

Geometric Modeling Using Similarity

geometric similarity is common in deriving and testing physical and biological relationships

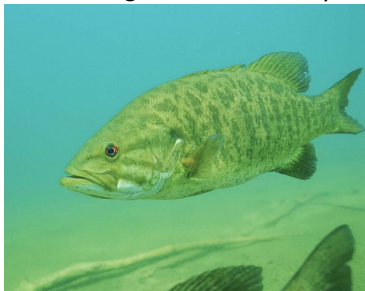


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a species of bass? $\frac{\text{length}}{\text{height}}$

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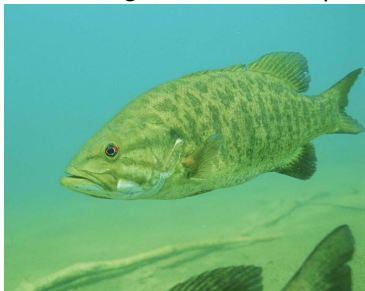


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humans? $\frac{\text{armspan}}{\text{height}}$ i.e. $l \propto h$.

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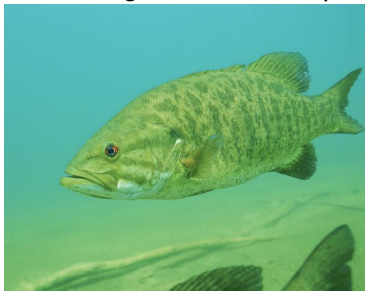


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volume?

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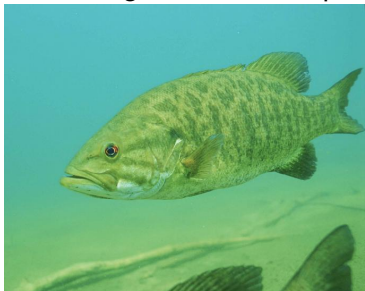


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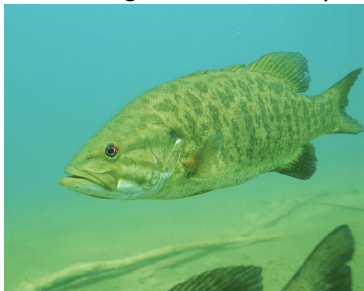


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surface area?

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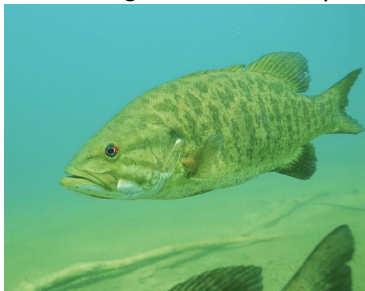


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surface area? $a \propto l^2$

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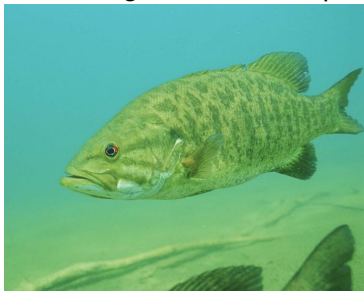


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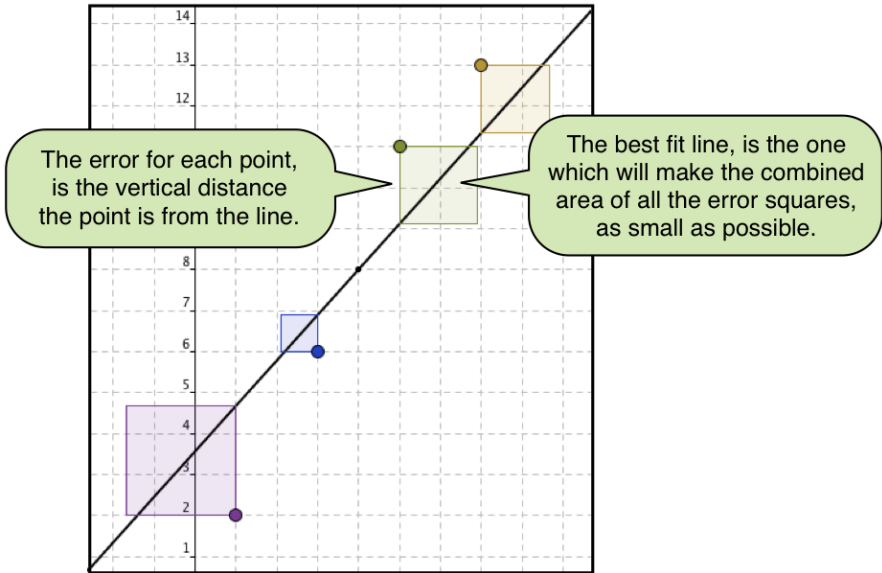
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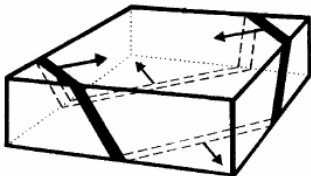
surface area? $a \propto l^2$

weight = volume \times average weight density, so if that density is constant, then $w \propto l^3$

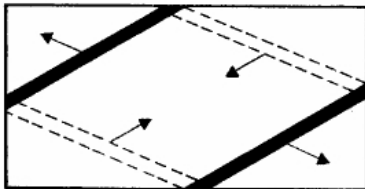
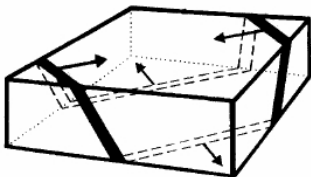


<http://math.maine121.org/welcome/chapter-5/>

Sliding a Ribbon Off a Box Using Similarity



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The Geometric Viewpoint: a Survey of Geometries by Thomas Sibley