

Area Action Lab

Measure flat spaces by choosing the right formula.

HIGH SCHOOL • MA.912.GR.4.4

MA.912.GR.4.4 "Solve mathematical and real-world problems involving the area of two-dimensional figures."

NAME _____

DATE _____

AREA STRATEGIES

Area measures the amount of surface inside a two-dimensional figure, in square units. Use $A=lw$ for a rectangle, $A=bh$ for a parallelogram, $A=\frac{1}{2}bh$ for a triangle, $A=\frac{1}{2}(b_1+b_2)h$ for a trapezoid, and $A=\pi r^2$ for a circle. Split a composite figure into nonoverlapping familiar shapes, then add or subtract their areas.

WORKED EXAMPLE

Find the area of a trapezoid with bases of 13 cm and 21 cm and a height of 8 cm.

1. Use $A=\frac{1}{2}(b_1+b_2)h$.
2. Substitute: $A=\frac{1}{2}(13+21)(8)$.
3. Simplify: $A=\frac{1}{2}(34)(8)=17(8)=136$.

Answer: 136 cm²

PRACTICE 6 problems

- 1** Find the area of a rectangle with a length of 14 cm and a width of 9 cm.

ANSWER _____

- 2** Find the area of a triangle with a base of 18 m and a height of 7 m.

ANSWER _____

- 3** Find the area of a parallelogram with a base of 16 in. and a height of 12 in.

ANSWER _____

- 4** Find the area of a trapezoid with bases of 10 yd and 22 yd and a height of 11 yd.

ANSWER _____

- 5** Find the area of a circle with a radius of 5 ft. Write your answer in terms of pi.

ANSWER _____

- 6** A 25 m by 17 m rectangular patio has a 6 m by 4 m rectangular planter cut out of one corner. Find the remaining patio area.

ANSWER _____

APPLY IT Show your work

- 1** Student council is painting a 28 ft by 16 ft rectangular photo wall. A triangular window with a base of 12 ft and a height of 10 ft will not be painted. How many square feet will be painted?

WORK SPACE

ANSWER _____

- 2** A robotics team is cutting a trapezoid-shaped metal panel for a competition display. Its parallel sides are 26 in. and 14 in., and its height is 9 in. What is the area of the panel?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A media room floor is a 32 ft by 24 ft rectangle. A circular recording booth with a radius of 6 ft will not be carpeted. How much area will be carpeted? Write your answer in terms of pi.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Find the area of a rectangle with a length of 14 cm and a width of 9 cm.	126 cm²
2	Find the area of a triangle with a base of 18 m and a height of 7 m.	63 m²
3	Find the area of a parallelogram with a base of 16 in. and a height of 12 in.	192 in.²
4	Find the area of a trapezoid with bases of 10 yd and 22 yd and a height of 11 yd.	176 yd²
5	Find the area of a circle with a radius of 5 ft. Write your answer in terms of pi.	25pi ft²
6	A 25 m by 17 m rectangular patio has a 6 m by 4 m rectangular planter cut out of one corner. Find the remaining patio area.	401 m²

PART 2 • APPLY IT

1. **388 ft²** Find the wall area, $28(16)=448$, and the window area, $\frac{1}{2}(12)(10)=60$. Subtract: $448-60=388$.
2. **180 in.²** Use the trapezoid formula: $A=\frac{1}{2}(26+14)(9)=\frac{1}{2}(40)(9)=180$.

CHALLENGE**768-36pi ft²**

Accept equivalent forms such as 36π subtracted from 768 for the challenge. For answers requested in terms of pi, accept only exact pi forms, not decimal approximations.