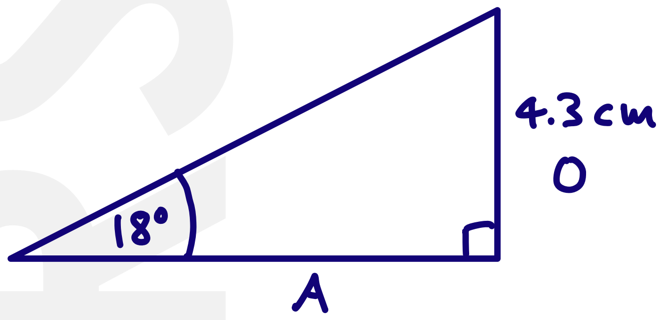
1st February

1 2 3

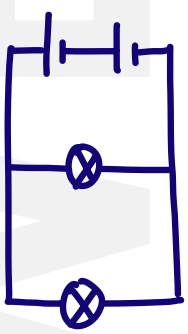
1. Calculate the **length** of the adjacent side of a triangle with an angle of 18˚ and an opposite side length of 4.3 cm.



$$\tan\theta = \frac{O}{A}$$

$$A = \frac{4.3}{\tan 18} = 13\,\text{cm}$$

2. A 6.0 V battery, with negligible internal resistance, has two bulbs connected in parallel across it. One bulb has a resistance of 3.0 Ω and the other has a resistance of 6.0 Ω at 6.0 V. Calculate the total **charge** transferred in 30 seconds in the circuit.



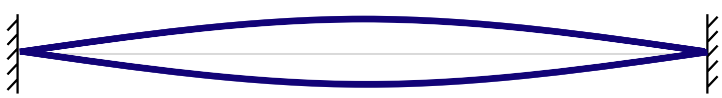
$$R_T = \frac{R_1 R_2}{R_1 + R_2} = \frac{3.0 \times 6.0}{3.0 + 6.0} = 2.0\,\Omega$$

$$I = \frac{V}{R_T} = \frac{6.0}{2.0} = 3.0\,\text{A}$$

$$Q = It = 3.0 \times 30 = 90\,\text{C}$$

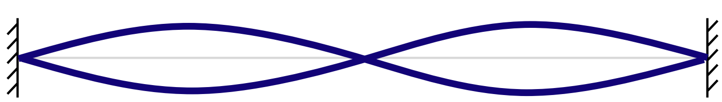
3. Sketch the **standing/stationary** wave formed on a 0.65 m **string** fixed at both ends, and state the **wavelength** in each case:

a. First harmonic



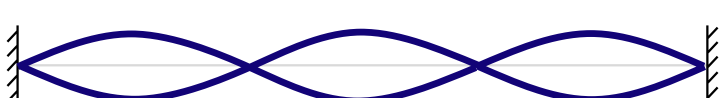
$\lambda = 2l \quad \lambda = 1.3\,\text{m}$

b. Second harmonic



$\lambda = l \quad \lambda = 0.65\,\text{m}$

c. Third harmonic



$$\lambda = \frac{2l}{3} = 0.43\,\text{m}$$

2nd February

1 2 3

1. A resistor has a resistance of 47 Ω. Calculate the **current** flowing through the resistor if there is a potential difference of 1.2 V across it.

$$I = \frac{V}{R} = \frac{1.2}{47} = 0.026 \text{ A}$$

2. Define:

   a. **Kirchhoff's first** law

   The sum of currents into a junction is equal to the sum of currents leaving the junction.

   b. **Kirchhoff's second** law

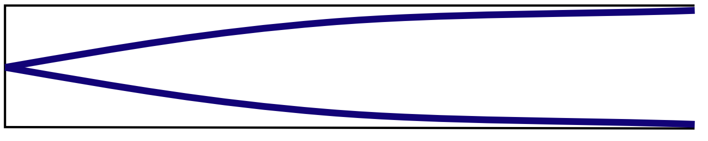
   The sum of EMFs is equal to the sum of PDs around any closed loop in a circuit.

3. Sketch the **standing/stationary** wave formed in the 0.80 m **tube** open at one end, and state the **wavelength** in each case:

   a. First harmonic

   $\lambda = 4L$

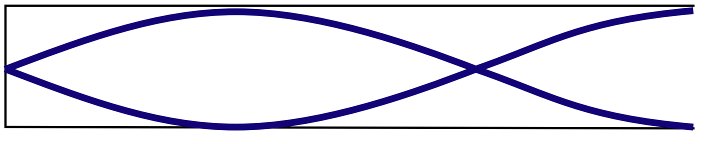
   $\lambda = 3.2\text{m}$



   b. Second harmonic

   $\lambda = \frac{4L}{3}$

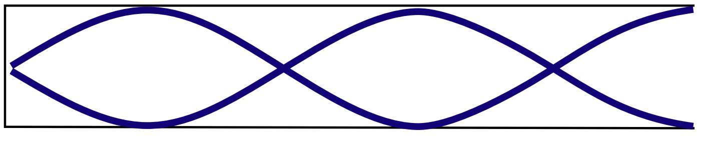
   $\lambda = 1.1\text{m}$



   c. Third harmonic

   $\lambda = \frac{4L}{5}$

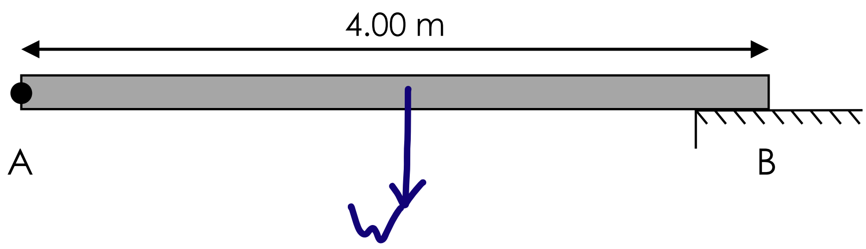
   $\lambda = 0.64\text{m}$



3rd February

1

1. A 20 000 N draw bridge can be modelled as a uniform beam. Initially it is horizontal, supported at B and able to pivot about A.



a. Calculate the **clockwise moment** about point A in this position

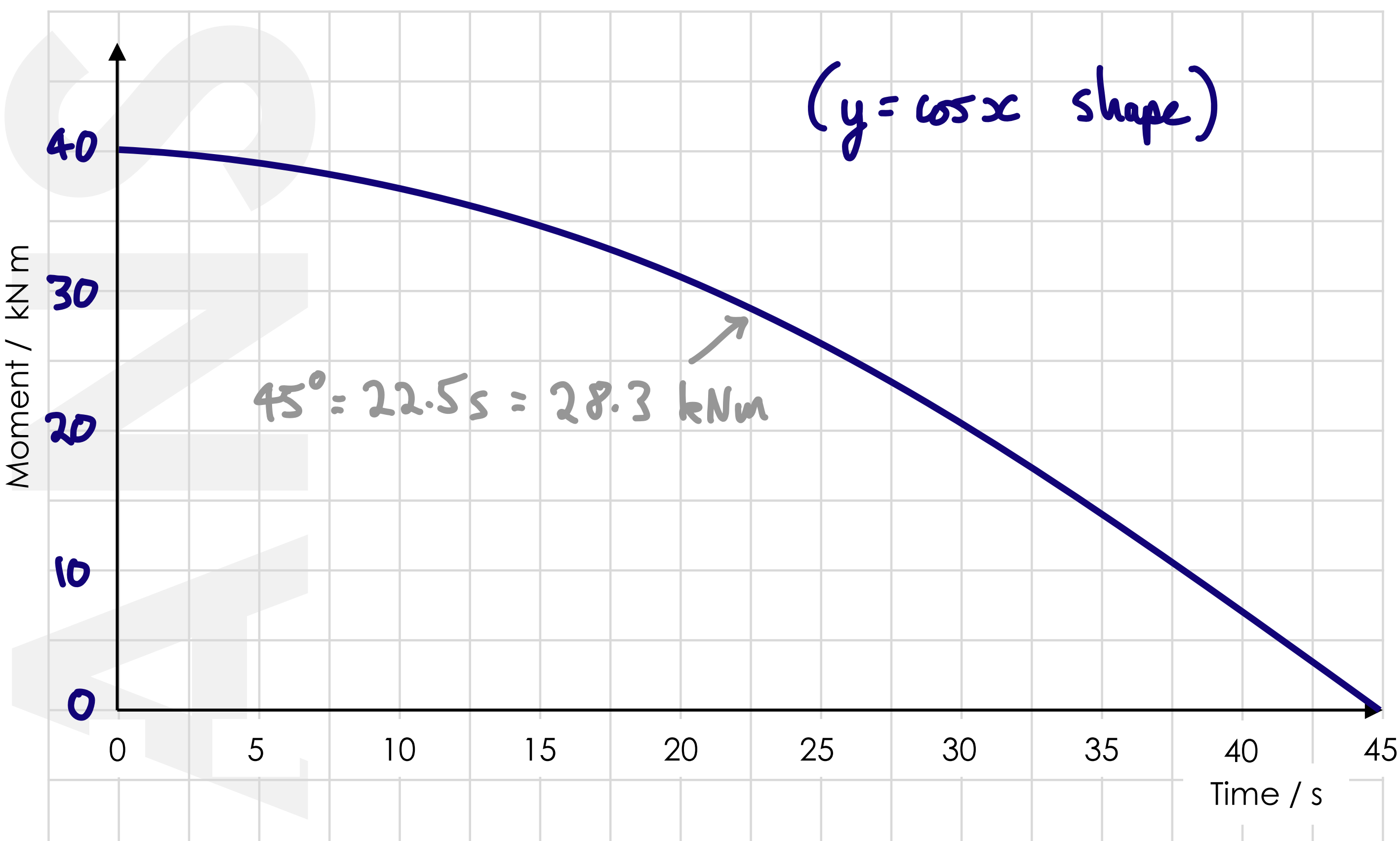
$\overset{\curvearrowright}{M} = Fs = 20\,000 \times \left(\frac{4.00}{2}\right) = 40\,000 = 40.0 \text{ kNm}$

b. Calculate the **clockwise moment** if the drawbridge is raised to **45.0˚** above the horizontal

