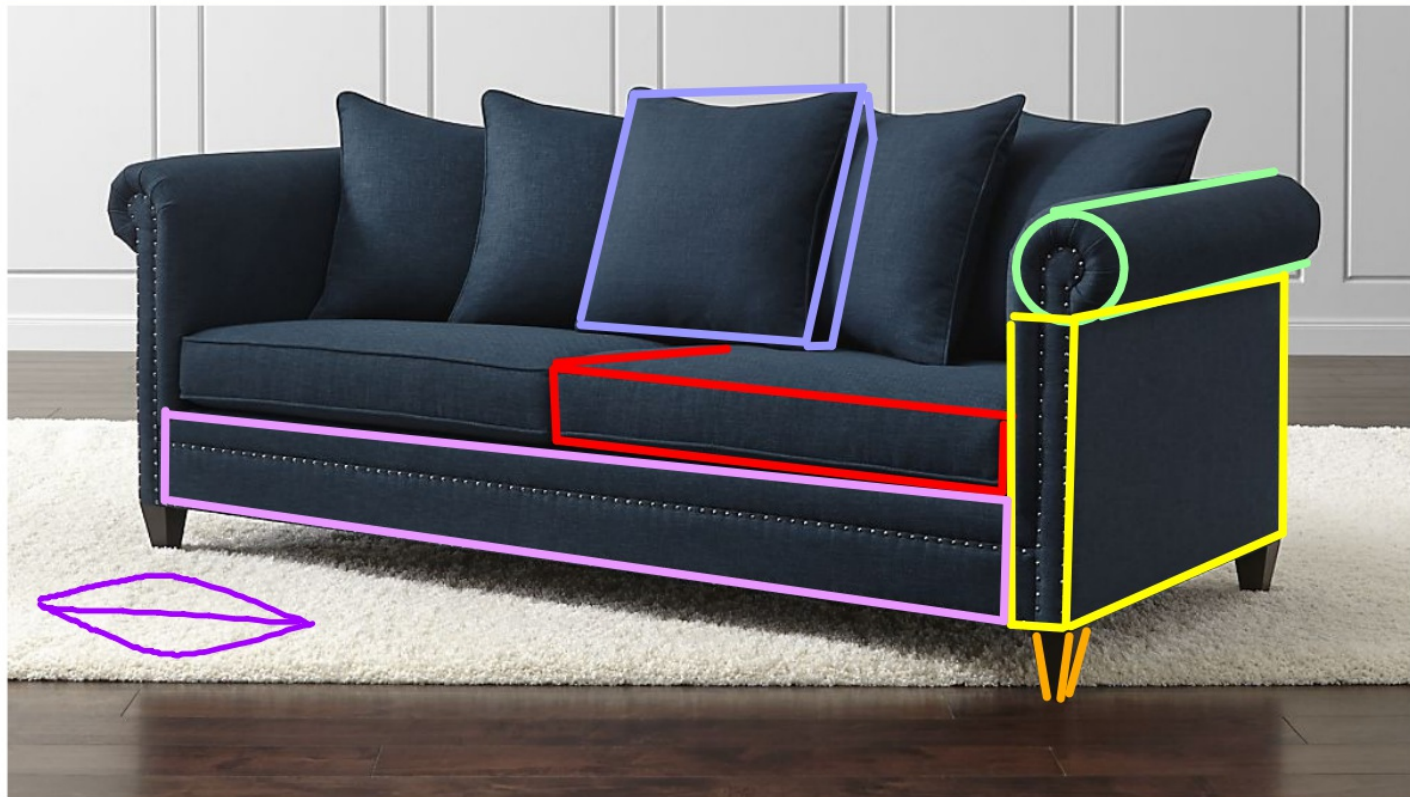


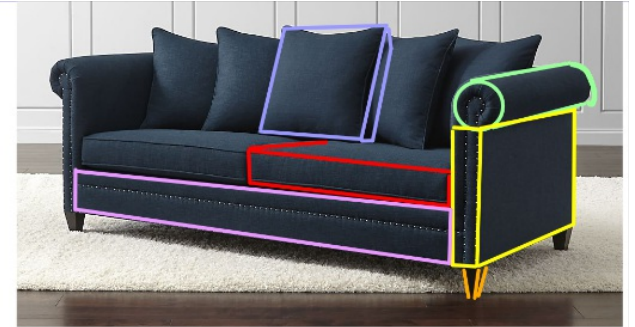
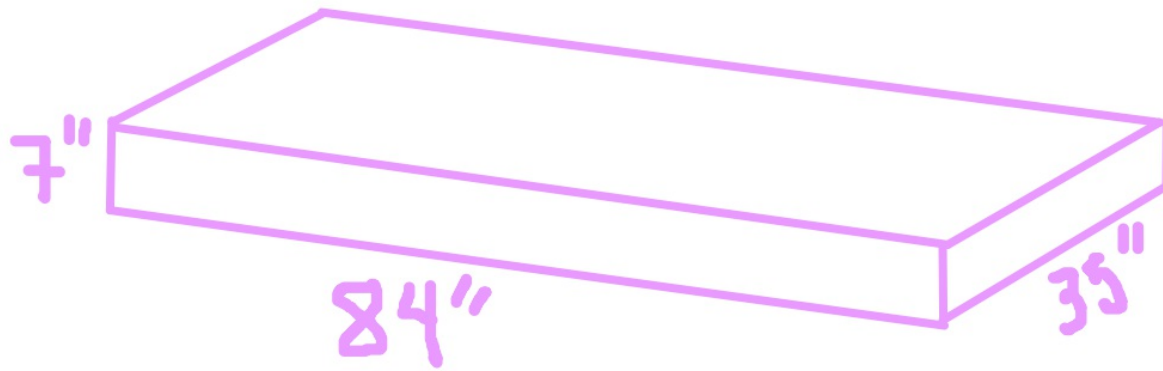
My Sofa: A story in volume



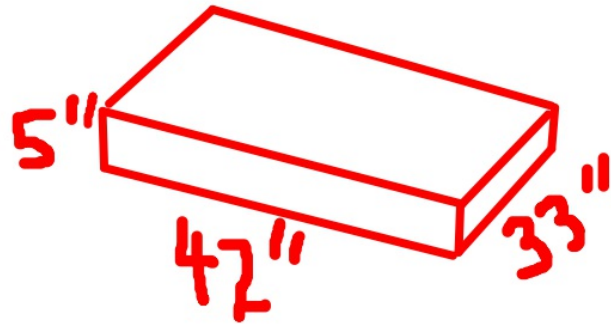
by Nader Mohyuddin
Mr Mohyuddin
Honors Geometry
March 28, 2017

