

4.3 Practice pg. 170-171 #5-19 odd (ANSWERS WITH WORK)

$$\begin{aligned} 5. \quad A &= \frac{1}{2}h(b_1 + b_2) \\ &= \frac{1}{2}(4)(5 + 7) \\ &= \frac{1}{2}(4)(12) \\ &= 24 \end{aligned}$$

The area of the trapezoid is 24 square units.

$$\begin{aligned} 6. \quad A &= \frac{1}{2}h(b_1 + b_2) \\ &= \frac{1}{2}(3)(12 + 6) \\ &= \frac{1}{2}(3)(18) \\ &= 27 \end{aligned}$$

The area of the trapezoid is 27 square units.

$$\begin{aligned} 7. \quad A &= \frac{1}{2}h(b_1 + b_2) \\ &= \frac{1}{2}(4)(6 + 8) \\ &= \frac{1}{2}(4)(14) \\ &= 28 \end{aligned}$$

The area of the trapezoid is 28 square inches.

$$\begin{aligned} 8. \quad A &= \frac{1}{2}h(b_1 + b_2) \\ &= \frac{1}{2}(4)\left(1\frac{1}{2} + 3\frac{1}{2}\right) \\ &= \frac{1}{2}(4)(5) \\ &= 10 \end{aligned}$$

The area of the trapezoid is 10 square centimeters.

$$\begin{aligned} 9. \quad A &= \frac{1}{2}h(b_1 + b_2) \\ &= \frac{1}{2}(10)(7.5 + 13.5) \\ &= \frac{1}{2}(10)(21) \\ &= 105 \end{aligned}$$

The area of the trapezoid is 105 square feet.

10. The area formula should include the height of the trapezoid.

$$\begin{aligned} A &= \frac{1}{2}(8)(6 + 14) \\ &= 80 \text{ m}^2 \end{aligned}$$

$$\begin{aligned} 11. \quad A &= \frac{1}{2}h(b_1 + b_2) \\ &= \frac{1}{2}(4)(1 + 3) \\ &= \frac{1}{2}(4)(4) \\ &= 8 \end{aligned}$$

The area of the trapezoid is 8 square units.

$$\begin{aligned} 12. \quad A &= \frac{1}{2}h(b_1 + b_2) \\ &= \frac{1}{2}(4)(2 + 6) \\ &= \frac{1}{2}(4)(8) \\ &= 16 \end{aligned}$$

The area of the trapezoid is 16 square units.

$$\begin{aligned}
 13. \quad A &= \frac{1}{2}h(b_1 + b_2) \\
 &= \frac{1}{2}(3)(3 + 5) \\
 &= \frac{1}{2}(3)(8) \\
 &= 12
 \end{aligned}$$

The area of the trapezoid is 12 square units.

$$\begin{aligned}
 14. \quad A &= \frac{1}{2}h(b_1 + b_2) \\
 &= \frac{1}{2}(4)(3 + 5) \\
 &= \frac{1}{2}(4)(8) \\
 &= 16
 \end{aligned}$$

The area of the trapezoid-shaped region is 16 square feet.

$$\begin{aligned}
 15. \quad A &= \frac{1}{2}h(b_1 + b_2) \\
 &= \frac{1}{2}(6)(9 + 11) \\
 &= \frac{1}{2}(6)(20) \\
 &= 60
 \end{aligned}$$

The area of the trapezoid is 60 square inches.

$$\begin{aligned}
 16. \quad A &= \frac{1}{2}h(b_1 + b_2) \\
 &= \frac{1}{2}(22)(10.5 + 12.5) \\
 &= \frac{1}{2}(22)(23) \\
 &= 253
 \end{aligned}$$

The area of the trapezoid is 253 square centimeters.

$$\begin{aligned}
 17. \quad A &= \frac{1}{2}h(b_1 + b_2) \\
 &= \frac{1}{2}(12)(5.6 + 7.4) \\
 &= \frac{1}{2}(12)(13) \\
 &= 78
 \end{aligned}$$

The area of the trapezoid is 78 square miles.

$$\begin{aligned} 18. \quad A &= \frac{1}{2}h(b_1 + b_2) \\ &= \frac{1}{2}(14)(21 + 22) \\ &= \frac{1}{2}(14)(43) \\ &= 301 \end{aligned}$$

The area of the trapezoid is 301 square meters.

19. Area of rectangle = Area of trapezoid

$$\begin{aligned} \ell w &= \frac{1}{2}h(b_1 + b_2) \\ \ell(9) &= \frac{1}{2}(9)(12 + 24) \\ 9\ell &= \frac{1}{2}(9)(36) \\ 9\ell &= 162 \\ \frac{9\ell}{9} &= \frac{162}{9} \\ \ell &= 18 \end{aligned}$$

The length of the rectangle is 18 feet.