LESSON MAKER PRO

Shape Space Mission

Find area and perimeter of triangles and parallelograms.

GRADE 6 · 6.MG.2

6.MG.2 "The student will reason mathematically to solve problems, including those in context, that involve the area and perimeter of triangles and parallelograms..."

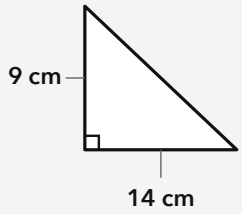
NAME _____ DATE _____

AREA AND PERIMETER TOOLS

A parallelogram can be rearranged into a rectangle with the same base and perpendicular height, so its area is A = b × h. A triangle with the same base and perpendicular height has half that area, so A = (b × h) / 2. Perimeter is the total distance around the outside of a shape.

WORKED EXAMPLE

Find the area of the right triangle shown.

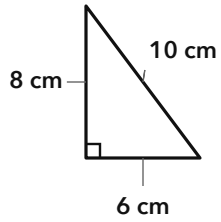


1. Use A = (b × h) / 2.
2. Substitute the leg lengths: A = (14 × 9) / 2.
3. Multiply, then divide: A = 126 / 2 = 63.

Answer: 63 cm^2

PRACTICE 6 problems

1 Use the labeled right triangle. Find its area and perimeter.



ANSWER _____

_____

2 A parallelogram has a base of 15 cm and a perpendicular height of 4 cm. What is its area?

ANSWER _____

3 A triangle has a base of 13 m and a perpendicular height of 12 m. What is its area?

ANSWER _____

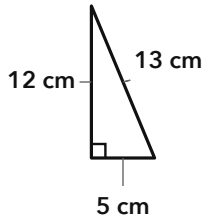
4 A parallelogram has a base of 11 in. and a side length of 8 in. What is its perimeter?

ANSWER _____

5 A triangle has side lengths of 7 ft, 11 ft, and 12 ft. What is its perimeter?

ANSWER _____

6 Use the labeled right triangle. Find its area and perimeter.



ANSWER _____

_____

APPLY IT Show your work

1 The gaming club is making a triangular sign. The sign has a base of 18 cm, a perpendicular height of 12 cm, and two other sides that are each 15 cm long. How many square centimeters of paper are needed to cover the sign? How many centimeters of border are needed around it?

WORK SPACE

ANSWER _____

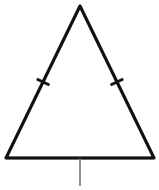
2 Students are planning a parallelogram-shaped garden bed. It has a base of 20 m, a perpendicular height of 7 m, and side lengths of 11 m. What area will be covered with mulch? How much edging is needed around the garden bed?

WORK SPACE

ANSWER _____

CHALLENGE One step up

The isosceles triangular patch shown has a perimeter of 36 cm. Its base is labeled, and its perpendicular height is 6 cm. Find the length of each matching side and the area. Explain your reasoning.



WORK SPACE AND ANSWER

ANSWER KEY # Shape Space Mission

GRADE 6 · 6.MG.2

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Use the labeled right triangle. Find its area and perimeter.	**Area = 24 cm^2; perimeter = 24 cm**
2	A parallelogram has a base of 15 cm and a perpendicular height of 4 cm. What is its area?	**60 cm^2**
3	A triangle has a base of 13 m and a perpendicular height of 12 m. What is its area?	**78 m^2**
4	A parallelogram has a base of 11 in. and a side length of 8 in. What is its perimeter?	**38 in.**
5	A triangle has side lengths of 7 ft, 11 ft, and 12 ft. What is its perimeter?	**30 ft**
6	Use the labeled right triangle. Find its area and perimeter.	**Area = 30 cm^2; perimeter = 30 cm**

PART 2 · APPLY IT

1. **108 cm^2 of paper; 48 cm of border** Use (18 × 12) / 2 = 108 to find the area. Add 18 + 15 + 15 = 48 to find the border length. The equal 15 cm sides are consistent with height 12 cm and half-base 9 cm.
2. **140 m^2 of mulch area; 62 m of edging** Multiply 20 × 7 for the area. Add both bases and both side lengths, 20 + 20 + 11 + 11, for the perimeter.

CHALLENGE

The two matching sides total 20 cm, so each is 10 cm. Its area is (16 × 6) / 2 = 48 cm^2.

Accept equivalent wording for square units and correct formula work. For the challenge, accept any clear explanation that subtracts the base from the perimeter and splits the remaining length equally.