Core question: What is the approximate volume of this sofa?

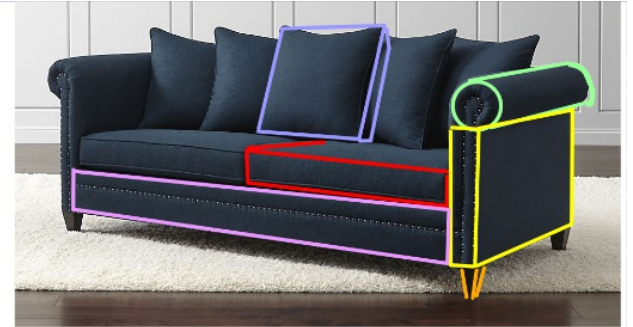


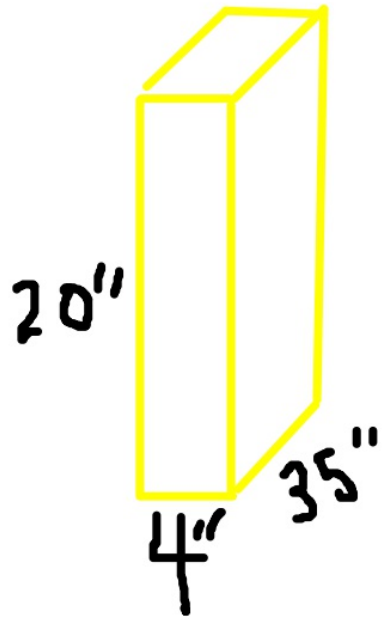


$$\begin{aligned}\text{Volume} &= 7\text{in} * 84\text{in} * 35\text{in} \\ &= 20,580\text{ in}^3\end{aligned}$$

