A pump ejects 12000 kg of water at the speed of 4 m/s in 40 second. Find the average rate at which the pump is working

A. 2.4kw
B. 2.3kw
C. 2.5kw
D. 1.7kw

$$f = ma = 12000 \times \frac{1}{10} = 1200\ N$$

$$s = ut + \frac{1}{2}at^2 = \frac{1}{2} \times \frac{1}{10} \times (40)^2 = 80\ m$$

$$P_{avg} = \frac{w}{t} = \frac{1200 \times 80}{40} = 2400\ W$$

$$= 2.4\ kw$$

90000 watt

A motorbike engine can develop a power of 90 kilowatt in order to keep a constant velocity of 108 km/h. What is the pushing force?

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A	5/6 N	B	5/6 kg.wt
C	300 N	D	3×10^8dyne

$$f = \frac{P}{v} = \frac{90000}{30} = 3000\ N$$

$$3 \times 10^3 \times 10^5 = 3 \times 10^8\ dyne$$

A body of mass 100 kg accelerates uniformly from rest to v=20m/s in time 2 sec. As a function of time t, what is the instantaneous power in kilowatt delivered to the body?

A	5t	B	10t
C	10000t	D	50000t

$$a = \frac{\Delta v}{t} = \frac{20}{2} = 10\ m/s^2$$

$$f = ma = 100 \times 10 = 1000\ N$$

$$P = f \cdot v$$

$$= 1000 \times 10t$$

$$= 10000t\ watt$$

$$= 10t\ kw$$