area is  $8'' \times 4'' = 32$  square inches

Find the area of the trapezoids. The first one is done for you. Remember that the drawings are sketches and may not be drawn exactly to scale.

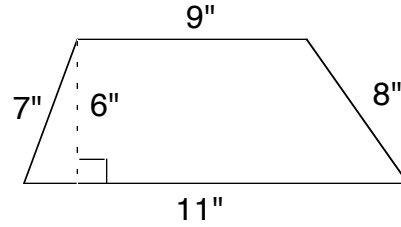
Solutions are at the end of the Solutions for the *Student Text* that follow A-3.



$$4 + 8 = 12$$

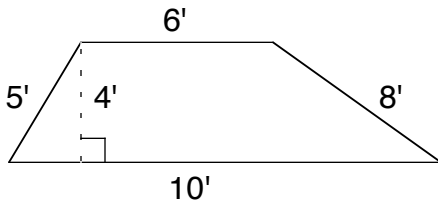
$$12 \div 2 = 6$$

$$6 \times 6 = 36 \text{ sq. ft.}$$

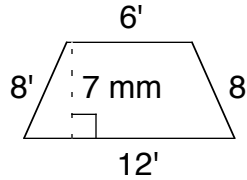


1) Area = 36 sq. ft.

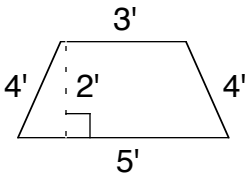
2) Area = \_\_\_\_\_



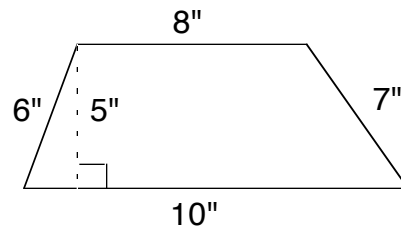
3) Area = \_\_\_\_\_



4) Area = \_\_\_\_\_



5) Area = \_\_\_\_\_

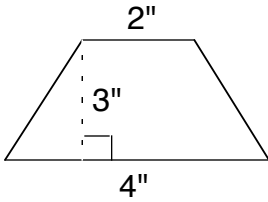


6) Area = \_\_\_\_\_

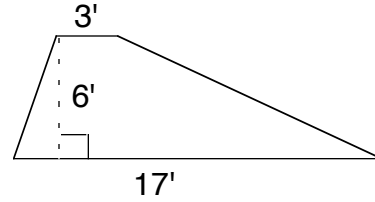
7) Austin cut shapes from colored paper to decorate the walls of his room. Each trapezoid had bases of 7 and 9 inches and a height of 5 inches. What was the area of each trapezoid? \_\_\_\_\_

8) We visited a park that was shaped like a trapezoid. The bases measured 1 mile and 3 miles and the height was 2 miles. What was the area of the park? \_\_\_\_\_

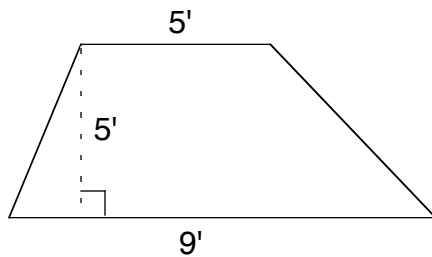
Find the area of the trapezoids.



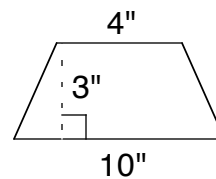
1) Area = \_\_\_\_\_



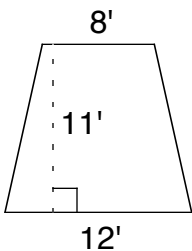
2) Area = \_\_\_\_\_



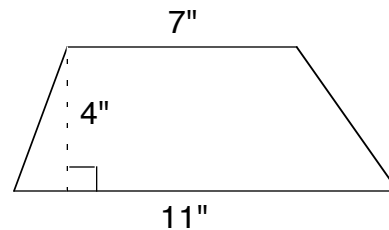
3) Area = \_\_\_\_\_



4) Area = \_\_\_\_\_



5) Area = \_\_\_\_\_



6) Area = \_\_\_\_\_

- 7) Pam's garden is shaped like a trapezoid. The bases are two and six feet long and the height is six feet. The plants she plans to use need one square foot of space apiece. How many plants should Pam buy to fill her garden? \_\_\_\_\_
- 8) Richard designed a special little book shaped like a trapezoid. The top of the book is five inches wide, the bottom of the book is seven inches wide, and the height of the book is six inches. What is the area of the front cover of the book? \_\_\_\_\_

A-2

- 1) done
- 2)  $9 + 11 = 20$   
 $20 \div 2 = 10$   
 $10 \times 6 = 60 \text{ sq. in.}$
- 3)  $6 + 10 = 16$   
 $16 \div 2 = 8$   
 $8 \times 4 = 32 \text{ sq. ft.}$
- 4)  $6 + 12 = 18$   
 $18 \div 2 = 9$   
 $9 \times 7 = 63 \text{ sq. ft.}$
- 5)  $3 + 5 = 8$   
 $8 \div 2 = 4$   
 $4 \times 2 = 8 \text{ sq. ft.}$
- 6)  $8 + 10 = 18$   
 $18 \div 2 = 9$   
 $9 \times 5 = 45 \text{ sq. in.}$
- 7)  $7 + 9 = 16$   
 $16 \div 2 = 8$   
 $8 \times 5 = 40 \text{ sq. in.}$
- 8)  $1 + 3 = 4$   
 $4 \div 2 = 2$   
 $2 \times 2 = 4 \text{ sq. mi.}$

A-3

- 1)  $2 + 4 = 6$   
 $6 \div 2 = 3$   
 $3 \times 3 = 9 \text{ sq. in.}$
- 2)  $3 + 17 = 20$   
 $20 \div 2 = 10$   
 $10 \times 6 = 60 \text{ sq. ft.}$
- 3)  $5 + 9 = 14$   
 $14 \div 2 = 7$   
 $7 \times 5 = 35 \text{ sq. ft.}$
- 4)  $4 + 10 = 14$   
 $14 \div 2 = 7$   
 $7 \times 3 = 21 \text{ sq. in.}$
- 5)  $8 + 12 = 20$   
 $20 \div 2 = 10$   
 $10 \times 11 = 110 \text{ sq. ft.}$
- 6)  $7 + 11 = 18$   
 $18 \div 2 = 9$   
 $9 \times 4 = 36 \text{ sq. in.}$
- 7)  $2 + 6 = 8$   
 $8 \div 2 = 4$   
 $4 \times 6 = 24 \text{ sq. ft.}$   
24 plants
- 8)  $5 + 7 = 12$   
 $12 \div 2 = 6$   
 $6 \times 6 = 36 \text{ sq. in.}$