MATHCOUNTS 2020–2021 Fall Newsletter Poster Solution

Method 1

Since the T. Rex's 570-pound skull is 15%, or 15/100 = 3/20, of the combined weight b of all its bones, we can set up the proportion $570/b = 3/20$. Cross-multiplying and solving for b gives us $3b = 570 \times 20 \rightarrow 3b = 11{,}400 \rightarrow b = 11{,}400 \div 3 = 3800$ pounds. So, the combined weight of all the T. Rex's bones is 3800 pounds, which we are told is 21%, or 21/100, of the total weight t of the T. Rex. We can set up another proportion, namely, $3800/t = 21/100$. Cross-multiplying and solving for t gives us $21t = 3800 \times 100 \rightarrow 21t = 380{,}000 \rightarrow t = 380{,}000 \div 21 \approx$ **18,095** pounds.

Method 2

We are told that the T. Rex's 570-pound skull accounts for 15% of 21% of its total weight t. Based on this, we can write the equation $0.15 \times 0.21 \times t = 570$. So, the T. Rex's total weight is $t = 570 \div (0.15 \times 0.21) = 570 \div 0.315 \approx$ **18,095** pounds.