LESSON MAKER PRO

Space and Edges

Model usable area and boundary length.

HIGH SCHOOL · MT.CORE.GEOM.MEAS.4.a

MT.CORE.GEOM.MEAS.4.a "Use geometric shapes, their measures, and their properties to model objects and use those models to solve problems in context. This standard should incorporate cultural context relating to Montana Indigenous Peoples and local communities..."

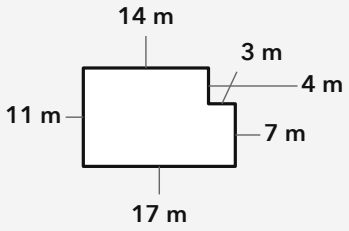
NAME _____ DATE _____

AREA AND PERIMETER

To find usable area, subtract the area of each removed part from the area of the whole shape. To find perimeter, add the lengths along every boundary, including the edge of an interior hole.

WORKED EXAMPLE

Find the area and perimeter of the display space shown.



1. Whole rectangle: 17 x 11 = 187 m^2.
2. Missing corner: 3 x 4 = 12 m^2.
3. Area: 187 - 12 = 175 m^2.
4. Perimeter: 17 + 7 + 3 + 4 + 14 + 11 = 56 m.

Answer: 175 m^2; 56 m

PRACTICE 4 problems

1 A 20 m by 10 m space has a 6 m by 2 m corner removed. Find its area.

ANSWER _____

2 An 18 m by 6 m rectangle has a 2 m by 1 m corner removed. Find its perimeter.

ANSWER _____

3 A circle of radius 5 cm is removed from the center of a circle of radius 9 cm. Find the area left in terms of pi.

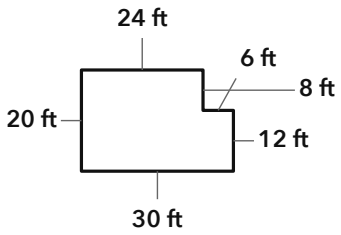
ANSWER _____

4 A 1 m square is removed from the center of a square with 15 m sides. Find the total length of both boundaries.

ANSWER _____

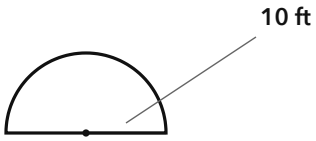
APPLY IT Show your work

1 At Salish Kootenai College, students plan a native-plant bed with the outline shown. How much planting area will it have?



ANSWER _____

2 A Montana community center plans the semicircular gathering space shown. How many feet of edging will cover its full boundary? Give an exact answer.



ANSWER _____

CHALLENGE One step up

A 28 m by 22 m event space has a 6 m by 2 m corner removed and a 5 m square planter removed from its interior. Find the usable area and the total length of all boundaries.

WORK SPACE AND ANSWER

ANSWER KEY

Space and Edges

HIGH SCHOOL · MT.CORE.GEOM.MEAS.4.a

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A 20 m by 10 m space has a 6 m by 2 m corner removed. Find its area.	**188 m^2**
2	An 18 m by 6 m rectangle has a 2 m by 1 m corner removed. Find its perimeter.	**48 m**
3	A circle of radius 5 cm is removed from the center of a circle of radius 9 cm. Find the area left in terms of pi.	**56pi cm^2**
4	A 1 m square is removed from the center of a square with 15 m sides. Find the total length of both boundaries.	**64 m**

PART 2 · APPLY IT

1. **552 ft^2** Subtract the missing corner from the full rectangle: 30 x 20 - 6 x 8 = 552 ft^2.
2. **10pi + 20 ft** The curved edge is half of a circle's circumference, or 10pi ft. Add the 20 ft straight edge.

CHALLENGE

579 m^2; 120 m

Accept equivalent exact forms, such as 20 + 10pi ft. For the challenge perimeter, the corner cut leaves the outer boundary length unchanged; include the planter's 20 m boundary.