

Score:	How to get the scores:
<p style="text-align: center;">4 (100%)</p>	<p>Frogs are amphibians, which always need go back to water to keep their skin moist. Why? Because they exchange gases (oxygen and carbon dioxide) across their thin, highly vascularized skin, and any surface that exchanges gases must be kept wet. They need to exchange gases across their skin because their lungs do not do a good enough job of getting in enough oxygen, but they are especially bad at flushing out excess carbon dioxide.</p> <p>Redesign a frog's lungs at the cellular level to help them overcome this design flaw. The relationship between surface area, volume, surface area-to-volume ratios, cell size, and cell transport efficiency should be shown implicitly in the redesign itself, and should reflect the fact that the student did some independent research. (Level 4 Check Activity)</p> <p>OR</p> <p>Design an experiment (in other words, fill out the first two pages of the Lab Write-Up Form) that answers this question: How would heat transfer differ between two people of the same volume—one person being tall and thin, with long arms and legs, and the other person being short with thicker and shorter arms and legs?</p> <p>Also, predict the results of your experiment, and give a possible scientific explanation for your prediction that shows the relationship between surface area, volume, surface area-to-volume ratios, cell size, and cell transport efficiency implicitly and explicitly. Further, consider how these differences in body shape could be useful as adaptations for the human organism in different environments. (Level 4 Check Activity)</p>
<p style="text-align: center;">3 (89%)</p>	<p>Write a paragraph (using given vocabulary words) that shows you know: (SA)</p> <ul style="list-style-type: none"> What surface area and volume are What a surface area-to-volume ratio means How to interpret surface area-to-volume ratios in terms of a cell's ability to diffuse needed substances and wastes in and out of the cell The overall relationship between cell size and cell transport efficiency (inductive reasoning) <p>Interpret a diagram of differently-sized cells by calculating their surface area-to-volume ratios and using those ratios to infer which cell would be more efficient at cell transport (MC or SA)</p>
<p style="text-align: center;">2 (79%)</p>	<ul style="list-style-type: none"> State the simple relationship between cell size and cell transport efficiency (MC or SA) Calculate surface area and volume (MC or SA) Calculate a surface area-to-volume ratio in reduced form (MC or SA)

1 (69%)	With help, can do some of 2 and 3
0 (59%)	With help, cannot do 2 and/or 3.