Products of Exponents Step By Step Lesson

Find the end value of: $(4b \bullet 2b^4)^3$

Explanation: $(4b \bullet 2b^4)^3$

Step 1) Complete the cube of each part.

$(4b)^3 = (4 \bullet 4 \bullet 4)\, b^3 = 64b^3$

$(2b^4)^3 = (2 \bullet 2 \bullet 2)b^{12} = 8b^{12}$

Restated problem with parts cubed: $64b^3 \bullet 8b^{12}$

Step 2) Multiply the parts numeric and variable:

$64b^3 \bullet 8b^{12} = (64 \bullet 8)(b^3 \bullet b^{12})$

$(64 \bullet 8) = 512$

$(b^3 \bullet b^{12}) = b^{15}$ The product of exponents with the same base is the sum of exponents.

Step 3) Combine the values to complete the problem. $512b^{15}$

$(4b \bullet 2b^4)^3 = 512b^{15}$