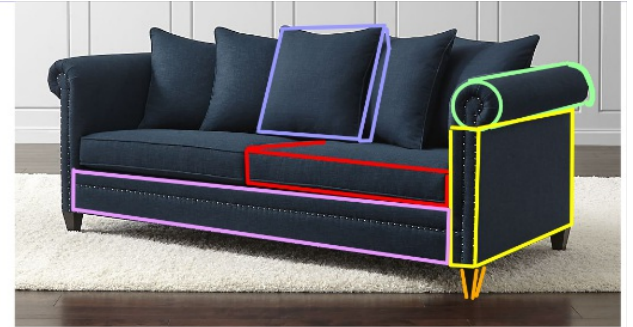


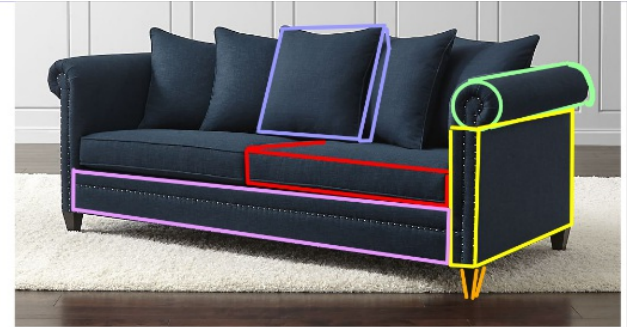
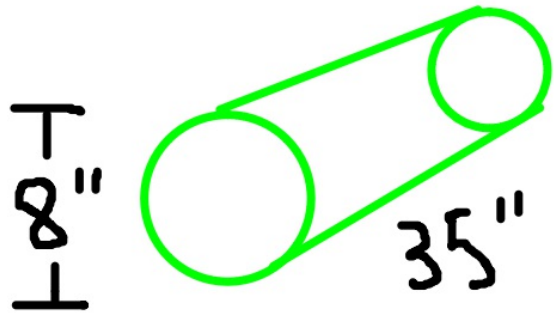
$$\begin{aligned}\text{Volume} &= 5\text{in} * 42\text{in} * 33\text{in} \\ &= 6930 \text{ in}^3 \text{ (per cushion)}\end{aligned}$$



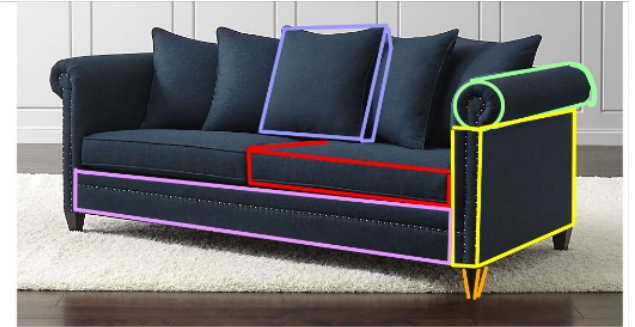
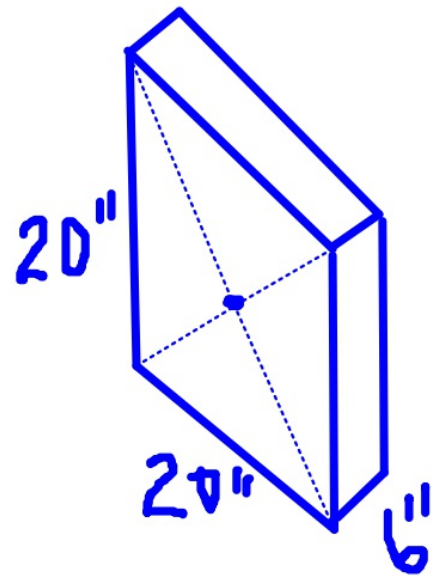