$\overset{\curvearrowright}{M} = Fs\cos\theta = 20\,000 \times \left(\frac{4.00}{2}\right) \times \cos 45 = 28.3 \text{ kNm}$

The drawbridge is raised from horizontal to vertical at a constant rate of 2.0˚ every second.

c. Plot a graph of **clockwise moment against time** as the drawbridge is raised



4th February

1 2 3

1. Write down the **value** and **units** for the following constants:

   a. Electron rest mass — 9.11×10^{-31}

   b. Avogadro's number — 6.02×10^{23} mol^{-1}

   c. Wien's constant — 2.90×10^{-3} mK

2. The energy of a photon is related to its frequency.

   a. Rearrange $E = hf$ to make **h** the **subject** — $h = \frac{E}{f}$

   b. State:
      i. Planck's **constant** — 6.63×10^{-34} Js
      ii. The Planck **length** — 1.62×10^{-35} m
      iii. The Planck **time** — 5.39×10^{-44} s

3. a. Define what a **superconductor** is

   $R = 0$ below a critical temperature

   b. Give examples of where they are used

   MRI machines, particle accelerators etc

   c. Explain why 'high-temperature' superconductors are very useful.

   Cheaper to run as the temperature does not have to be as cold.

5th February

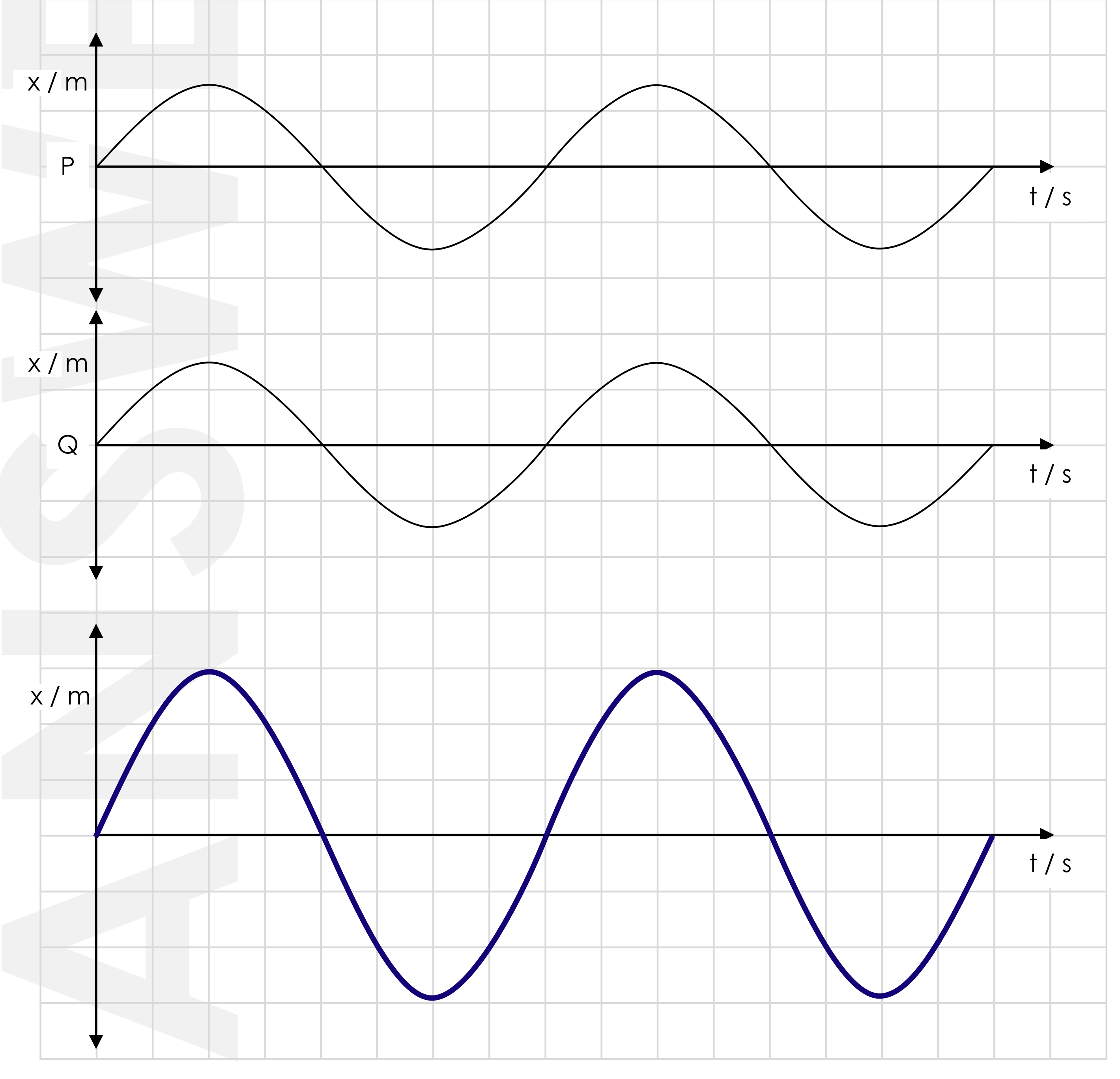
1 2

1. The EMF of a battery is 4.5 V. An ammeter in series with a resistor records a current of 1.2 A when the terminal potential difference drops to 4.2 V. Calculate the **internal resistance** of the battery.

$$E = V + Ir$$

$$r = \frac{E - V}{I} = \frac{4.5 - 4.2}{1.2} = 0.25\ \Omega$$

2. Two coherent waves P and Q are in phase. They interfere and superpose. Sketch the **resultant wave**.



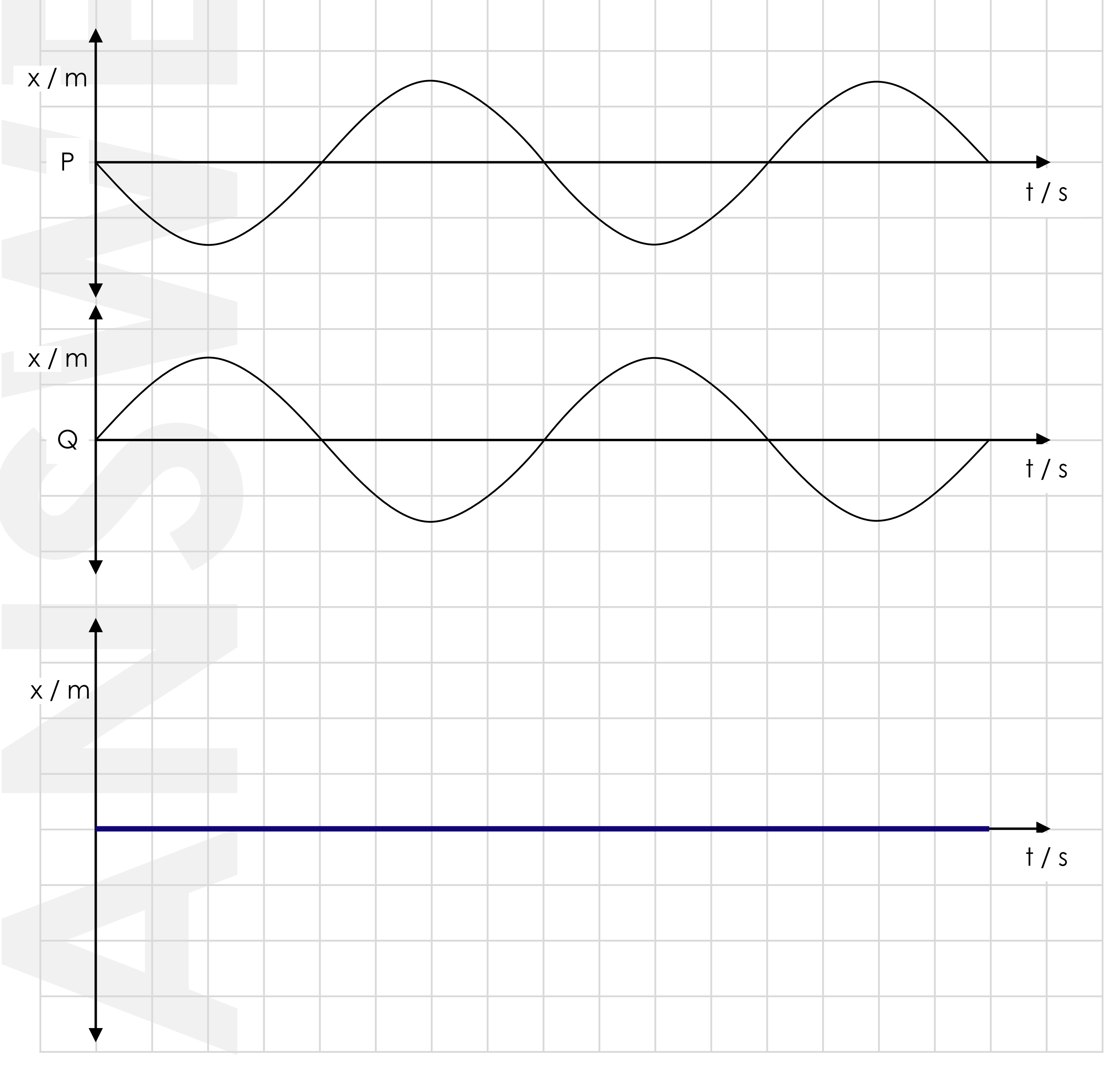
6^{th} February

1 2

1. Quarks are a type of fundamental particle. State how **many** there are, their **names** and their **charges**.

+2/3	Up	Charm	Top
-1/3	Down	Strange	Bottom

2. Two coherent waves P and Q are out of phase by 180˚. They interfere and superpose. Sketch the **resultant wave**.



7th February

1 2 3

1. Write the following quantities using an **appropriate** prefix:
   a. 0.000 000 630 m — 630 nm
   b. 1 320 000 000 W — 1.32 GW
   c. 40 200 000 000 000 J — 40.2 TJ
   d. 0.0420 s — 42.0 ms

