

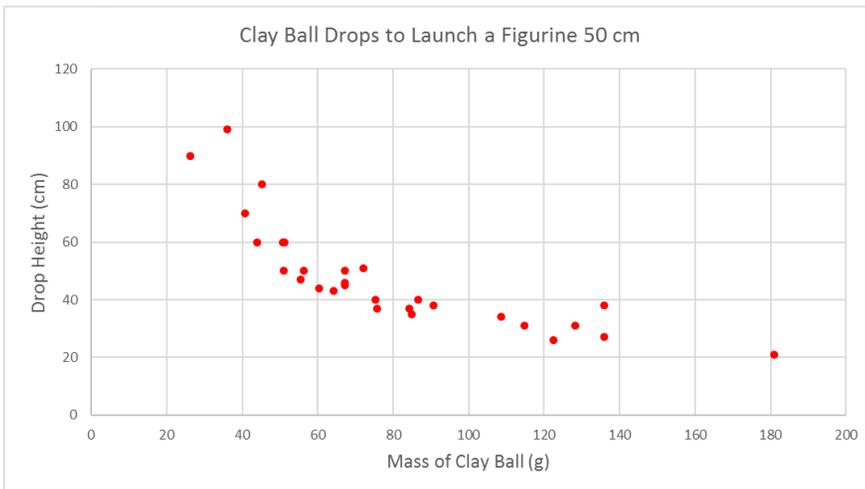
QUESTION:

How is the mass of clay related to the drop height required to launch the figurine 40 cm high?

CLAIM:

Less massive clay balls must be dropped from a greater height in order to launch the figurine 40 cm. More massive clay require less drop height to launch the figurine 40 cm.

EVIDENCE:



There is a clear trend in the data with a negative slope for drop height vs. mass of clay. This means that as the mass of the clay increases, the necessary drop height decreases. So, if you use a heavier clay ball, you don't need to drop it from as high in order for the figurine to launch 40 cm.

JUSTIFICATION:

Gravitational potential energy (GPE) and kinetic energy (KE) are two forms of mechanical energy, which is the energy an object has based on its motion or position. When a mass is off the ground (it has a height) it has GPE, meaning energy is stored in the object based on its position. When an object is moving (it has speed) it has KE, which is the energy of motion.

A teeter board takes advantage of conversions between GPE and KE to transfer energy between two objects. GPE in one object is converted into KE as it falls onto one side of the teeter board. The energy is transferred through the board to the other object, where it is given KE which converts back into GPE as it is launched into the air.

Both GPE and KE are dependent on the mass of an object, as mass is part of both equations.

- $GPE = mgh$ (where "g" = 9.8 m/s^2)
- $KE = \frac{1}{2} mv^2$

By manipulating the mass of an object, you can affect the amount of energy it has at a specific height or moving at a specific speed.

Name: _____

Pd: _____

Ast: _____

