Frosty the snowman is made from two uniform spherical snowballs, of initial radii $2R$ and $3R$. The smaller (which is his head) stands on top of the larger.

As each snowball melts, its volume decreases at a rate which is directly proportional to its surface area, the constant of proportionality being the same for both snowballs. During melting each snowball remains spherical and uniform.

- When Frosty is half his initial height, show that the ratio of his volume to his initial volume is 37 : 224 .

- What is this ratio when Frosty is one-tenth of his initial height?

Frosty the snowman returns in the problem "A Frosty Puddle"

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