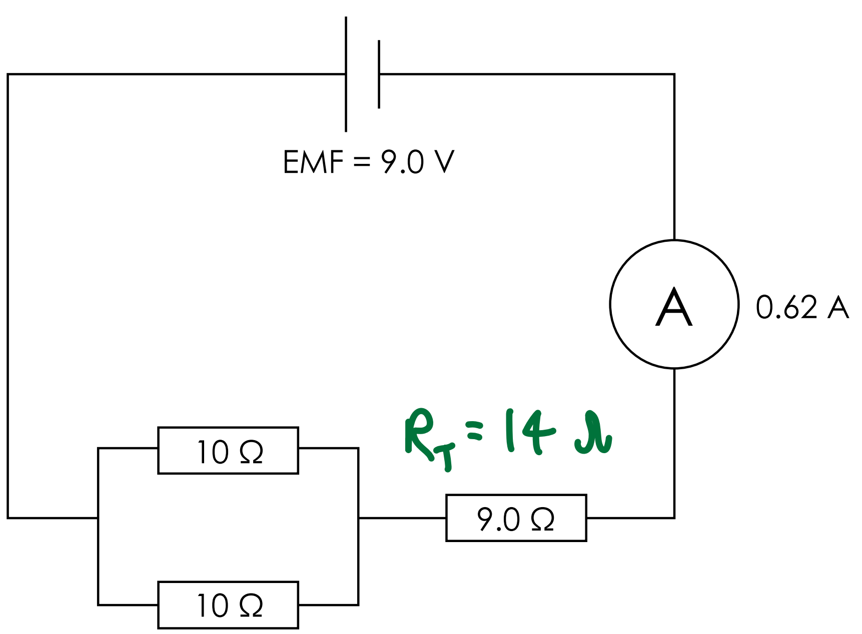
2. Define:
   a. An **elastic** collision

      p + E_K + E_T conserved

   b. A **perfectly inelastic** collision

      p + E_T conserved
      Maximum loss of E_K

3. Calculate the **internal resistance** of the cell in the circuit below.



$E = I(R + r)$ $\quad r = \frac{E}{I} - R = \frac{9.0}{0.62} - 14 = 0.52\ \Omega$

8th February

1 2

1. Write the following in **standard form**:

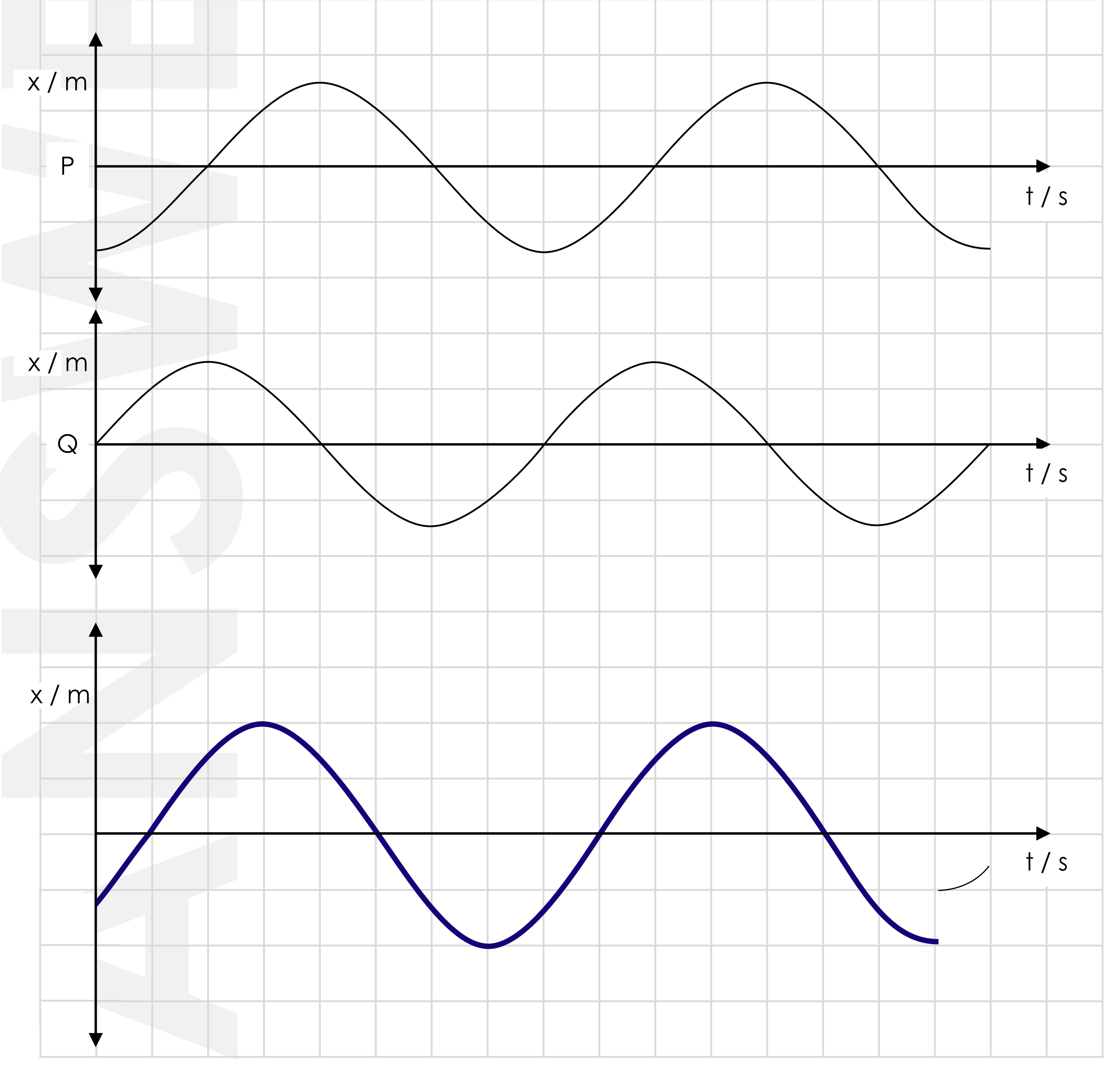
   a. 0.000 010 2 km — 1.02×10^{-2} m

   b. 84 000 pm — 8.4×10^{-8} m

   c. 0.203 GeV — 2.03×10^{8} eV

   d. 0.797 Mpc — 7.97×10^{5} pc

2. Two coherent waves P and Q are out of phase by π/2 radians. They interfere and superpose. Sketch the **resultant wave**.



9th February

1 2 3

1. Define what the term '**rest energy**' means for a particle.

Energy due to the mass of the particle.

2. List the **apparatus** and **safety precautions** required to measure the wavelength of light using a diffraction grating.

Laser
Diffraction grating
Paper (to shine laser onto)
Ruler

Don't stare into the laser, shine it onto a matt surface.

3. A transformer has potential differences of 230 V and 12 V across the primary and secondary coils respectively. It has a current of 10 A in the primary coil and 120 A in the secondary coil.

Calculate the **efficiency** of the transformer.

