Area of Parallelograms and Trapezoids

Parallelogram and trapezoid area: Models and calculations

Name _____ **Date** _____ **Score** _____ / 6

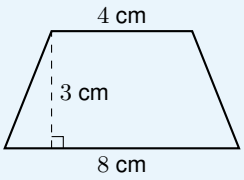
QUICK REVIEW

A parallelogram has $A = bh$, using perpendicular height: $b = 7, h = 4$ gives 28 cm^2. A trapezoid has $A = \frac{1}{2}(b_1 + b_2)h$: bases $4, 8$ and height 3 give $(4 + 8) \times 3/2 = 18$ cm^2. Slanted sides are not heights. Sketches are not to scale.

Worked example

Find the trapezoid area.

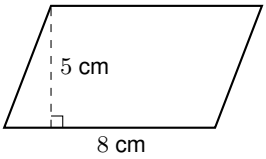
1. Average the parallel bases: $(4 + 8)/2 = 6$ cm.
2. Multiply by perpendicular height: $6 \times 3 = 18$ cm^2.
Answer: 18 cm^2.



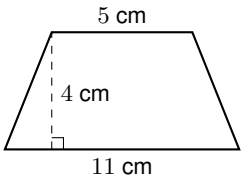
Practice Problems

Show your thinking.

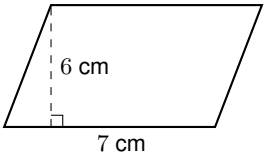
1. Find parallelogram area.



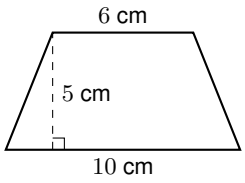
2. Find trapezoid area.



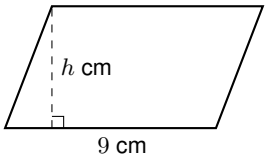
3. Model this shape as a rearranged rectangle.



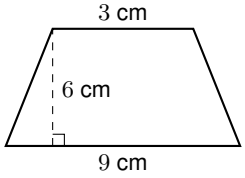
4. Explain how averaging bases finds area.



5. Find the missing perpendicular height. Area is 36 cm^2; find h.



6. A trapezoid tile has these dimensions. Find its area.



Answer Key

1. 40 cm^2.
2. 32 cm^2.
3. 42 cm^2.
4. 40 cm^2.
5. 4 cm.
6. 36 cm^2.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Rearrange the slanted side pieces into a rectangle with base 8 cm and height 5 cm.
2. $A = 8 \times 5 = 40$ cm^2.

Problem 2

1. Average the parallel bases: $(5 + 11)/2 = 8$ cm.
2. Multiply by perpendicular height: $8 \times 4 = 32$ cm^2.

Problem 3

1. Rearrange the slanted side pieces into a rectangle with base 7 cm and height 6 cm.
2. $A = 7 \times 6 = 42$ cm^2.

Problem 4

1. Average the parallel bases: $(6 + 10)/2 = 8$ cm.
2. Multiply by perpendicular height: $8 \times 5 = 40$ cm^2.

Problem 5

1. The perpendicular base is 9 cm.
2. Area is $9h$, so $9h = 36$.
3. $h = 36/9 = 4$ cm; check $9 \times 4 = 36$.

Problem 6

1. Average the parallel bases: $(3 + 9)/2 = 6$ cm.
2. Multiply by perpendicular height: $6 \times 6 = 36$ cm^2.

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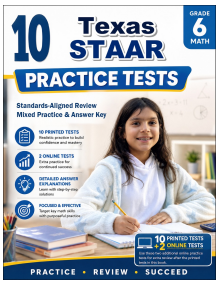

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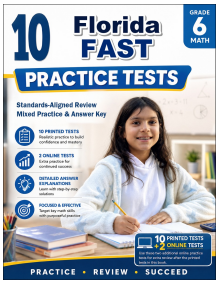

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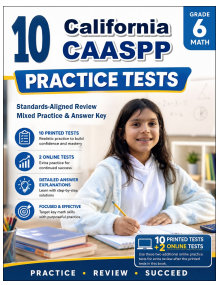

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