Area of Triangles

Area of triangles: Applications and decisions

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

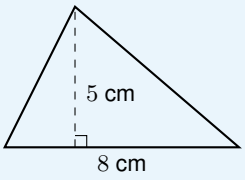
QUICK REVIEW

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.

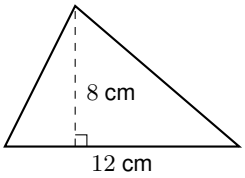
1. The matching rectangle has area $8 \times 5 = 40$ cm^2.
2. The triangle is half: $40/2 = 20$ cm^2.
Answer: 20 cm^2.



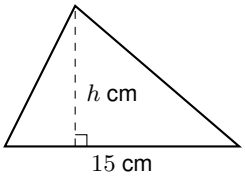
Practice Problems

Show your thinking.

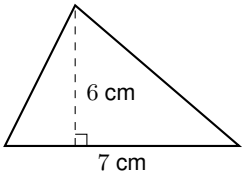
1. A triangular banner needs fabric. Find required square centimeters.



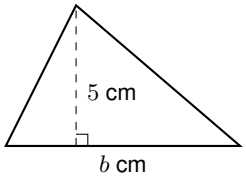
2. Design a triangle with this base and given area. Find height. Area is 30 cm^2.



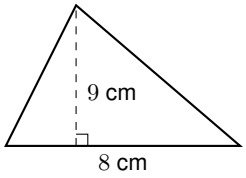
3. Two identical triangular cards are cut. Find one card area first. Then find total area for both cards.



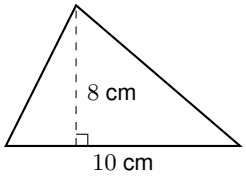
4. A sign maker knows height and area. Recover base. Area is 40 cm^2.



5. A triangle with these dimensions is labeled 72 square cm. Repair the label.



6. A 45-square-cm sheet is available. Find the triangle area and decide whether the area alone is enough.



Answer Key

1. 48 cm^2.
2. 4 cm.
3. 21 cm^2. Two cards: 42 cm^2.
4. 16 cm.
5. 36 cm^2.
6. 40 cm^2. Yes: $45 - 40 = 5$ cm^2 extra, by area only.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. The matching rectangle has area $12 \times 8 = 96$ cm^2.
2. The triangle is half: $96/2 = 48$ cm^2.

Problem 2

1. Double the area: $2 \times 30 = 60$ cm^2.
2. Divide by the known base: $60/15 = 4$ cm.
3. Check $\frac{1}{2}(15)(4) = 30$ cm^2.

Problem 3

1. The matching rectangle has area $7 \times 6 = 42$ cm^2.
2. The triangle is half: $42/2 = 21$ cm^2.
3. Two cards use $2 \times 21 = 42$ cm^2.

Problem 4

1. Double the area: $2 \times 40 = 80$ cm^2.
2. Divide by the known height: $80/5 = 16$ cm.
3. Check $\frac{1}{2}(16)(5) = 40$ cm^2.

Problem 5

1. The matching rectangle has area $8 \times 9 = 72$ cm^2.
2. The triangle is half: $72/2 = 36$ cm^2.

Problem 6

1. The matching rectangle has area $10 \times 8 = 80$ cm^2.
2. The triangle is half: $80/2 = 40$ cm^2.
3. $45 - 40 = 5$ cm^2 is spare; shape and fit are separate from this area comparison.

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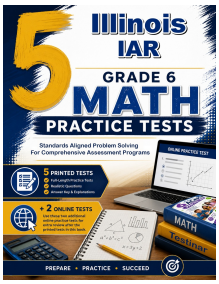

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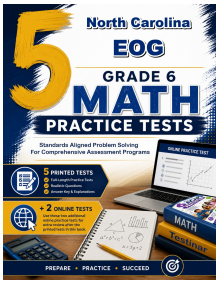

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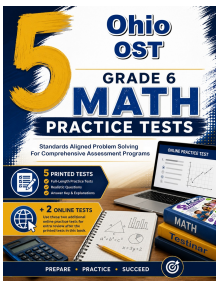

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