

Why doesn't one of them just
cycle faster?

Surely after five hours of racing
they shouldn't all still be
together!?







$$\text{Drag Force} = \frac{\text{Speed}^2}{4}$$



$$\text{Drag whilst hiding} = \frac{\text{Speed}^2}{6}$$

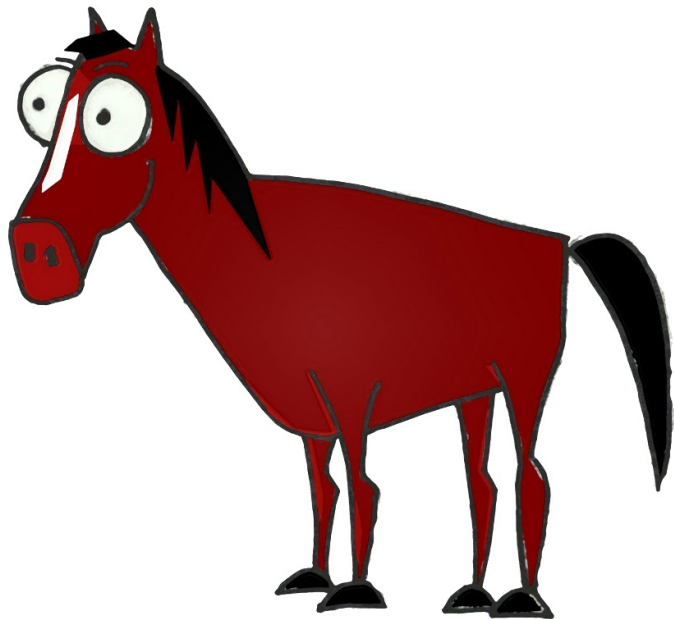
$$\text{Energy} = \text{Force} \times \text{Distance}$$

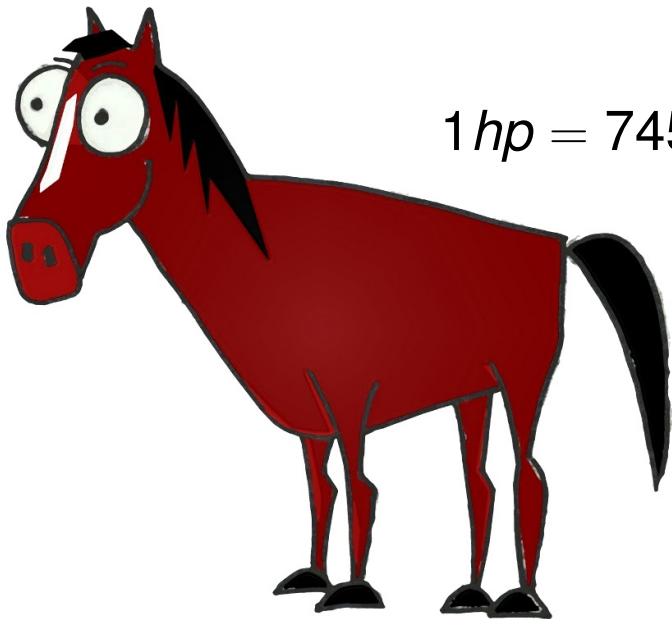
$$\text{Power} = \frac{\text{Energy}}{\text{Time}}$$

$$\text{Power} = \frac{\text{Speed}^3}{4}$$

$$\text{Power whilst hiding} = \frac{\text{Speed}^3}{6}$$





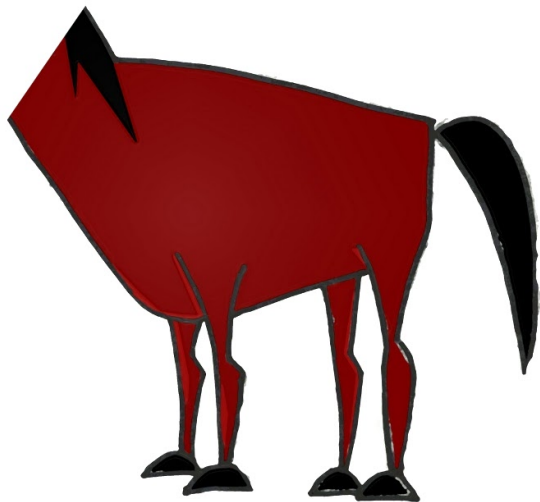


$$1\text{ hp} = 745\text{ W}$$

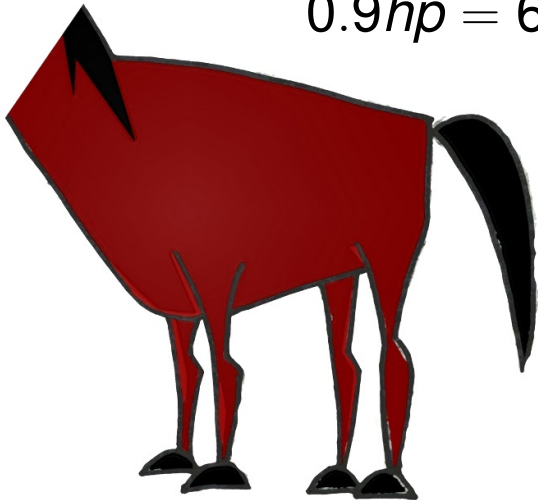
$$745 = \frac{14.4^3}{4}$$

$$\begin{aligned}\text{Speed} &= 14.4\text{m/s} \\ &= 32\text{mph}\end{aligned}$$





$$0.9hp = 670W$$



$$670 = \frac{16^3}{6}$$

$$\begin{aligned}\text{Speed} &= 16^m/s \\ &= 36mph\end{aligned}$$



$$\begin{aligned}\text{Force of gravity} &= 10 \times \text{Mass} \\ &= 700\end{aligned}$$

$$\begin{aligned}\text{Energy} &= \text{Force} \times \text{Height} \\ &= \text{Force} \times \text{Distance} \times \text{Gradient}\end{aligned}$$

