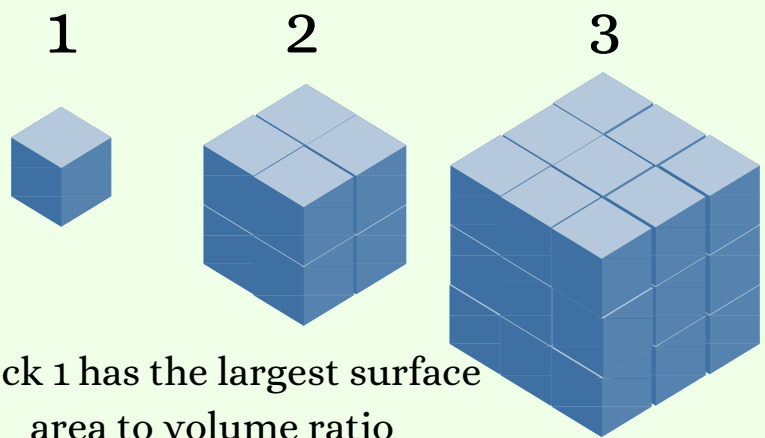


environment, unicellular, exchange, large, volume
 Unicellular organisms are small and made of one cell. This provides them with a large surface area compared to their volume so they can exchange materials directly with their environment.

Which block has the great surface area to volume ratio?
 Use the table to help you prove which one.



Surface area to volume ratio

Block 1 has the largest surface area to volume ratio

EXCHANGE SURFACES

TOP MARKS SCIENCE

Block	Faces	No. of squares on each face	Surface area	Volume	SA : Vol ratio
1	6	1	6x1= 6	1 ³ = 1	6:1
2	6	4	6x4= 24	2 ³ = 8	24:8 3:1
3	6	9	6x9= 54	3 ³ = 27	54:27 2:1

Reduces diffusion distance

Thin membranes

A large surface area

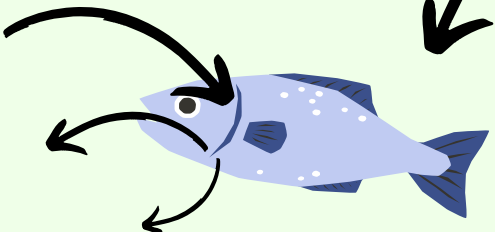
Adaptations

Continuous blood supply

Maintains a concentration gradient for diffusion

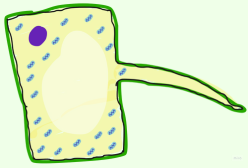
Examples

Fish gills



Rich blood supply

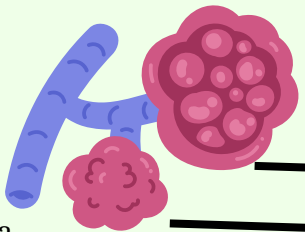
Continuous water flow to maintain a concentration gradient



Root hair cell

Root hair: Increases surface area

Alveoli



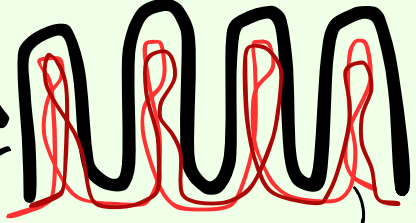
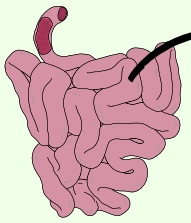
Continuous blood supply to maintain a concentration gradient

Lots of tiny sacs to increase surface area

Moist and thin membrane to reduce diffusion distance

Increases rate of diffusion

Small intestine



Villi & microvilli to increase surface area

Continuous blood supply to maintain a concentration gradient