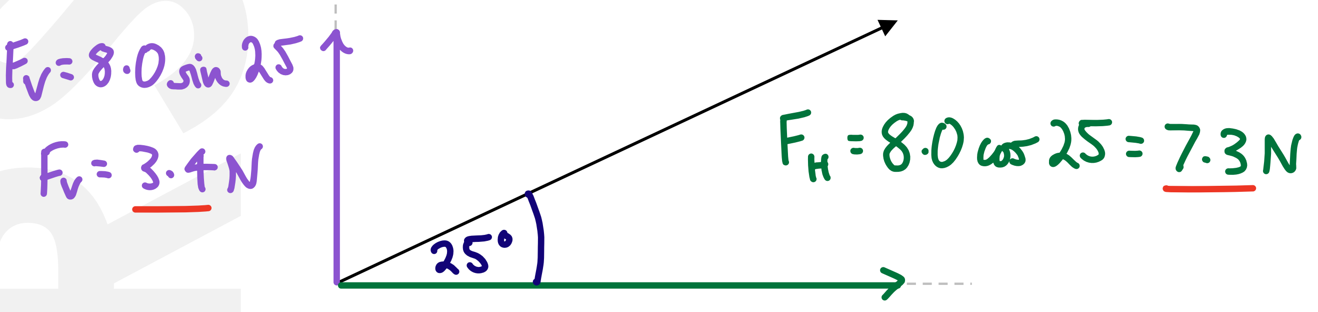
$$P_{out} = \eta P_{in}$$

$$\eta = \frac{P_{out}}{P_{in}} = \frac{I_2 V_2}{I_1 V_1} = \frac{120 \times 12}{10 \times 230} = 0.626$$

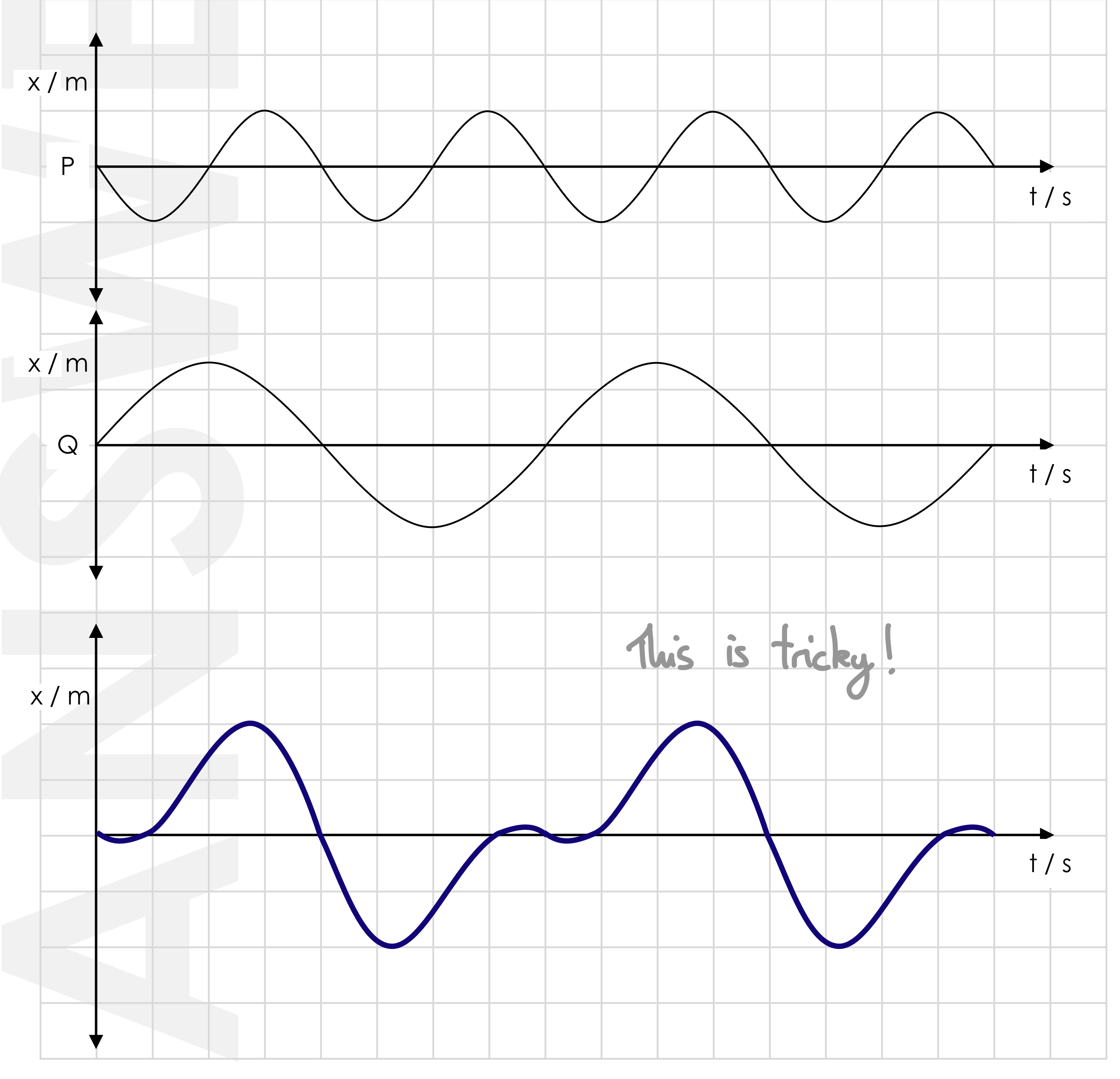
$$= 63\%$$

10th February

1. Resolve this 8.0 N force into its **horizontal** and **vertical** components.



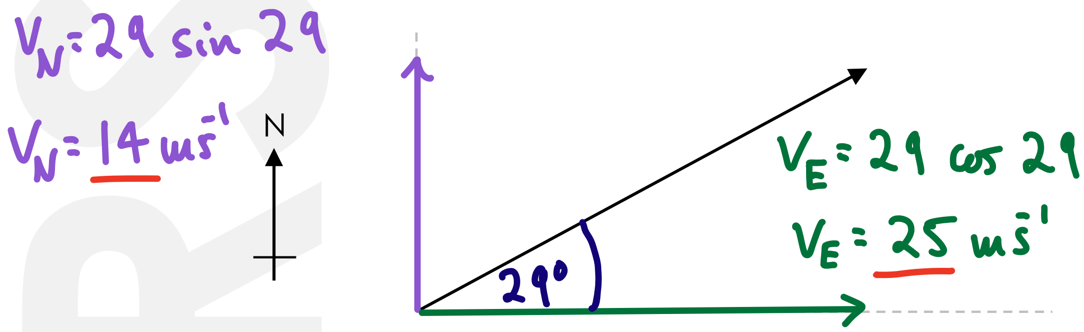
2. Two waves P and Q are shown below. They interfere and superpose. Sketch the **resultant wave**.



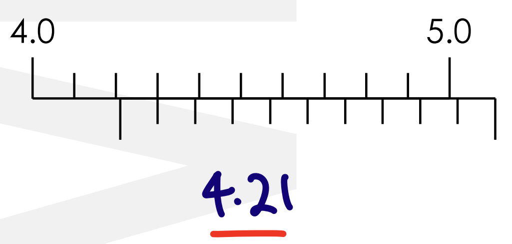
11th February

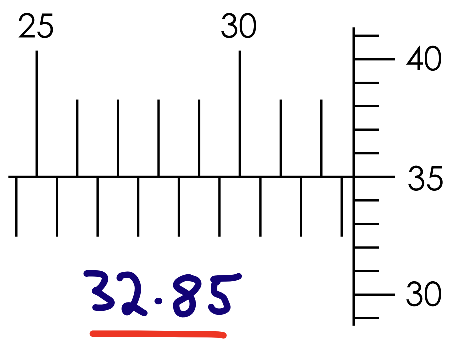
1 2 3

1. Resolve this 29 m s^{-1} velocity into its **northerly** and **easterly** components.

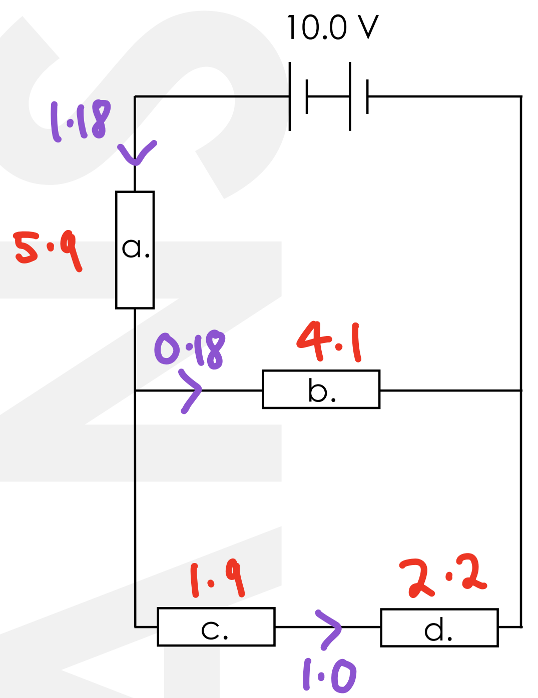


2. Read the **quantity** measured in the following diagrams of vernier scales.





3. Complete the table for the **circuit below** (the battery has negligible internal resistance):



Resistor	R / Ω	V / V	I / A
a.	5.0	5.9	1.18
b.	23	4.1	0.18
c.	1.9	1.9	1.0
d.	2.2	2.2	1.0

12th February

1 2 3

1. Underline the **vector** quantities:

Resistivity	Acceleration	Upthrust
Momentum	Young's modulus	Strain
Current	Electronvolt	Planck's constant

2. Microwaves of wavelength 1.5 mm pass through a double slit. An interference patten is detected 2.0 m away with the distance between points of constructive interference equal to 6.0 cm. Calculate the **slit separation**.

