Area of Triangles

Area of triangles: Mistakes and missing information

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

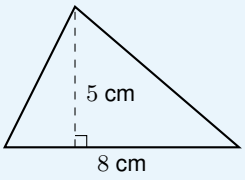
QUICK REVIEW

Triangle area is $A = \frac{1}{2}bh$. The height is perpendicular to the chosen base, not a slanted side. A base of 8 cm and perpendicular height 5 cm gives $A = \frac{1}{2}(8)(5) = 20$ cm^2. For a missing height, $h = 2A/b$. Sketches are not to scale.

Worked example

Find the area using the dashed perpendicular height.

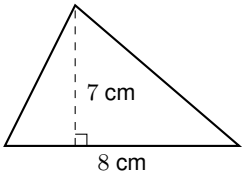
1. The matching rectangle has area $8 \times 5 = 40$ cm^2.
2. The triangle is half: $40/2 = 20$ cm^2.
Answer: 20 cm^2.



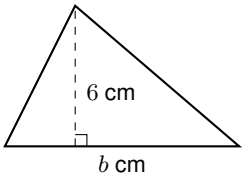
Practice Problems

Show your thinking.

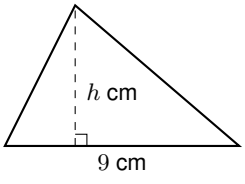
1. A student reports 56 cm^2. Correct the missing halving step.



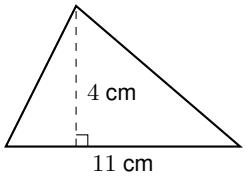
2. Find missing base b. Area is 42 cm^2.



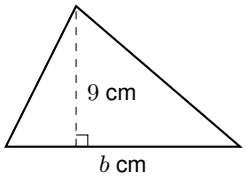
3. Find the perpendicular height. Area is 45 cm^2.



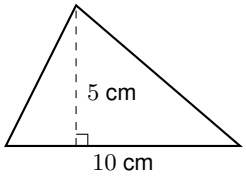
4. A student uses $b + h$ as area. Correct the formula and result.



5. Reconstruct the base from area and height. Area is 27 cm^2.



6. Explain why halving the base-height product is necessary.



Answer Key

1. 28 cm^2.
2. 14 cm.
3. 10 cm.
4. 22 cm^2.
5. 6 cm.
6. 25 cm^2.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. The matching rectangle has area $8 \times 7 = 56$ cm^2.
2. The triangle is half: $56/2 = 28$ cm^2.

Problem 2

1. Double the area: $2 \times 42 = 84$ cm^2.
2. Divide by the known height: $84/6 = 14$ cm.
3. Check $\frac{1}{2}(14)(6) = 42$ cm^2.

Problem 3

1. Double the area: $2 \times 45 = 90$ cm^2.
2. Divide by the known base: $90/9 = 10$ cm.
3. Check $\frac{1}{2}(9)(10) = 45$ cm^2.

Problem 4

1. The matching rectangle has area $11 \times 4 = 44$ cm^2.
2. The triangle is half: $44/2 = 22$ cm^2.

Problem 5

1. Double the area: $2 \times 27 = 54$ cm^2.
2. Divide by the known height: $54/9 = 6$ cm.
3. Check $\frac{1}{2}(6)(9) = 27$ cm^2.

Problem 6

1. The perpendicular height splits this triangle into two right triangles. Each fills half of its smaller matching rectangle. Together those rectangles form the full base-by-height rectangle.
2. The matching rectangle has area $10 \times 5 = 50$ cm^2.
3. The triangle is half: $50/2 = 25$ cm^2.

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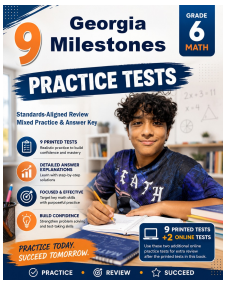

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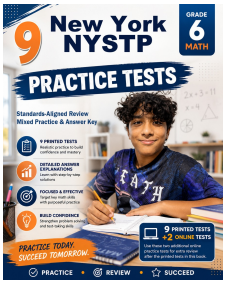

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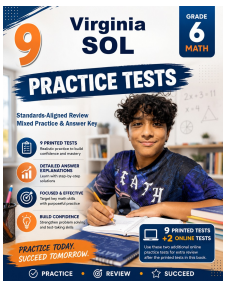

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