Area of Composite Shapes

Explore ideas and representations

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

QUICK REVIEW

Split a region into nonoverlapping parts. Add attached parts and subtract missing parts. A 5 by 3 rectangle with a triangle of base 5 and perpendicular height 2 has area $15 + 5 = 20$ square units.

Worked example

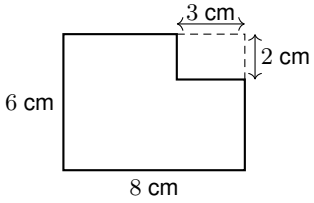
A 5 by 4 rectangle has a 2 by 1 notch. Find area.

1. Whole rectangle: $5(4) = 20$.
2. Notch: $2(1) = 2$.
3. Remaining area: $20 - 2 = 18$.
Answer: 18 square units.

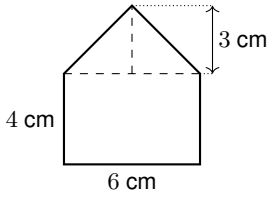
Practice Problems

Show your thinking.

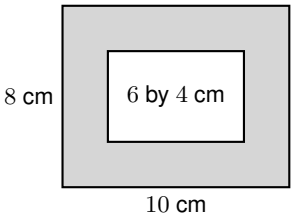
1. A 8 by 6 cm rectangle has a 3 by 2 cm corner removed. Find the remaining area.



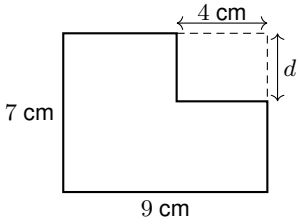
2. A roof triangle of base 6 cm and height 3 cm sits on a 6 by 4 cm rectangle. Find the total area.



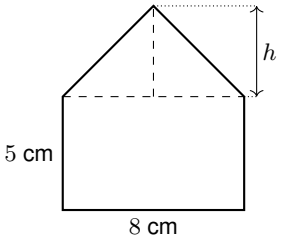
3. A 10 by 8 cm rectangular frame has a 6 by 4 cm hole. Find the remaining area.



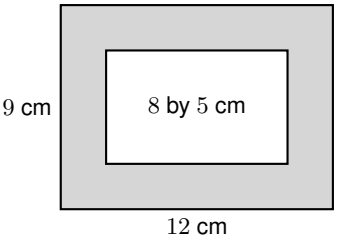
4. A 9 by 7 cm panel has area 51 cm^2 after cutting a 4 cm wide notch. Find the notch depth.



5. This panel is 8 cm wide and 9 cm tall. The rectangle is 5 cm high. Find the roof height and the total area.



6. A centered 8 by 5 cm hole is cut from a 12 by 9 cm frame. Find all four border widths.



Answer Key

1. 42 cm^2.
2. 33 cm^2.
3. 56 cm^2.
4. 3 cm.
5. Roof height 4 cm; area 56 cm^2.
6. Left/right 2 cm; top/bottom 2 cm.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Outer rectangle: $8(6) = 48$ cm^2.
2. Removed rectangle: $3(2) = 6$ cm^2.
3. Subtract the removed area: $48 - 6 = 42$ cm^2.

Problem 2

1. Outer rectangle: $6(4) = 24$ cm^2.
2. Added triangle: $(6)(3)/2 = 9$ cm^2.
3. Add: $24 + 9 = 33$ cm^2.

Problem 3

1. Outer rectangle: $10(8) = 80$ cm^2.
2. Removed rectangle: $6(4) = 24$ cm^2.
3. Subtract the removed area: $80 - 24 = 56$ cm^2.

Problem 4

1. Whole area: $9(7) = 63$ cm^2.
2. The removed area is $63 - 51 = 12$ cm^2.
3. Divide the removed area by its width: $12/4 = 3$ cm.

Problem 5

1. Roof height is $9 - 5 = 4$ cm.
2. Roof area is $8(4)/2 = 16$ cm^2.
3. Add the rectangle: $8(5) + 16 = 56$ cm^2.

Problem 6

1. Split the remaining width equally: $(12 - 8)/2 = 2$ cm on each side.
2. Split the remaining height equally: $(9 - 5)/2 = 2$ cm at top and bottom.
3. Centering gives equal opposite borders, not necessarily four equal borders.

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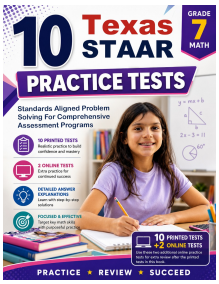

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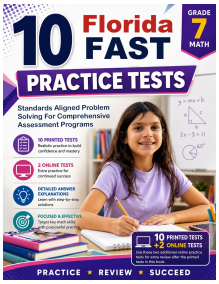

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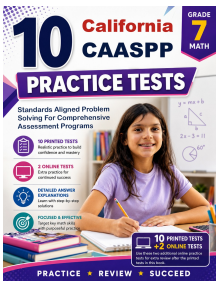

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