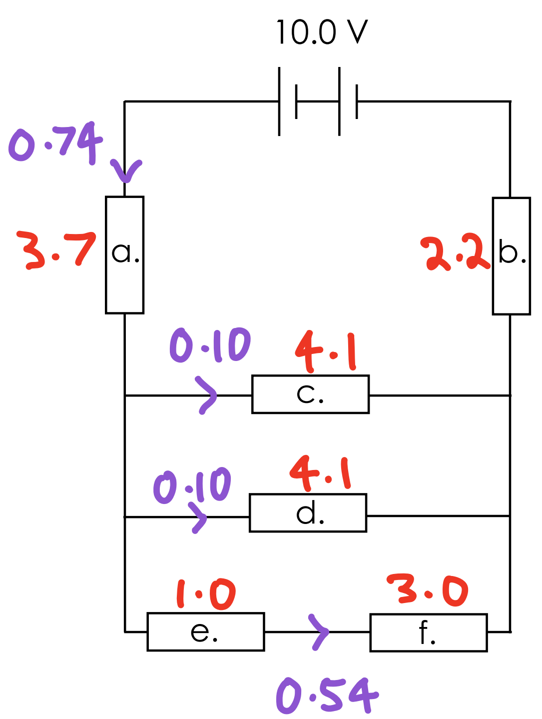
$\lambda = \frac{ax}{D}$

or

$w = \frac{\lambda D}{s}$

$\frac{1.5\times10^{-3}\times 2.0}{6.0\times10^{-2}} = 0.050\,m$

3. Complete the table for the **circuit below** (the battery has negligible internal resistance):



Resistor	R / Ω	V / V	I / A
a.	5.0	3.7	0.74
b.	3.0	2.2	0.74
c.	41	4.1	0.10
d.	41	4.1	0.10
e.	1.9	1.0	0.54
f.	5.7	3.1	0.54

13th February

1 2 3

1. Underline the **scalar** quantities:

Velocity	<u>Time period</u>	Drag
Impulse	<u>Potential difference</u>	<u>Pressure</u>
Displacement	<u>Density</u>	<u>Work done</u>

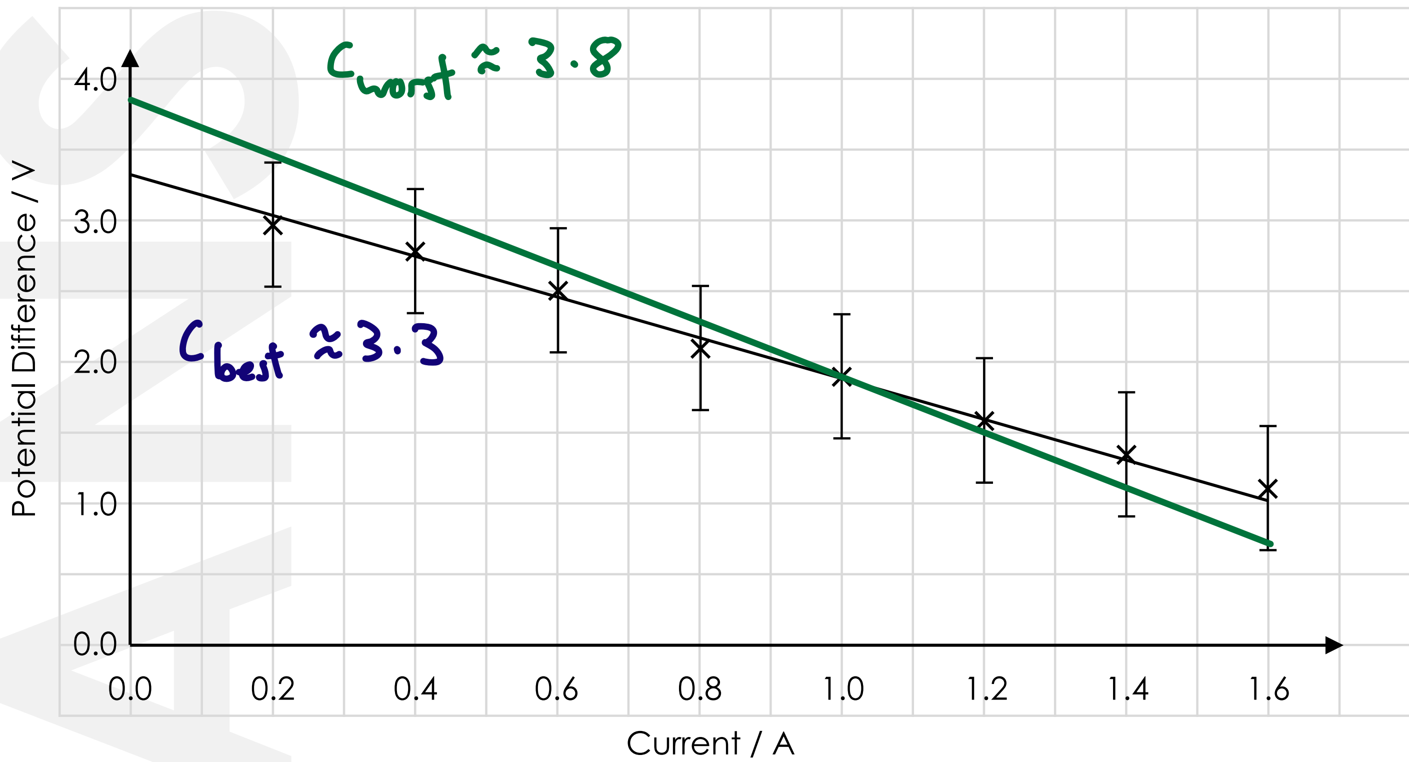
2. A DC current of 200 mA flows through a lamp that is switched on for 2.0 minutes. Calculate how many **electrons** flow past a point in the circuit.

$Q = It = 200 \times 10^{-3} \times 2.0 \times 60 = 24\ C$

$Q = ne \qquad n = \frac{Q}{e} = \frac{24}{1.60 \times 10^{-19}} = 1.5 \times 10^{20}$ electrons

3. Calculate the **percentage uncertainty** in the **y-intercept**.

$\frac{3.3 - 3.8}{3.3} \times 100 \approx 15\%$



14th February

1 2 3

1. A bungee rope of spring constant 200 N m^{-1} is extended by a distance of 35 m. Calculate the **force** (in units of kN) that is applied to the bungee.

$F = ke = 200 \times 35 = 7.0\text{kN}$

2. Blue laser light is investigated with a double slit arrangement. Calculate the **percentage uncertainty** in the wavelength.

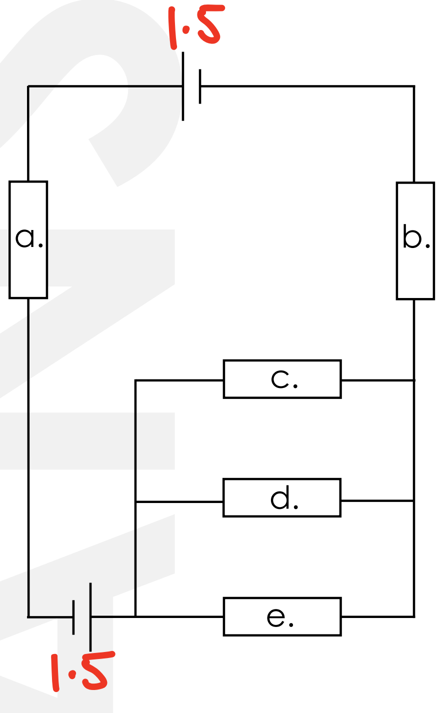
Quantity	Percentage Uncertainty
Slit separation	4.2 %
Fringe spacing	3.1 %
Distance to screen	0.1 %

$\lambda = \frac{ax}{D}$

$\%\lambda = \%a + \%x + \%D$

$\%\lambda = 4.2 + 3.1 + 0.1 = 7.4\%$

3. Complete the table for the **circuit below** (each cell has negligible internal resistance and an EMF of 1.5 V):



$V = IR = 0.04038 \times 22 = 0.888$

Resistor	R / Ω	V / V	I / A
a.	22	0.89	0.040
b.	47	1.9	0.040
c.	18	0.21	0.012
d.	30	0.21	0.0071
e.	10	0.21	0.021

$R_T = 22 + 47 + \left(\frac{1}{\frac{1}{18} + \frac{1}{30} + \frac{1}{10}}\right) = 74.294$

