HOW MANY SMALL BOXES ANSWER KEY

Part A: What is the maximum number of sculptures she can ship in one box?

Length: \(\frac{7}{3} \div \frac{1}{3} = 7\)  
Width: \(\frac{2}{1} \div \frac{1}{3} = 6\)  
Height: \(\frac{5}{3} \div \frac{1}{3} = 5\)

\(7 \times 6 \times 5 = 210\) sculptures

Part B: Show how to find the volume of the shipping box in three ways:

1) Using the volume of the sculpture box

\[
\text{Volume} = \text{number of sculpture boxes} \times \text{volume of sculpture box}
\]

\[
\text{Volume of sculpture box} = \frac{1}{3} \times \frac{1}{3} \times \frac{1}{3} = \frac{1}{27}
\]

\[
\text{Volume} = 210 \times \frac{1}{27} = \frac{210}{27} = 7\frac{7}{9}\text{ cubic feet}
\]

2) Using the formula \(V = lwh\)

\[
V = 2\frac{1}{3} \times 2 \times 1\frac{2}{3}
\]

\[
V = \frac{7}{3} \times \frac{2}{1} \times \frac{5}{3} = \frac{70}{9} = 7\frac{7}{9}\text{ cubic feet}
\]

3) Using the formula \(V = Bh\)

\[
B = 2\frac{1}{3} \times 2 = \frac{7}{3} \times \frac{2}{1} = \frac{14}{3}
\]

\[
V = \frac{14}{3} \times 1\frac{2}{3} = \frac{14}{3} \times \frac{5}{3} = \frac{70}{9} = 7\frac{7}{9}\text{ cubic feet}
\]

Part C: Jody has to ship a special order of 36 sculptures. What are the dimensions of two possible shipping box sizes that will fit all 36 sculptures without extra space.

The volume is \(1\frac{1}{3}\) cubic feet. Any combination that allows for 36 - \(\frac{1}{3}\) cubes will work.

Possible answers in feet:

Box 1: \(\frac{1}{3} \times 1\frac{1}{3} \times 3\)

Box 2: \(\frac{2}{3} \times \frac{2}{3} \times 3\)