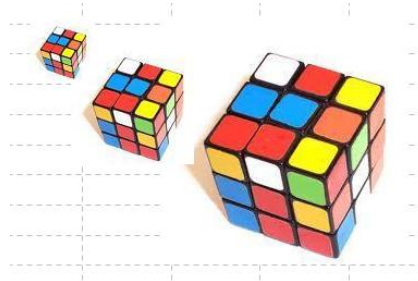


Student Activity: To investigate the effect changes to side lengths have on the area of the face of a cube, the total surface area of the cube and the volume of a cube

Use in connection with the interactive file, 'Cube', on the Student's CD.



- Given that the side length of one side of a cube is 2 cms, what is the side length of the other sides of the cube?

-
- Complete the following table for cubes of various side lengths:

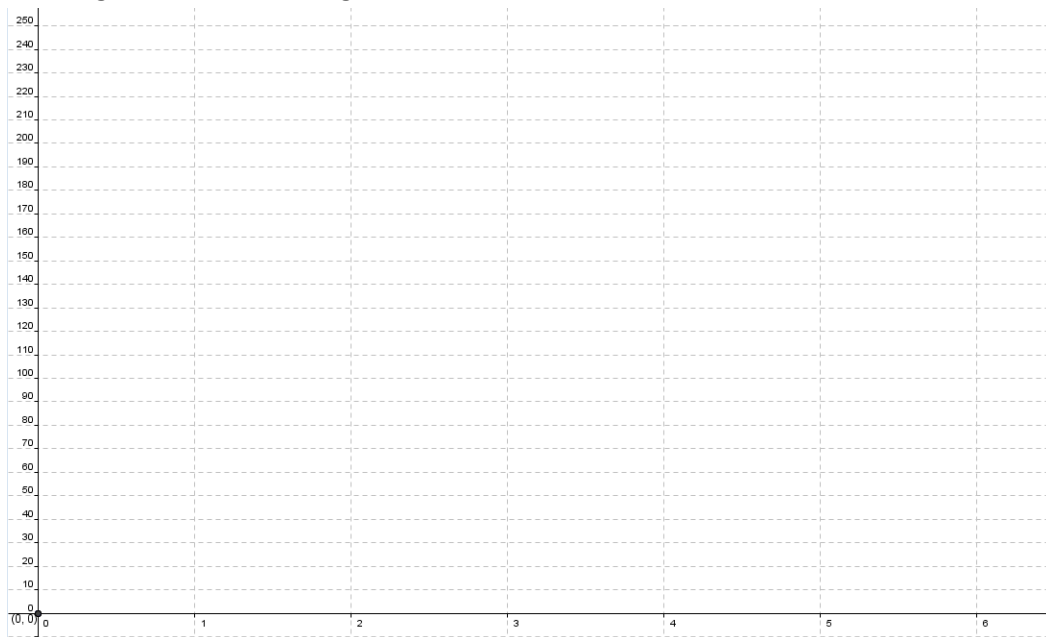
Side length of a cube	Area of 1 face of this cube
0	
1	
2	
3	
4	
5	
6	

- Write, in your own words, what pattern is formed in the change in the area of one face of a cube as the side length of the cube changes.

- Write a formula to represent the pattern formed by the change in the area of one face of a cube (A) as the side length (L) of the cube changes.

5. Is the relationship between the side length of the cube and the area of one face of the cube linear, quadratic or exponential? Explain your choice.

6. On the following diagram draw a graph to represent the area of one face of a cube as the side length of the cube changes.



7. Complete the following table for cubes of various side lengths:

Side length of a cube	Total surface area of this cube
0	
1	
2	
3	
4	
5	
6	

8. Write, in your own words, the pattern formed by the change in the total surface area of a cube as the side length of the cube changes.

9. Write a formula to represent the pattern formed by the change in the total surface area of a cube as the side length of the cube changes.

10. Is the relationship between the side length of the cube and the total surface area of the cube linear, quadratic, exponential or none of the above? Explain your choice.

11. On the same diagram as before, draw a graph to represent the change in total surface area of a cube as the side length of the cube changes.

12. Complete the following table for cubes of various side lengths:

Side length of a cube	Volume of this cube
0	
1	
2	
3	
4	
5	
6	

13. Write, in your own words, the pattern formed by the change in the volume of a cube as the side length of the cube changes.

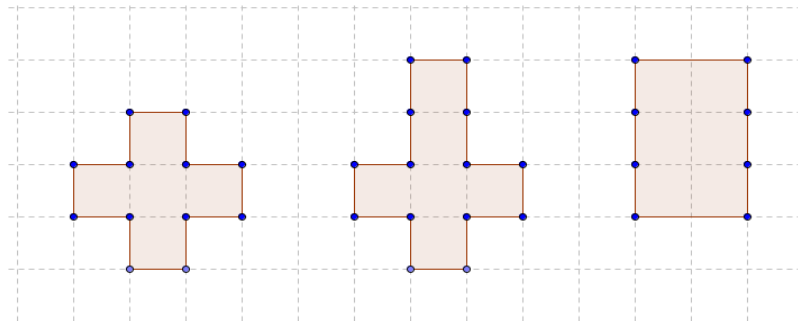
14. Write a formula to represent the pattern formed by the change in the volume of a cube as the side length of the cube changes.

15. Is the relationship between the side length of the cube and the volume of the cube linear, quadratic or exponential? Explain your choice.

16. On the same diagram as before, draw a graph to represent the change in the volume of a cube as the side length of the cube changes.

17. Do your graphs agree with the interactive file?

18. Which of the following nets represents a cube?



19. From the interactive file, is total surface area always greater than volume? Explain your answer.

Challenge

The greater the surface area the faster the object cools and the greater the volume of a living object the greater its heat producing capacity.

20.

i. What would be the implications of this for a heat producing object with a large volume to surface area ratio?

ii. What would be the implications for a heat producing object with a small volume to surface area ratio?

21. Why do babies need to be wrapped up very well?
