

Q1.(2018)

a)

$$\text{work done} = 11\,500 \times 2.60$$

$$\text{work done} = 29\,900 \text{ (J)}$$

b)

$$13\,800$$

c)

moment (of a force) = force x
distance

d)

$$13\,800 = 11\,500 \times \text{distance}$$

$$\text{distance} = \frac{13\,800}{11\,500}$$

$$\text{distance} = 1.2(0 \text{ m})$$

Q2.(2021)

a)

zero error

b)

subtract 0.5 N from each
measurement

c)

points plotted correctly

Subtopic: Work done and energy transfer

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Q3.(2021)

a)

the long ramp has a smaller angle

(so) less force is needed (to hold the wheelchair stationary on the ramp)

b)

$$W = 160 \times 2.5$$

$$W = 400 \text{ (J)}$$

Q4.(2022)

a)

any **two** from:

- capacity of the battery
- speed
- mass / weight
- uphill / downhill
- stopping at traffic lights
- condition of the road
- (air) temperature
- (incorrect) tyre pressure
- streamlining of the car

b)

acceleration = change in velocity/time (taken)

or

$$a = \frac{\Delta v}{t}$$

c)

$$20 = \frac{28}{t}$$

$$t = \frac{28}{20}$$

$$1.4 \text{ (s)}$$

d)

$$v^2 - 0^2 = 2 \times 10 \times 605$$

$$v^2 = 12\,100$$

$$v = 110 \text{ (m/s)}$$

e)

work done = force $\times$ distance

or

$$W = Fs$$

f)

$$s = 7500 \text{ (m)}$$

$$W = 4000 \times 7500$$

$$W = 30\,000\,000 \text{ (J)}$$