

Task 3:

The body surface area (BSA) of a human can be calculated using the following formula:

$$BSA = \sqrt{[(\text{mass} \times \text{height}) \div 3600]}$$

Units:

$BSA = m^2$

$Mass = kg$

$Height = cm$

For example, if Spider Man is 1.78 m tall and has a mass of 76 kg, what is his body's surface area, to 2 decimal places?

$$\begin{aligned} BSA &= \sqrt{[(76 \times 178) \div 3600]} \\ &= \sqrt{[13,528 \div 3600]} \\ &= \sqrt{3.76} \\ &= 1.94 \text{ m}^2 \end{aligned}$$

Complete the values for body surface area in the table:

SUPERHERO	MASS (KG)	HEIGHT (CM)	BODY SURFACE AREA (M ²)
THE WASP	50	165	
THE HULK	640	213	
WONDER WOMAN	75	75	



Now you have their surface areas, we can calculate each superhero surface area to volume ratio (SA:V). This ratio can be reduced to smaller numbers similar to the way that fractions can be reduced. It is customary to reduce SA:V ratios so that V is equal to 1. This can be done by dividing the SA by V and V by V. Below is an example where SA is 54 and V is 27.

$$54/27: 27/27 = 2:1$$

Complete the missing values in the table:

SUPERHERO	BODY SURFACE AREA (M ²)	VOLUME (M ³)	SA:V
THE WASP		165	
THE HULK		213	
WONDER WOMAN		75	

