Area and Perimeter of Rectangles

Spot mistakes, reason, and work backward

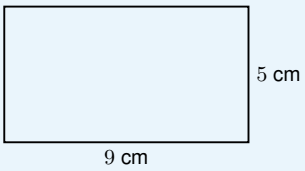
Name _____ **Date** _____ **Score** _____ / 8

QUICK REVIEW

For a rectangle, area $A = l \times w$ counts square units; perimeter $P = 2(l + w)$ measures the boundary. A 7-cm by 4-cm rectangle has $A = 28$ cm^2 and $P = 22$ cm. Do not mix square units and length units.

Worked example

Find the area and perimeter of this rectangle.



1. The area counts 5 rows of 9 unit squares: $9 \times 5 = 45$.

2. The boundary uses two of each side: $9 + 5 + 9 + 5 = 28$.

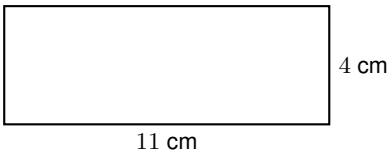
3. Check: area $45 \div 9 = 5$ rows; half the perimeter is $28 \div 2 = 14 = 9 + 5$.

Answer: Area 45 cm^2; perimeter 28 cm.

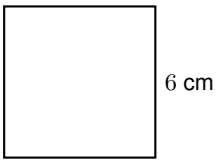
Practice Problems

Show your thinking.

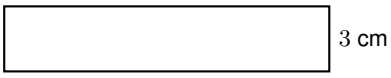
1. Check the area and boundary length of this labeled figure.



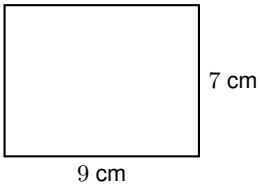
2. Find both measurements for this square rectangle.



3. Use opposite equal sides to calculate the full boundary.



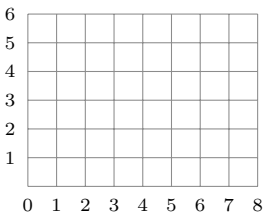
4. Use rows of unit squares to verify the area.



5. A student says area 36 cm^2 always means perimeter 24 cm. Give a counterexample.

6. A rectangle has perimeter 30 cm and length 9 cm. Find its width.

7. Draw two differently shaped rectangles of area 12 square units on this grid. Give their dimensions.



8. Which uses less edging: a 10-m by 2-m garden or a 6-m by 4-m garden? Give the difference.

Answer Key

1. Area 44 cm^2; perimeter 30 cm.
2. Area 36 cm^2; perimeter 24 cm.
3. 36 cm.
4. 63 cm^2.
5. For example, a 9-cm by 4-cm rectangle has perimeter 26 cm.
6. 6 cm.
7. For example, 6 by 2 and 4 by 3.
8. The 6-m by 4-m garden; 4 m less.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. The area counts 4 rows of 11 unit squares: $11 \times 4 = 44$.
2. The boundary uses two of each side: $11 + 4 + 11 + 4 = 30$.
3. Check: area $44 \div 11 = 4$ rows; half the perimeter is $30 \div 2 = 15 = 11 + 4$.

Problem 2

1. The area counts 6 rows of 6 unit squares: $6 \times 6 = 36$.
2. The boundary uses two of each side: $6 + 6 + 6 + 6 = 24$.
3. Check: area $36 \div 6 = 6$ rows; half the perimeter is $24 \div 2 = 12 = 6 + 6$.

Problem 3

1. The area counts 3 rows of 15 unit squares: $15 \times 3 = 45$.
2. The boundary uses two of each side: $15 + 3 + 15 + 3 = 36$.
3. Check: area $45 \div 15 = 3$ rows; half the perimeter is $36 \div 2 = 18 = 15 + 3$.

Problem 4

1. The area counts 7 rows of 9 unit squares: $9 \times 7 = 63$.
2. The boundary uses two of each side: $9 + 7 + 9 + 7 = 32$.
3. Check: area $63 \div 9 = 7$ rows; half the perimeter is $32 \div 2 = 16 = 9 + 7$.

Problem 5

1. Look for a side pair with product 36. Try width 4 cm: $36 \div 4 = 9$ cm.
2. This pair has area $9 \times 4 = 36$ cm^2 but perimeter $2(9 + 4) = 26$ cm.
3. $26 \neq 24$, so the claim is false.

Problem 6

1. Half the perimeter is $30 \div 2 = 15$ cm.
2. This is length plus width, so $15 - 9 = 6$ cm.
3. $2(9 + 6) = 30$ cm checks it.

Problem 7

1. Find pairs of factors of 12. Use $6 \times 2 = 12$ and $4 \times 3 = 12$.
2. At the lower-left corner, outline 6 columns across and 2 rows up.
3. Start on the left edge three rows up from the bottom. Outline 4 columns across and 3 rows up. The two outlines are different and fit without overlap.

Problem 8

1. First perimeter: $2(10 + 2) = 24$ m.
2. Second perimeter: $2(6 + 4) = 20$ m.
3. $24 - 20 = 4$ m less edging.

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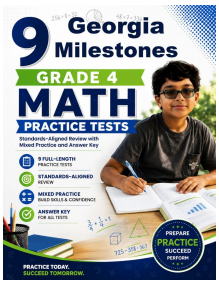

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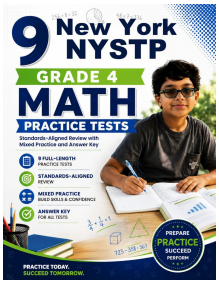

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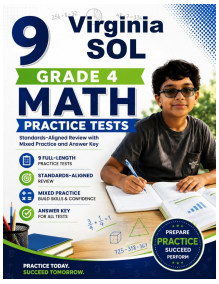

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