

Shape Area Mashup

Split, solve, and add areas.

GRADE 8 • 8.MG.5.a

8.MG.5.a "Subdivide a plane figure into triangles, rectangles, squares, trapezoids, parallelograms, circles, and semicircles. Determine the area of subdivisions and combine to determine the area of the composite plane figure."

NAME _____

DATE _____

BUILD THE TOTAL

Split a composite figure into familiar shapes. Find each area, then add the areas that do not overlap. Leave answers with pi in exact form when a circle or semicircle is included.

WORKED EXAMPLE

A 9-unit by 4-unit rectangle has a semicircle with diameter 4 units attached outside one short side. Find the total area.

1. Rectangle area: $9 \times 4 = 36$
2. Semicircle radius: $4 / 2 = 2$
3. Semicircle area: $\text{half} \times \pi \times 2^2 = 2\pi$
4. Total area: $36 + 2\pi$

Answer: $36 + 2\pi$ square units

PRACTICE 5 problems

- 1** A 6-unit by 5-unit rectangle has a triangle attached along a 6-unit side. The triangle's height is 3 units. Find the total area.

ANSWER _____

- 2** A square has side length 7 units. A semicircle with diameter 14 units is attached outside one side. Find the total area.

ANSWER _____

- 3** A 12-unit by 5-unit rectangle has a triangle attached outside one 8-unit section of a long side. The triangle's height is 5 units. Find the total area.

ANSWER _____

- 4** A parallelogram has base 11 units and height 6 units. A semicircle with diameter 6 units is attached outside one side. Find the total area.

ANSWER _____

- 5** A 13-unit by 10-unit rectangle has a semicircle attached to each 10-unit side. Find the total area.

ANSWER _____

APPLY IT Show your work

- 1** A gaming club makes a logo shaped like an 18-cm by 12-cm rectangle with a semicircle, diameter 12 cm, attached on top. What is the logo's area?

WORK SPACE

ANSWER _____

- 2** The student council designs a festival backdrop with a 16-ft by 11-ft rectangle and a triangle on top. The triangle has base 16 ft and height 7 ft. What is the backdrop's area?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A stage floor has a 20-unit by 12-unit rectangle. A trapezoid is attached outside a 20-unit side, with bases 20 and 14 units and height 6 units. A semicircle with diameter 12 units is attached outside a short side. Find the total area.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A 6-unit by 5-unit rectangle has a triangle attached along a 6-unit side. The triangle's height is 3 units. Find the total area.	39 square units
2	A square has side length 7 units. A semicircle with diameter 14 units is attached outside one side. Find the total area.	49 + 49pi/2 square units
3	A 12-unit by 5-unit rectangle has a triangle attached outside one 8-unit section of a long side. The triangle's height is 5 units. Find the total area.	80 square units
4	A parallelogram has base 11 units and height 6 units. A semicircle with diameter 6 units is attached outside one side. Find the total area.	66 + 9pi/2 square units
5	A 13-unit by 10-unit rectangle has a semicircle attached to each 10-unit side. Find the total area.	130 + 25pi square units

PART 2 • APPLY IT

1. **216 + 18pi cm²** Find the rectangle area, $18 \times 12 = 216$. Add the semicircle area, $\text{half} \times \pi \times 6^2 = 18\pi$.
2. **232 ft²** The rectangle area is $16 \times 11 = 176$. The triangle area is $\text{half} \times 16 \times 7 = 56$, so the total is 232.

CHALLENGE

342 + 18pi square units

Accept equivalent exact forms, such as $49\pi/2 + 49$. Do not require decimal approximations for answers containing pi.