$I = \frac{V}{R_T} = \frac{3.0}{74.294} = 0.04038$

15th February

1. Calculate the **surface area** of a sphere with a radius of:

   a. 1.0 mm $\quad 1.3\times10^{-5}\ m^2$

   b. 1.0 cm $\quad A = 4\pi r^2 \quad 1.3\times10^{-3}\ m^2$

   c. 1.0 m $\quad 13\ m^2$

2. Light is radiated equally in all directions from a 60 W ceiling lamp.

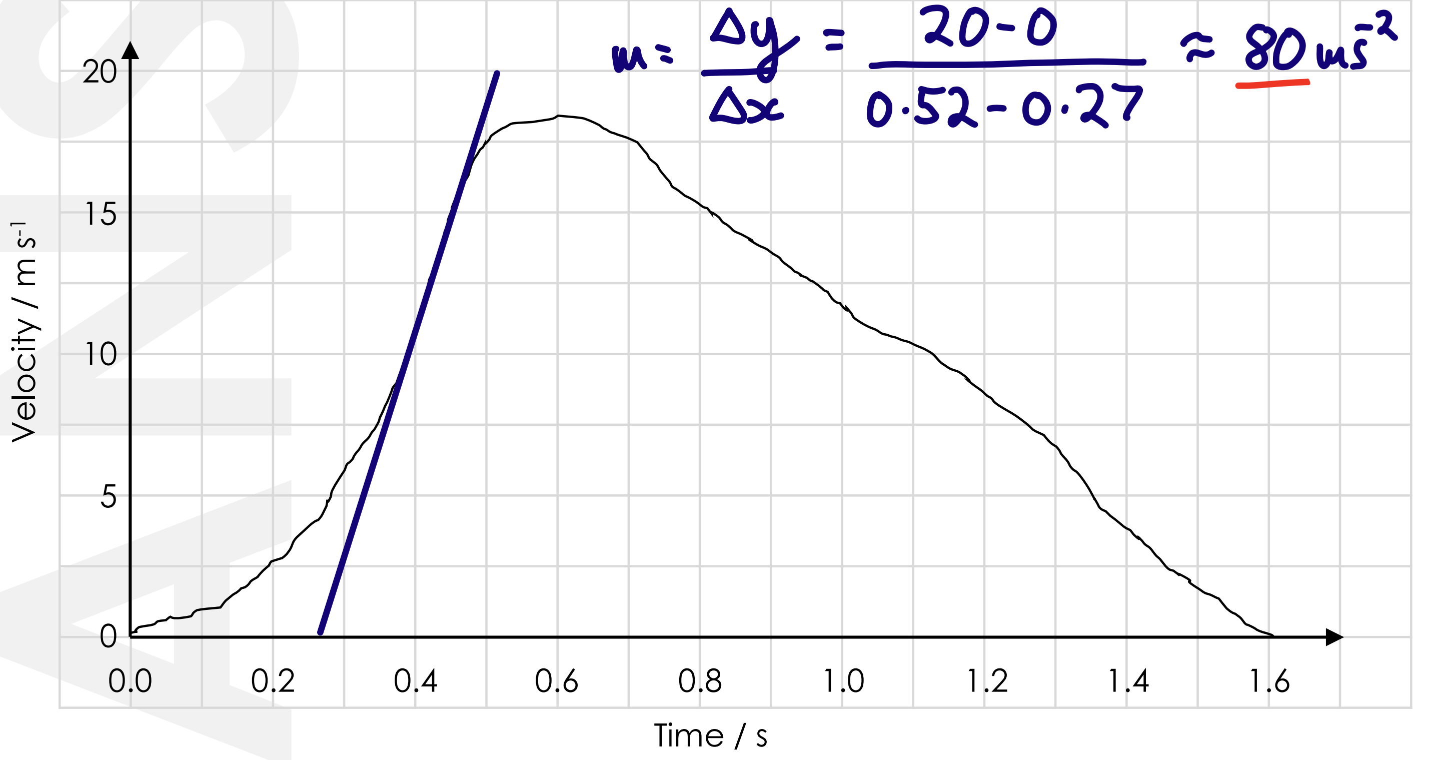
   Calculate the **intensity** 2.4 m away from the bulb.

   $$I = \frac{P}{A} = \frac{60}{4\pi \times 2.4^2} = 0.8289$$

   $$= \underline{0.83}\ Wm^{-2}$$

3. A sensor is fitted to a water bottle rocket that is launched from a school field.

   Calculate the **maximum acceleration** from the velocity-time graph below.



$$m = \frac{\Delta y}{\Delta x} = \frac{20-0}{0.52-0.27} \approx \underline{80}\ ms^{-2}$$

16th February

1 2 3

1. Calculate the **energy** of a red photon with wavelength 630 nm.

$$E = hf = \frac{hc}{\lambda} = \frac{6.63\times10^{-34} \times 3.00\times10^{8}}{630\times10^{-9}} = 3.16\times10^{-19}\ \text{J}$$

2. A 9.0 V battery, when connected across two 125 Ω resistors in series, causes a current of 34 mA.

   Calculate the **internal resistance** of the battery

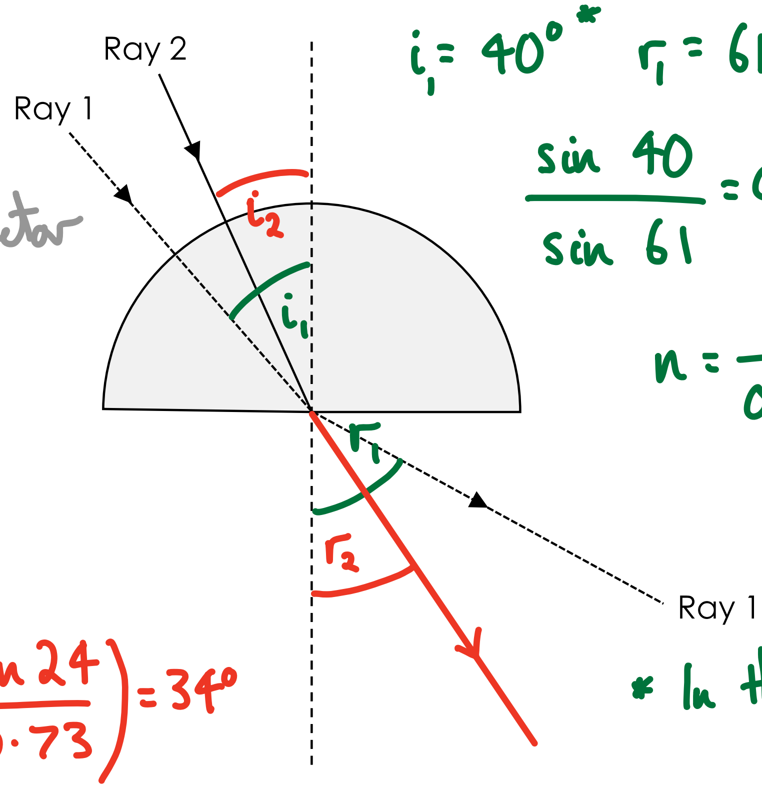
$$E = I(R+r)$$

$$r = \frac{E}{I} - R = \frac{9.0}{34\times10^{-3}} - (125+125) = 14.71$$

$$= 15\ \Omega$$

3. A ray of light passes through a semi-circular block and refracts, as shown by the dashed line -------- below.

   Calculate the **refractive index** of the material and complete the **second ray** showing its path as it exits the block.



$i_1 = 40°$* $r_1 = 61°$

$$\frac{\sin 40}{\sin 61} = 0.73$$

$$n = \frac{1}{0.73} = 1.4$$

* In the video I said 41°

Use your protractor to measure the angles!

$i_2 = 24°$

$$r_2 = \sin^{-1}\left(\frac{\sin 24}{0.73}\right) = 34°$$

17th February

1 2 3

1. An LED has a current of 0.050 A flowing through it and a potential difference of 1.2 V across it.

   Calculate how much energy the LED transfers in a time of 2.0 minutes.

   $E = ItV = 0.050 \times 2.0 \times 60 \times 1.2 = 7.2\text{ J}$

2. A stone is dropped down a well to estimate its depth. It falls for 3.1 seconds.

   Calculate the **depth** of the well, listing any **assumptions** made.

   ↓ $s = ?$
   $u = 0\text{ ms}^{-1}$
   v
   $a = 9.81\text{ ms}^{-2}$
   $t \approx 3.1\text{ s}$

   $s = \cancel{ut} + \frac{1}{2}at^2$

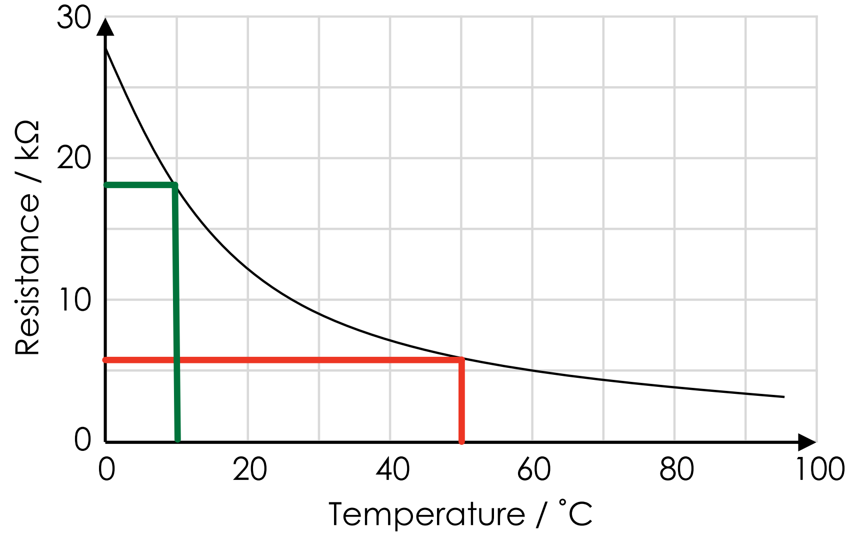
   $s = \frac{1}{2} \times 9.81 \times 3.1^2 = 47.14$

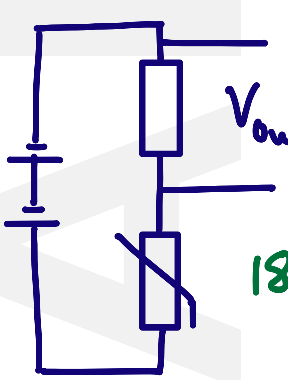
   $\approx 47\text{ m}$ deep

   Assume air resistance and time for sound to travel back up is negligible.

3. A potential divider circuit is constructed of a 9.0 V battery, 10 000 Ω fixed resistor and a thermistor.

   Calculate the **range** of output potential differences across the fixed resistor between 10 ˚C and 50 ˚C.





