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Name: _____

Class: _____

ACTIVITY SHEET

1.3 Surface area to volume ratio

1 Calculate the surface-area-to-volume ratio (SA:V) of the following cubes.

   a $2\,\text{cm} \times 2\,\text{cm} \times 2\,\text{cm}$

   b $5\,\text{cm} \times 5\,\text{cm} \times 5\,\text{cm}$

   c $0.3\,\text{cm} \times 0.3\,\text{cm} \times 0.3\,\text{cm}$

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2 a Four cubes have side measurements 0.5 cm, 1 cm, 2 cm and 4 cm respectively. Draw each cube to scale.

b Complete the following table with the calculated surface area and volume for each cube.

Cube	SA	V	SA:V
0.5			
1			
2			
4			

c What trend is shown by the ratio?

d Explain the importance of a high surface-area-to-volume ratio in terms of cellular function.

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3 a Complete the following SA:V table for rectangular objects.

Rectangle	Length	Width	Height	SA	V	SA:V
1	32	16	1			
2	16	16	2			
3	8	16	4			
4	8	8	8			

b What happened to the surface area and volume as the height increased?

c What happened to the ratio as the height increased?

d What dimension of the rectangular object would allow the highest rate of diffusion?

e Explain why leaves are long and flat.

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