$$\begin{aligned}\text{Volume} &= 4\text{in} * 20\text{in} * 35\text{in} \\ &= 2800 \text{ in}^3 \text{ (per)}\end{aligned}$$

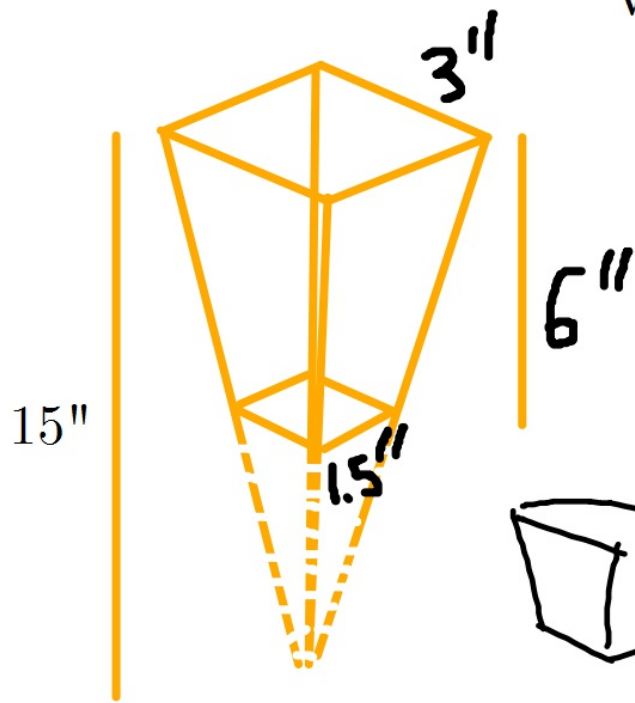




$$\begin{aligned}\text{Volume} &= \pi(4\text{in})^2 * 35\text{in} \\ &= 1759.29 \text{ in}^3 \text{ (per)}\end{aligned}$$

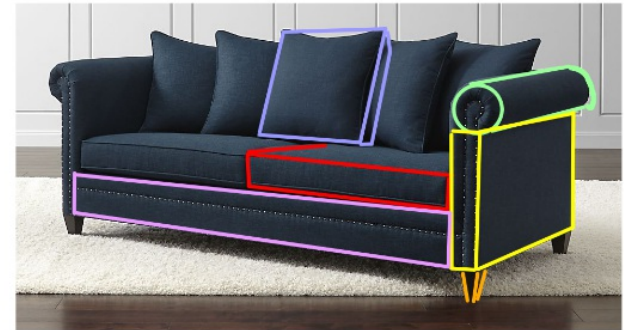


$$V = (1/3)(20\text{in})(20\text{in})(3\text{in}) \times 2$$
$$= 800 \text{ in}^3 \text{ per cushion}$$



$$V = \left(\frac{1}{3}\right)(3\text{in})(3\text{in})(15\text{in}) - \left(\frac{1}{3}\right)(1.5\text{in})(1.5\text{in})(9\text{in})$$

$$= 38.25\text{in}^3 \text{ per leg}$$



Total volume:

1 base: 20580 in^3
2 cushions: $6930 \text{ in}^3 \times 2$
5 pillows: $800 \text{ in}^3 \times 5$
2 side supports: $2800 \text{ in}^3 \times 2$
2 arm rests: $1759.29 \text{ in}^3 \times 2$
4 legs: $38.25 \text{ in}^3 \times 4$
TOTAL: $47,711.58 \text{ cubic inches}$



The sofa has an approximate volume of 47,712 cubic inches.