V_{out} 10 kΩ

18 kΩ to 6 kΩ

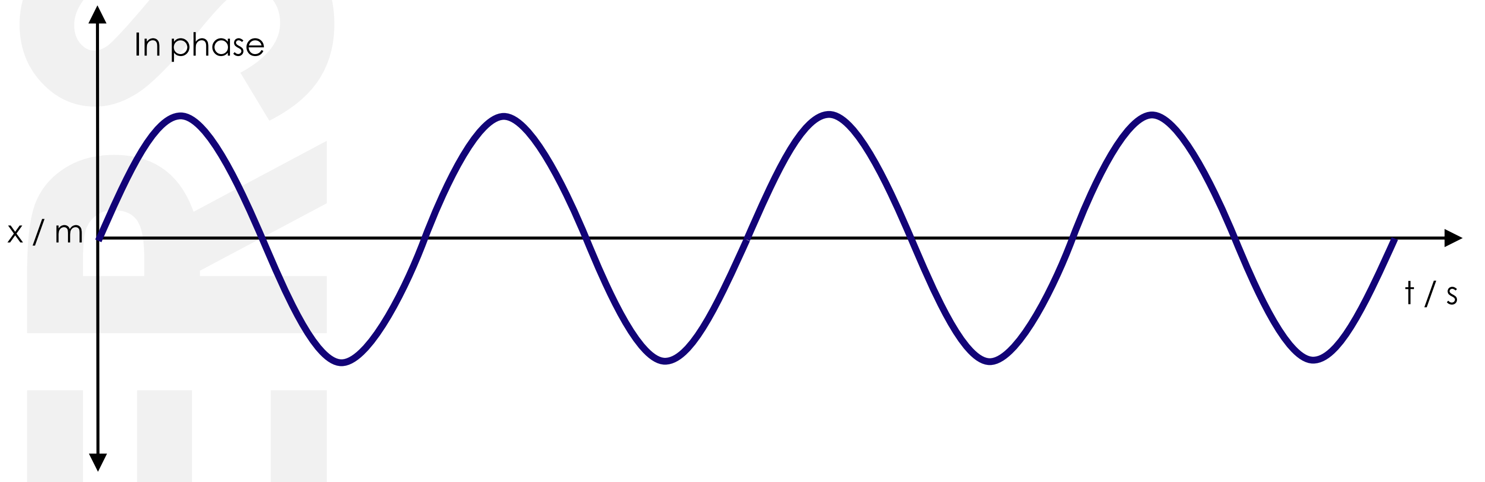
$V_{out} = 9.0 \times \frac{10}{28} = 3.2\text{ V}$

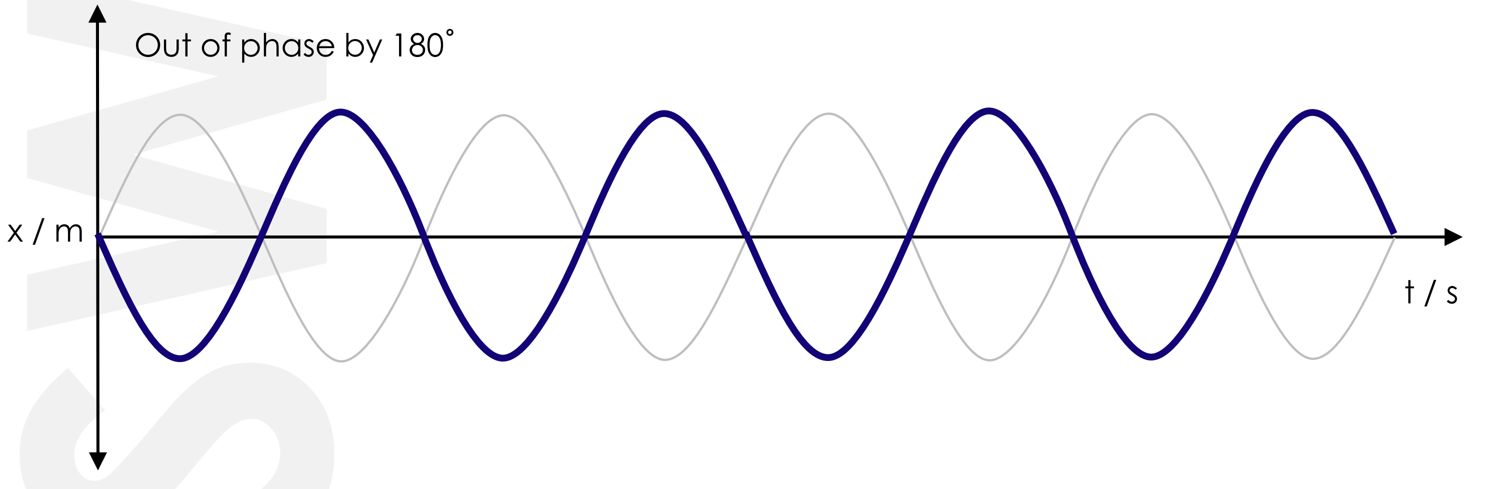
$V_{out} = 9.0 \times \frac{10}{16} = 5.6\text{ V}$

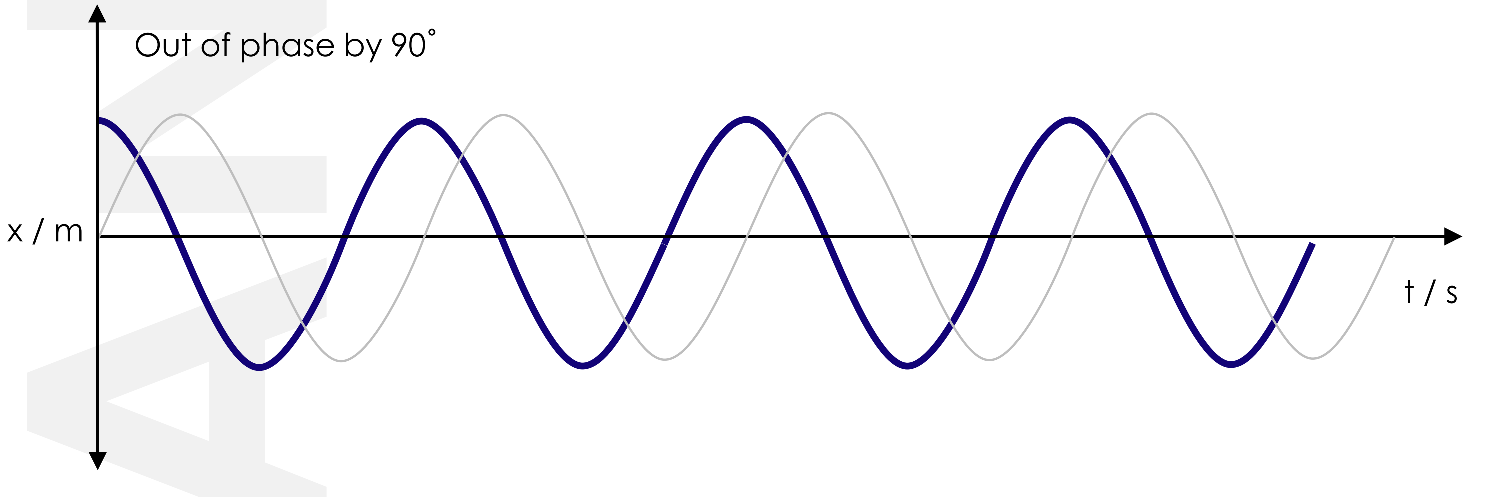
18th February

1

1. Add a second **sinusoidal** curve for the following displacement-time graphs for a wave:







19th February

1. A resistor has 25 C of charge flow through it and a potential difference of 9.0 V across it.

   Calculate the **energy** transferred by the resistor.

   $E = QV = 25 \times 9.0 = 225\ J$

2. A Nerf gun is fired vertically into the air from ground level. The 1.02 g dart is in the air for 2.9 seconds.

   Calculate the maximum **gravitational potential energy** gained by the dart.

