

Lesson 8-1 Estimating Length and Area

WARM UP:

How many inches are in a foot? 12 in

5 ft = 60 in

48 in = 4 ft

Measuring Length

Length	Unit	Reference Example
Metric System	millimeter (mm)	tip of pen, piece of lead
	centimeter (cm)	width of pinky finger
	meter (m)	width of door
	kilometer (km)	from here to Chick-fil-A (SFS)
U.S. Customary System	inch (in)	knuckle to top of thumb
	feet (ft)	school floor tile
	yard (yd) = 3 ft.	width of door
	mile (mi)	27 laps in gym

Choose an appropriate metric unit for the questions below.

- | | METRIC | CUSTOMARY |
|---------------------------------------|--------------|----------------|
| 1) Height of a classroom chalkboard. | <u>m</u> | <u>ft./yd.</u> |
| 2) Length of a broom. | <u>m</u> | <u>ft.</u> |
| 3) Length of a pencil. | <u>cm</u> | <u>in.</u> |
| 4) Width of a penny. (flat) | <u>cm/mm</u> | <u>in.</u> |
| 5) Distance from Raleigh to New York. | <u>km</u> | <u>mi</u> |

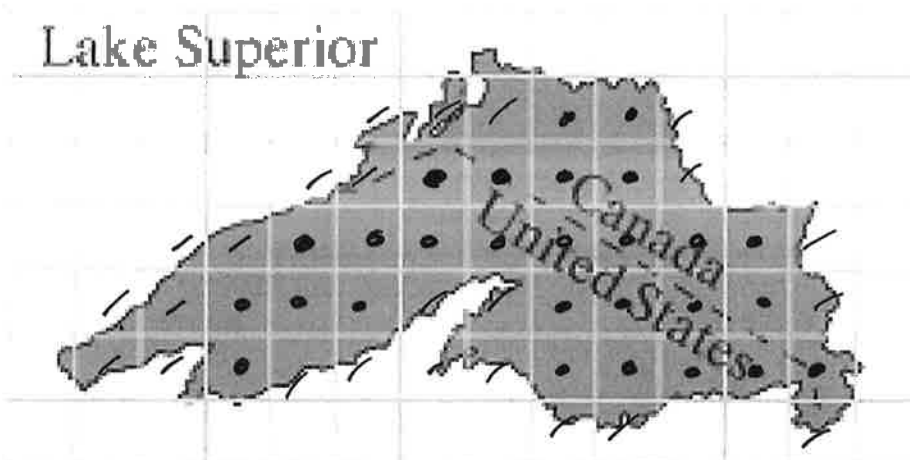
Choose a reasonable estimate.

- 1) Height of a juice box: 4 ft or **4 in**
- 2) Length of a new pencil: **15 cm** or 15 m
- 3) Depth of a pool: **2 m** or 2 cm
- 4) Distance between two cities: **50 mi** or 50 yd
- 5) Perimeter of a classroom: **20 m** or 20 km

Estimating Area

Area	The number of square units a figure encloses. <i>Think of it as the amount of space something takes up.</i>	Example: · top of desk · "area" rug in living room
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Estimate the area of Lake Superior. Each square below represents 900 square miles.



full \square s = 27

$\frac{1}{2}$ \square s = 24 \approx 12 \square s

12 + 27 = 39 \square s

$$\begin{array}{r} 900 \\ \times 39 \\ \hline 8100 \\ 27000 \\ \hline 35100 \end{array}$$

Estimate: 35,100 square miles

Solution:

Lake Superior



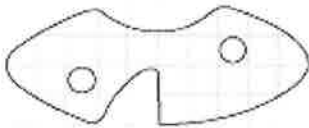
Count the number of squares filled or almost filled. Then count the number of squares that are about half-filled.

$$\begin{array}{r} 31 \\ 5 \\ 9 \\ 8 \\ 6 \\ \hline 31 \end{array} \begin{array}{r} 1 \\ 1 \\ 0 \\ 3 \\ 3 \\ \hline 8 \end{array}$$

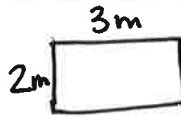
Estimate the number of squares filled by adding the filled squares plus the half-filled squares, which is $31 + \frac{1}{2}(8)$, or 35. Multiply 35 by 900 mi^2 . The area is about $31,500 \text{ mi}^2$.

Try Again!

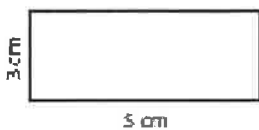
Estimate the area of the shaded region. Each square represents 4 yd^2 .



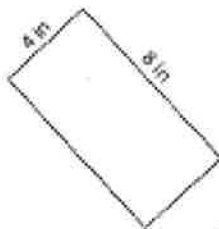
Area of a Rectangle

Area of a Rectangle	<p>Formula:</p> $l \times w$ <p>length \times width</p>	<p>Example:</p>  $l \times w$ $3 \times 2 = 6 \text{ m}^2$ <p>units²</p>
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Find the area of the rectangles below:



$$5 \times 3 = 15 \text{ cm}^2$$



$$8 \times 4 = 32 \text{ in}^2$$

A 14 ft by 3 ft wall.

$$\begin{array}{r} 14 \\ \times 3 \\ \hline 42 \text{ ft}^2 \end{array}$$