

Vel. m/s	Dis	Vol. (H of drops)	
2 m/s	.2m	6 4 6 8	Avg. ≈ 6
4 m/s	.8m	24 24 25 26	Avg. 25
2 m/s	3.25	56	73
		58	77
			100
			92
			90
			105

Handwritten notes:
 - Blue arrow from 2 m/s to 4 m/s labeled "2x"
 - Blue arrow from 2 m/s to 2 m/s labeled "2x"
 - Blue arrow from 24 to 96 labeled "x4"
 - Blue text: "Really close to 4x more!"
 - Red text: "Avg. 25" (with arrow pointing to 24, 24, 25, 26)
 - Green text: "Avg. ≈ 6 " (with arrow pointing to 6, 4, 6, 8)

- 1600's - Leibnitz \rightarrow "vis viva"

Gravesande - Copper balls dropped
into clay 2x height
= 4x depth

- 1700's - Newton $mv = mv$

- 1801 - Thomas Young "Energy"
2x velocity = 4x vol.

→

$$E_k = \frac{1}{2} m v^2$$

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$$\frac{(1 \text{ kg}) (2 \frac{\text{m}}{\text{s}})^2}{2} = \frac{4}{2} = 2 \text{ J}$$

$$2 \quad \frac{(1 \text{ kg}) (4 \frac{\text{m}}{\text{s}})^2}{2} = \frac{16}{2} = 8 \text{ J}$$

4x

Energy - ability to do work (J)
Kinetic energy - moving, $\frac{1}{2}mv^2$
Potential energy - stored, potential to do work (J)
gravitational energy - potential en. related to ht.

$$\underline{500\text{N}} \times \underline{3\text{m}} = 1,500 \text{ J}$$

Mechanical Energy - position & motion

thermal Energy - total potential + kinetic energy of ptcls.

electric energy - electricity

Chemical energy - potential en. of bonds in chemicals

Nuclear energy - potential en. stored in nuclei of atoms

electromagnetic