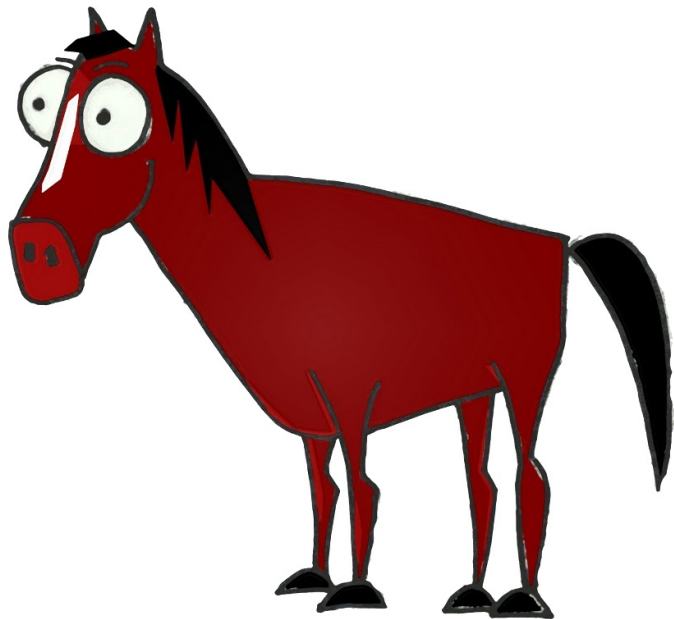
$$\text{Power} = \text{Force} \times \text{Speed} \times \text{Gradient}$$

For a typical 10% gradient

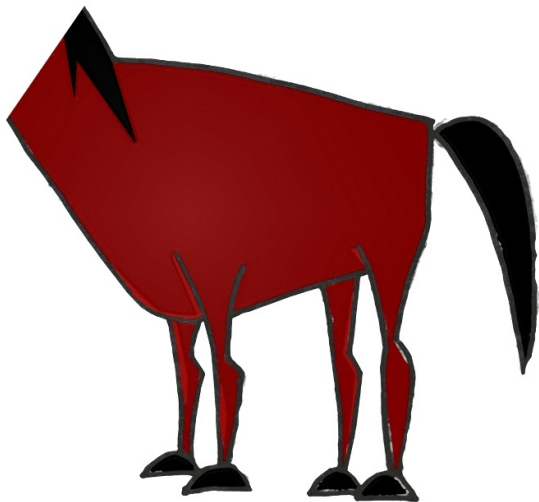
$$\text{Power} = \frac{\text{Speed}^3}{4} + 70 \times \text{Speed}$$

Power whilst hiding

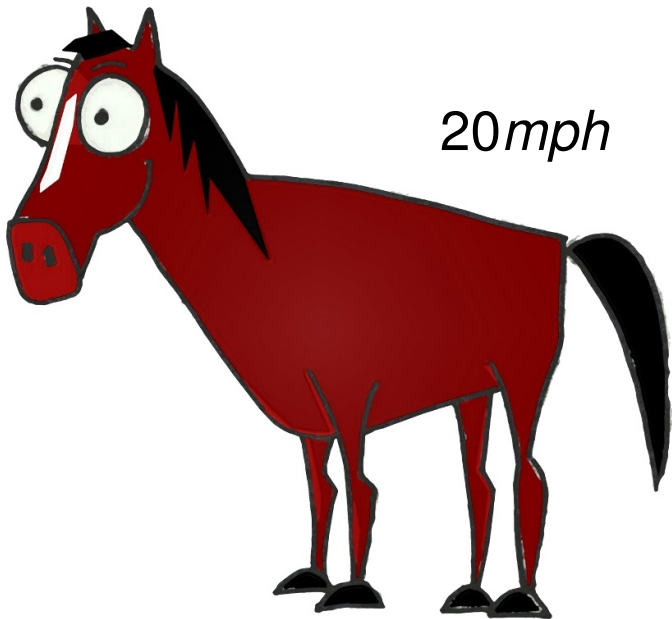
$$= \frac{\text{Speed}^3}{6} + 70 \times \text{Speed}$$



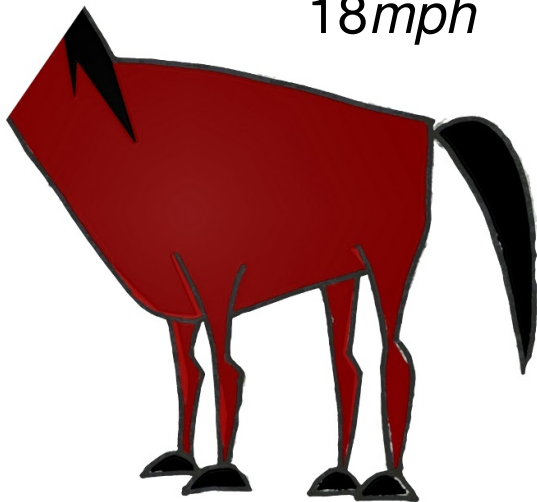
$$745 = \frac{8.5^3}{4} + 70 \times 8.5$$



$$670 = \frac{8.2^3}{6} + 70 \times 8.2$$



18mph



Motto:

Flat races can be a little dull.