Crater formation from surface explosives

Hopkinson's Law: The distance of disruption from the center of an explosion is proportional to the cube root of the energy dissipated in the blast. (For chemical explosives, use total mass rather than energy of explosive involved)

$$D = 0.8W^{1/3}$$

D = Diameter of the crater (in meters) that results from an explosive placed at ground level

W = Mass of explosive (kg of TNT)

*More complex analysis is required for underground explosions.

1.) If the diameter of the explosion crater is one meter, how much TNT was used to create the bomb? Round to the nearest hundredth.

2.) If I had eight kilograms of TNT at my disposal, what would the diameter of the crater of the bomb be? No Calculator on this problem☺.

3.) On Sunday, December 29th, 2013 there was a destructive bombing in Volgograd, Russia that killed 16 people. The first responders measured a crater of approximately 1.72 meters. http://www.cnn.com/2013/12/29/world/europe/russia-train-station-explosion/

   a.) How many kilograms of TNT were used?

   b.) How heavy (in pounds) do you think the bomb was? Who could have been responsible (man, woman, child)?

What is the domain and range in this context:

What is the domain and range not in context:

Is it a function?

Is the inverse a function?

Adam, Craig. 2010. *Essential Mathematics and Statistics for Forensic Science*. Chippenham, Wiltshire: Wiley-Blackwell.