FULL NAME .... DUE DATE ....

SCIENCE CLASS .... TEACHER ....

Combined Sciences: Physics Homework/Extension Sheet T2pt1.1

1.   What is 24 ÷ 660?

Give your answer to three significant figures.

(1 mark)

☐ **A:** 0.036
☐ **B:** 0.0363
☐ **C:** 0.0364
☐ **D:** 0.03

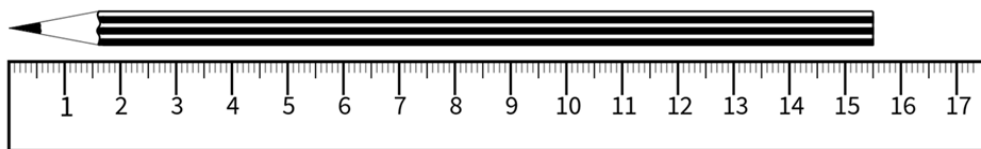**2**. Which of these options is the same as 4.5 km?

(1 mark)

☐ **A:** 0.045 m
☐ **B:** 45 m
☐ **C:** 4500 m
☐ **D:** 45 000 m

3. How many seconds are in three and half days?

(1 mark)

☐ **A:** 302 400 s
☐ **B:** 10 080 s
☐ **C:** 5040 s
☐ **D:** 210 s

4. The markings shown on the ruler below are in centimetre (cm) increments.

State the length of the pencil in **metres** to two significant figures.

(2 marks)

Pencil length = ... m

5. (a) What was the speed of a van that travelled 74 metres in a time of 12 seconds? Give your answer to three significant figures

(2 marks)

Speed of van = ... m/s

(b)   A car on the motorway is moving at a constant speed of 31 m/s for 5 minutes. How far does this car travel in that time? Give your answer to the nearest whole kilometre.

(3 marks)

Distance = ... km

Description	Equation
force exerted on a spring = spring constant × extension	$F = k \times x$
(final velocity)² – (initial velocity)² = 2 × acceleration × distance	$v^2 - u^2 = 2 \times a \times x$
HT **force = change in momentum ÷ time**	$F = \dfrac{(mv - mu)}{t}$
energy transferred = current × potential difference × time	$E = I \times V \times t$
HT **force on a conductor at right angles to a magnetic field carrying a current = magnetic flux density × current × length**	$F = B \times I \times l$
For transformers with 100% efficiency, potential difference across primary coil × current in primary coil = potential difference across secondary coil × current in secondary coil	$V_P \times I_P = V_S \times I_S$
change in thermal energy = mass × specific heat capacity × change in temperature	$\Delta Q = m \times c \times \Delta\theta$
thermal energy for a change of state = mass × specific latent heat	$Q = m \times L$
energy transferred in stretching = 0.5 × spring constant × (extension)²	$E = \dfrac{1}{2} \times k \times x^2$

Description	Equation
distance travelled = average speed × time	
acceleration = change in velocity ÷ time taken	$a = \dfrac{(v-u)}{t}$
force = mass × acceleration	$F = m \times a$
weight = mass × gravitational field strength	$W = m \times g$
HT **momentum = mass × velocity**	$p = m \times v$
change in gravitational potential energy = mass × gravitational field strength × change in vertical height	$\Delta GPE = m \times g \times \Delta h$
kinetic energy = 1/2 × mass × (speed)²	$KE = \dfrac{1}{2} \times m \times v^2$
efficiency = $\dfrac{\text{(useful energy transferred by the device)}}{\text{(total energy supplied to the device)}}$	
wave speed = frequency × wavelength	$v = f \times \lambda$
wave speed = distance ÷ time	$v = \dfrac{x}{t}$
work done = force × distance moved in the direction of the force	$E = F \times d$
power = work done ÷ time taken	$P = \dfrac{E}{t}$
energy transferred = charge moved × potential difference	$E = Q \times V$
charge = current × time	$Q = I \times t$
potential difference = current × resistance	$V = I \times R$
power = energy transferred ÷ time taken	$P = \dfrac{E}{t}$
electrical power = current × potential difference	$P = I \times V$
electrical power = (current)² × resistance	$P = I^2 \times R$
density = mass ÷ volume	$\rho = \dfrac{m}{V}$

Metric prefixes

how to convert	abbreviation	prefix
x 1000 →	T	tera-
x 1000 →	G	giga-
x 1000 →	M	mega-
x 1000 →	k	kilo-
	no prefix	
÷ 1000 ←	m	milli-
÷ 1000 ←	μ	micro-
÷ 1000 ←	n	nano-
÷ 1000 ←	p	pico-

Time

how to convert	abbreviation	Unit of time
x 7 →	wk	week
x 24 →	d	day
x 60 →	h or hr	hour
x 60 →	min	minute
	s, seconds	
÷ 1000 ←	ms	millisecond
÷ 1000 ←	μs	microsecond
÷ 1000 ←	ns	nanosecond
÷ 1000 ←	ps	picosecond