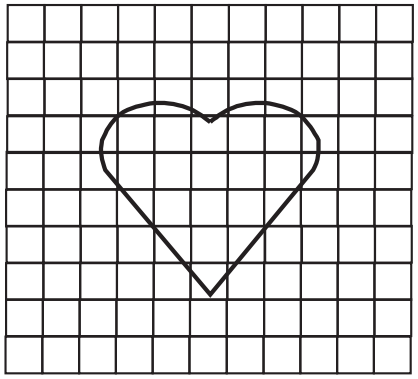
NAME_____

Module 13 Perimeter, Area, and Volume
Lesson 3 Area: Irregular Shapes

Independent Practice 13.3

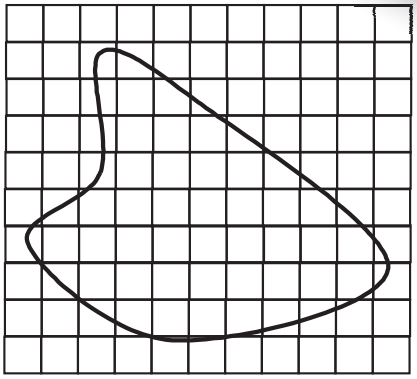
Estimate the area of the shape. Each ☐ is 1 km^2.

1.



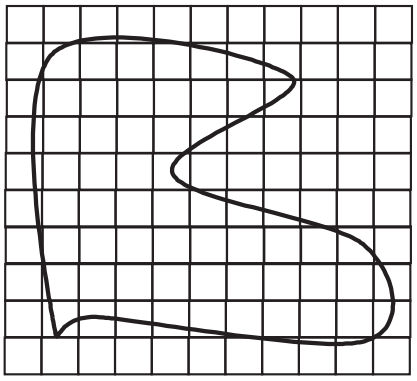
About 20.5 km^2

2.



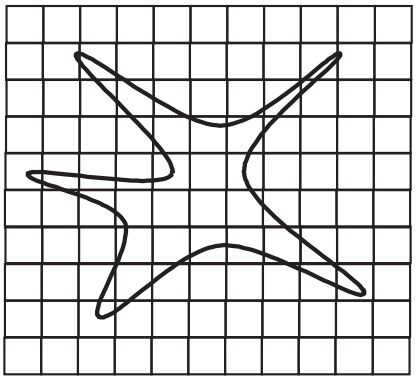
About 43 km^2

3.



About 54 km^2

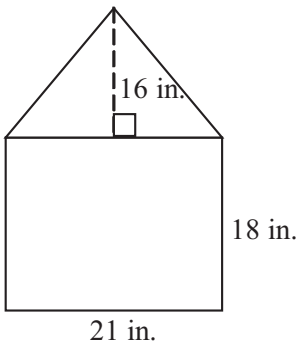
4.



About 22 km^2

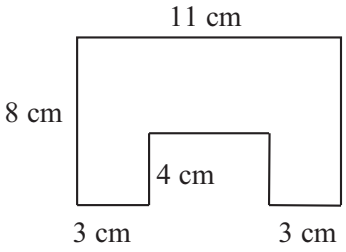
Find the area of the shape.

5.



546 in.^{2}

6.



68 cm^2

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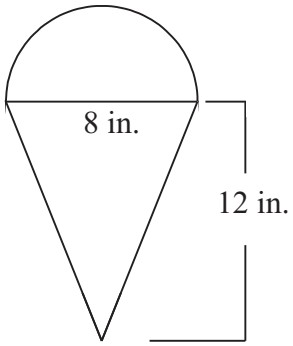
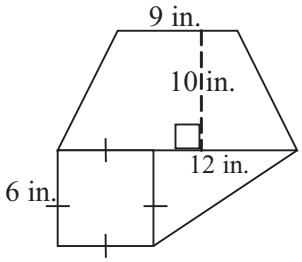
Find the area of the shape. Assume that figures, which appear to be semi-circles, are semi-circles.

7.



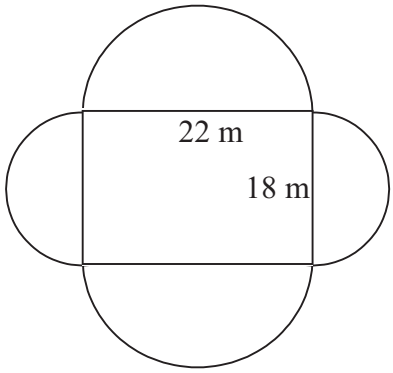
About 73.12 in.^{2}

8.



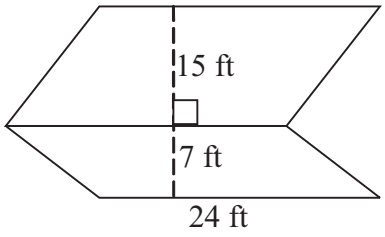
207 in.^{2}

9.



About 1,030.28 m^2

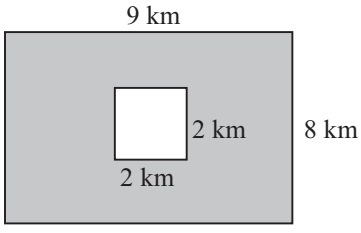
10.



528 ft^2

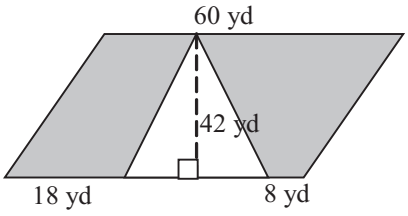
Find the area of the gray shaded region.

