Maths with Melissa

Area of Trapeziums: Problem Solving Worksheet

Solve the following problems about the area of trapeziums. Show your working where required. Use the formula:

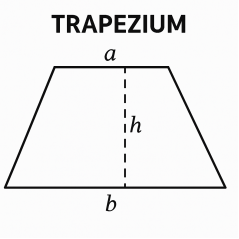
$$\text{Area of a trapezium} = \frac{1}{2} \times (a + b) \times h$$

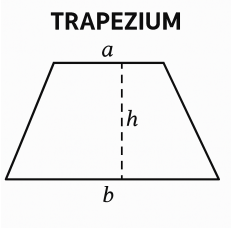
where a and b are the lengths of the parallel sides, and h is the height (the perpendicular distance between the parallel sides).

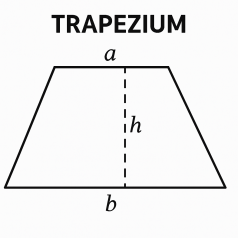
Problem Solving Exercises

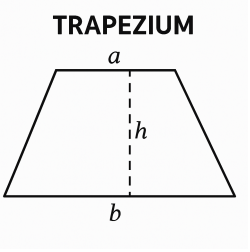
1. The parallel sides of a trapezium are 8 cm and 12 cm. The height is 5 cm. Calculate the area of the trapezium.
2. A trapezium has parallel sides of 15 m and 9 m. The height is 7 m. What is its area?
3. The area of a trapezium is 60 cm². If the lengths of the parallel sides are 10 cm and 14 cm, find the height.
4. One parallel side of a trapezium is 18 cm, the other is 22 cm, and the height is 6 cm. Find the area.
5. A trapezium has an area of 96 m² and its height is 8 m. If one parallel side is 10 m, find the length of the other parallel side.
6. The parallel sides of a trapezium are 25 mm and 40 mm, and the height is 12 mm. Find the area in mm².
7. A trapezium has parallel sides of 7.5 cm and 12.5 cm, and the height is 4 cm. What is the area?
8. The area of a trapezium is 84 cm². Its parallel sides are 10 cm and 14 cm. What is the height?
9. A trapezium has an area of 150 m², one parallel side is 20 m, the other is 10 m. Find the height.
10. The parallel sides of a trapezium are 6 m and 14 m. The height is 9 m. Calculate the area.

Use diagrams to help or draw your own.









Answer Key

1. Area $= \frac{1}{2} \times (8 + 12) \times 5 = \frac{1}{2} \times 20 \times 5 = 10 \times 5 =$ **$50\ cm^2$**

2. Area $= \frac{1}{2} \times (15 + 9) \times 7 = \frac{1}{2} \times 24 \times 7 = 12 \times 7 =$ **$84\ m^2$**

3. $\frac{1}{2}(10 + 14)h = 60 \Rightarrow \frac{1}{2} \times 24 \times h = 60 \Rightarrow 12h = 60 \Rightarrow$ **$h = 5\ cm$**

4. Area $= \frac{1}{2} \times (18 + 22) \times 6 = \frac{1}{2} \times 40 \times 6 = 20 \times 6 =$ **$120\ cm^2$**

5. $\frac{1}{2}(10 + b)8 = 96 \Rightarrow (10 + b)8 = 192 \Rightarrow 10 + b = 24 \Rightarrow b =$ **$14\ m$**

6. Area $= \frac{1}{2} \times (25 + 40) \times 12 = \frac{1}{2} \times 65 \times 12 = 32.5 \times 12 =$ **$390\ mm^2$**

7. Area $= \frac{1}{2} \times (7.5 + 12.5) \times 4 = \frac{1}{2} \times 20 \times 4 = 10 \times 4 =$ **$40\ cm^2$**

8. $\frac{1}{2}(10 + 14)h = 84 \Rightarrow \frac{1}{2} \times 24 \times h = 84 \Rightarrow 12h = 84 \Rightarrow h =$ **$7\ cm$**

9. $\frac{1}{2}(20 + 10)h = 150 \Rightarrow \frac{1}{2} \times 30 \times h = 150 \Rightarrow 15h = 150 \Rightarrow h =$ **$10\ m$**

10. Area $= \frac{1}{2} \times (6 + 14) \times 9 = \frac{1}{2} \times 20 \times 9 = 10 \times 9 =$ **$90\ m^2$**