Area of Composite Shapes

Spot mistakes, reason, and work backward

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

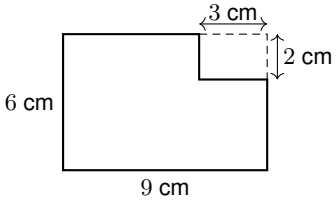
A 5 by 4 rectangle has a 2 by 1 notch. Find area.

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

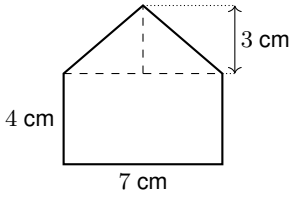
Practice Problems

Show your thinking.

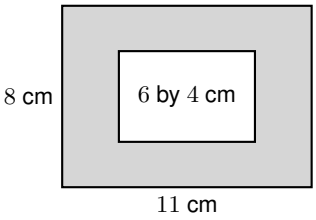
1. A 9 by 6 cm rectangle has a 3 by 2 cm corner removed. A student adds the missing corner. Correct the area.



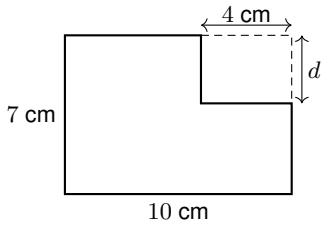
2. A roof triangle of base 7 cm and height 3 cm sits on a 7 by 4 cm rectangle. A student subtracts the roof area. Correct the total.



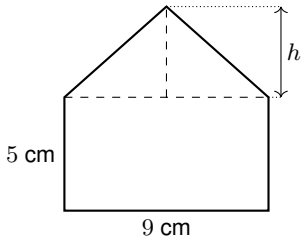
3. A 11 by 8 cm rectangular frame has a 6 by 4 cm hole. A student subtracts the hole perimeter from the outer area. Correct the frame area.



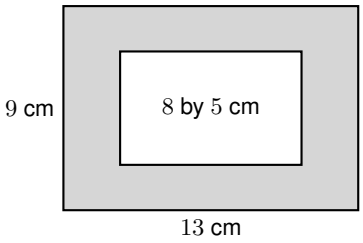
4. A 10 by 7 cm panel has area 58 cm^2 after a 4 cm wide notch. A student divides the remaining area by 4 to find depth. Correct the method.



5. The panel has total area 63 cm^2 and a 9 by 5 cm rectangle below the roof. A student uses the full area as the triangle area. Find the roof height.



6. A centered 8 by 5 cm hole is cut from a 13 by 9 cm frame. A student says all border widths must match. Check the claim.



Answer Key

1. 48 cm^2.
2. $\frac{77}{2}$ cm^2.
3. 64 cm^2.
4. 3 cm.
5. Roof height 4 cm.
6. Left/right $\frac{5}{2}$ cm; top/bottom 2 cm. The claim is false.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Outer rectangle: $9(6) = 54$ cm^2.
2. Removed rectangle: $3(2) = 6$ cm^2.
3. Subtract the removed area: $54 - 6 = 48$ cm^2.

Problem 2

1. Outer rectangle: $7(4) = 28$ cm^2.
2. Added triangle: $(7)(3)/2 = \frac{21}{2}$ cm^2.
3. Add: $28 + \frac{21}{2} = \frac{77}{2}$ cm^2.

Problem 3

1. Outer rectangle: $11(8) = 88$ cm^2.
2. Removed rectangle: $6(4) = 24$ cm^2.
3. Subtract the removed area: $88 - 24 = 64$ cm^2.

Problem 4

1. Whole area: $10(7) = 70$ cm^2.
2. The removed area is $70 - 58 = 12$ cm^2.
3. Divide the removed area by its width: $12/4 = 3$ cm.

Problem 5

1. The rectangle accounts for $9(5) = 45$ cm^2.
2. The roof must supply $63 - 45 = 18$ cm^2.
3. At the target area, $h = 2(18)/9 = 4$ cm.

Problem 6

1. Split the remaining width equally: $(13 - 8)/2 = \frac{5}{2}$ 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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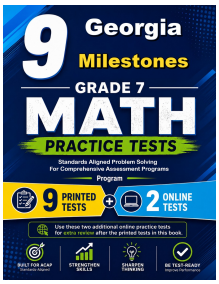

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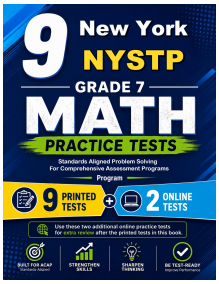

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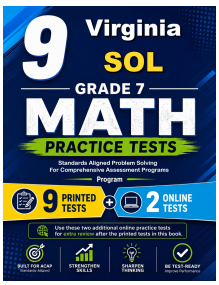

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