11.



68 km^2

12.



1,806 yd^2

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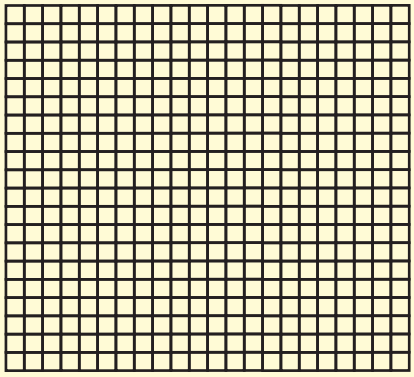
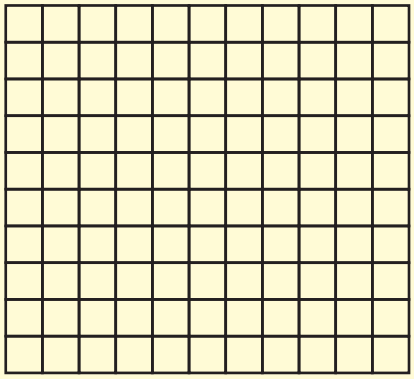
Module 13 **Perimeter, Area, and Volume**
Lesson 3 **Area: Irregular Shapes**

Journal

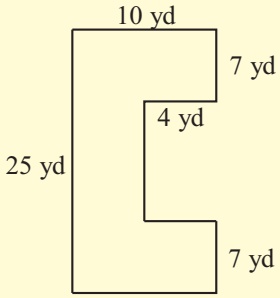
1. Explain how to use a grid to estimate the area of an irregular shape.

2. Mickey needs to estimate the area of an irregular shape. He has two types of graph paper as shown below. Explain how the accuracy of his estimate is related to which type of graph paper he uses.





3. Explain how either addition or subtraction can be used to find the area of the shape below.



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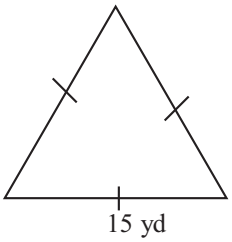
Cumulative Review

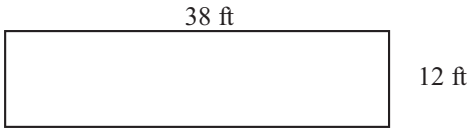
Find the perimeter.

1.



45 yards

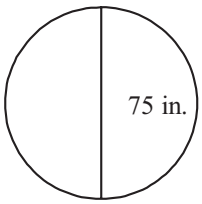
2.



100 feet

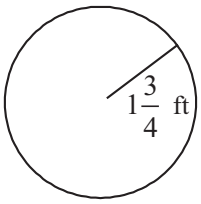
Find the circumference. Each segment intersects the center of the circle.

3.



About 235.5 in.

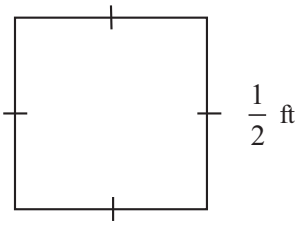
4.



About 11 ft

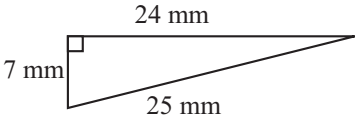
Find the area.

5.



$\frac{1}{4}$ ft^2

6.



84 mm^2

7. A circular tabletop has an area of 153.86 square feet. Estimate the diameter of the tabletop.

The diameter is about 14 feet.

8. Find the height of a triangle that has an area of 200 square meters and a base length of 10 square meters.

The height of the triangle is 40 meters.

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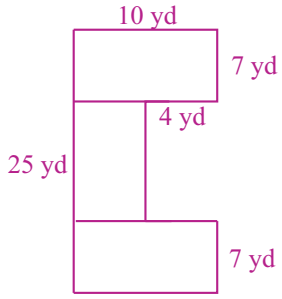
Module 13 **Perimeter, Area, and Volume**
Lesson 3 **Area: Irregular Shapes**

Possible Journal Answers

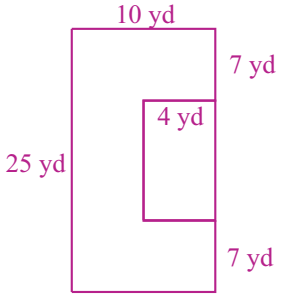
1. **I place a grid of congruent squares of known area, such as one square foot, over the shape. I count the number of squares that were completely inside the shape. Of the remaining squares on the grid, I counted the number of squares that the shape passed through. I added half of this number to the number of squares that were completely inside the grid. This sum was an estimate of the area of the irregular shape.**

2. **If Mickey uses the graph paper with the smaller squares, he will get a more accurate estimate. When the paper with the smaller squares is used, more squares will be completely inside the shape and more of the shape will be covered by squares completely inside of it, meaning more of the shape will be known rather than estimated.**

3. **Addition can be used to find the area of the shape by dividing the shape into three rectangles, by finding the area of each rectangle, and then by finding the sum of the three areas.**



Subtraction can be used to find the area by drawing a segment to complete a larger rectangle and then by subtracting the area of the smaller rectangle formed. In the figure below, the area can be found by subtracting the area of the shaded region from the area of the 25 yd by 10 yd rectangle.



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