   $s = ?$
   u
   $v = 0\ m\,s^{-1}$
   $a = -9.81\ m\,s^{-2}$
   $t = 1.45\ s$

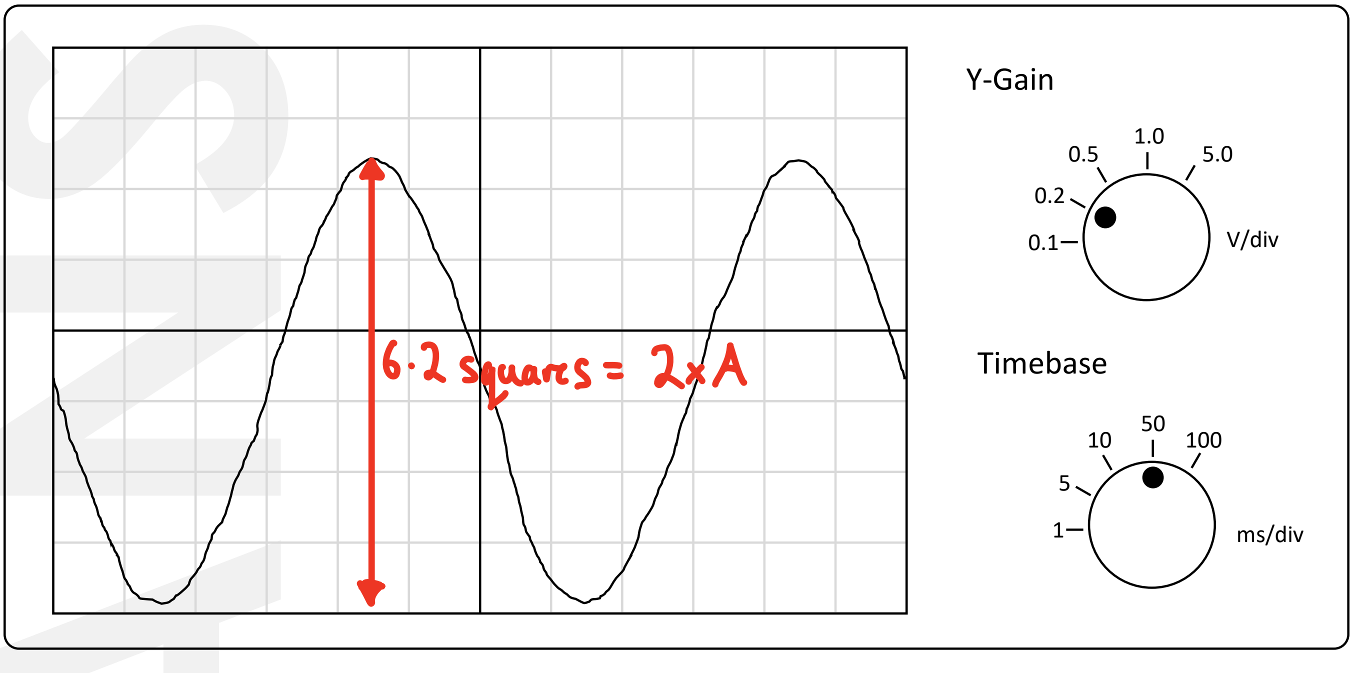
   $s = vt - \frac{1}{2}at^2$

   $s = -(-)\frac{1}{2} \times 9.81 \times 1.45^2$

   $s = 10.31\ m$

   $E_p = mgh = 1.02 \times 10^{-3} \times 9.81 \times 10.31 = 0.10\ J$

3. Determine the **amplitude** (in V) and **frequency** of the signal on this oscilloscope trace.



$A = 3.1 \times 0.2 = 0.62\ V$

$f = \frac{1}{T} = \frac{1}{6 \times 50 \times 10^{-3}} = 3.3\ Hz$

20th February

1 2 3

1. Determine the **result** that should be recorded for m and calculate the **percentage uncertainty** in the data:

m / g	28.2	28.0	26.9	27.3	28.4

$m = 27.8$ $\qquad \frac{1.5 \div 2}{27.76} \times 100 = \pm 2.7\%$

2. A bullet is fired horizontally from an SA80 rifle 1.65 m above ground level at 930 m s^{-1}.

   If air resistance is ignored, calculate how **far** the bullet travels before it hits the ground.

$\downarrow$ $s = 1.65\ m$
$u = 0\ ms^{-1}$
v
$a = 9.81\ ms^{-2}$
$t = ?$

$s = ut + \frac{1}{2}at^2$

$t = \sqrt{\frac{2s}{a}} = 0.57999$

$\rightarrow$ $s = vt = 930 \times 0.58$

$s = 539\ m$

3. An electron is accelerated through a potential difference of 3.00 kV in a cathode-ray tube.

   a. Calculate the **kinetic energy** gained by the electron in **eV**

$3.00 \times 10^{3}\ eV$

   b. Calculate the **kinetic energy** gained by the electron in **J**

$3.00 \times 10^{3} \times 1.60 \times 10^{-19} = 4.8 \times 10^{-16}\ J$

   c. Calculate the **speed** of the electron

$E_K = \frac{1}{2}mv^2$ $\qquad v = \sqrt{\frac{2E_K}{m}} = \sqrt{\frac{2 \times 4.8 \times 10^{-16}}{9.11 \times 10^{-31}}}$

$v = 3.25 \times 10^{7}\ ms^{-1}$

21st February

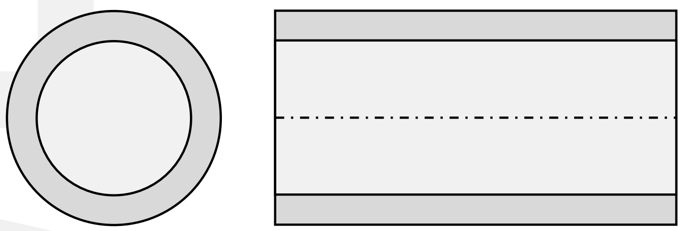
1. Calculate the approximate **energy** of a photon of:

   a. Red light $\lambda \approx 630\,nm$ $3.2\times10^{-19}\,J$

   b. Green light $\lambda \approx 550\,nm$ $E = \frac{hc}{\lambda}$ $3.6\times10^{-19}\,J$

   c. Blue light $\lambda \approx 450\,nm$ $4.4\times10^{-19}\,J$

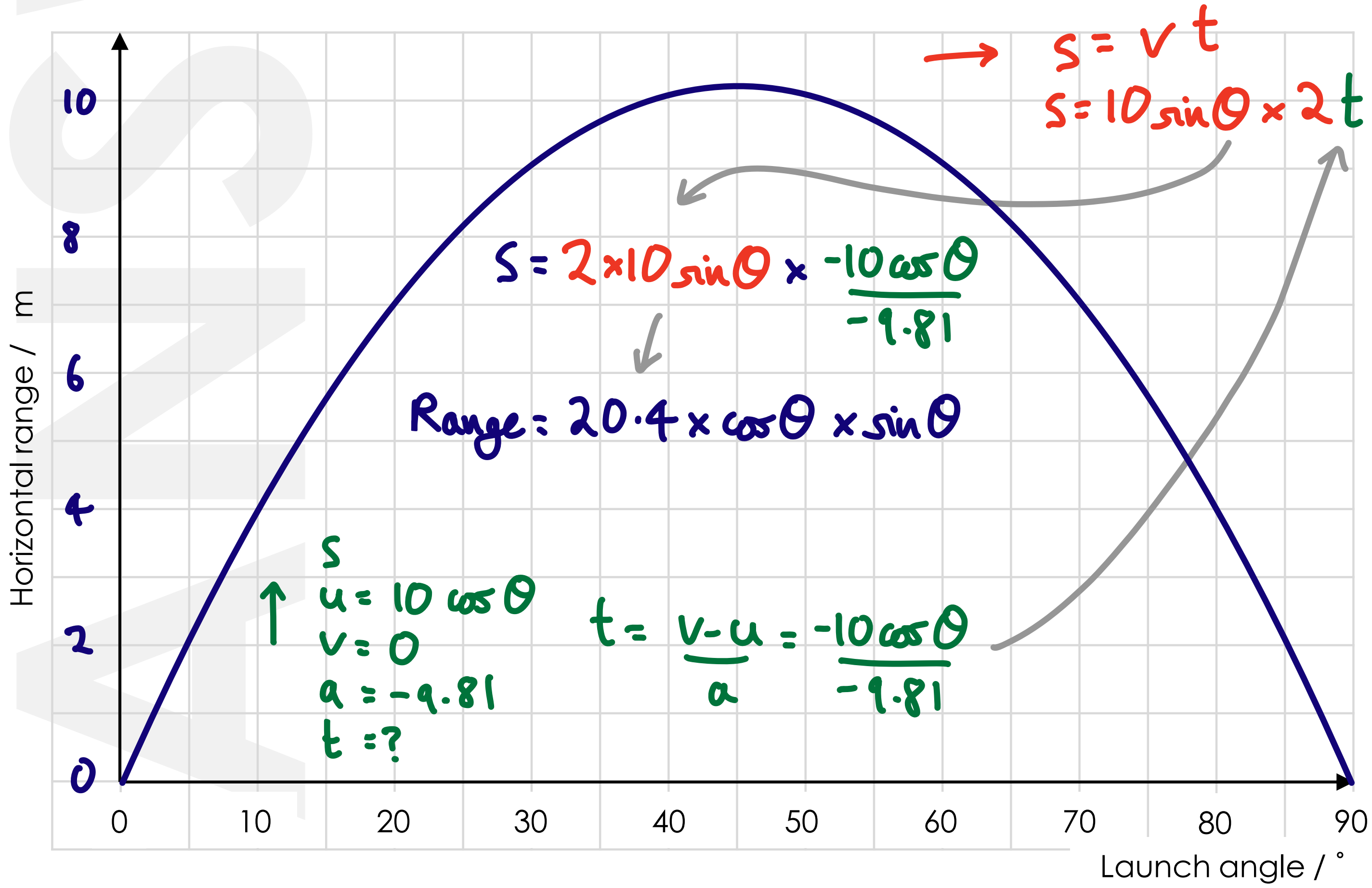
2. A step index optical fibre is made from two types of glass. Calculate the **critical angle** between the core and the outer layer.



Glass	n
Core	1.45
Outer	1.37

$\sin\theta_c = \frac{n_2}{n_1}$ $\theta_c = \sin^{-1}\left(\frac{1.37}{1.45}\right) = 70.9°$

3. A projectile is launched at 10 ms^{-1} from various angles between 0˚ and 90˚. Plot a graph of **launch angle vs. horizontal range** (ignoring air resistance).



22nd February

1 2

1. A car of mass 1200 kg crashes and decelerates from a velocity of 12 m s^{-1} to rest in a time of 200 ms. Calculate the **average force** experienced by the car in the crash.

$$F = \frac{\Delta p}{\Delta t} = \frac{1200 \times 12}{200 \times 10^{-3}} = 72\ kN$$

2. **Complete** the following table:

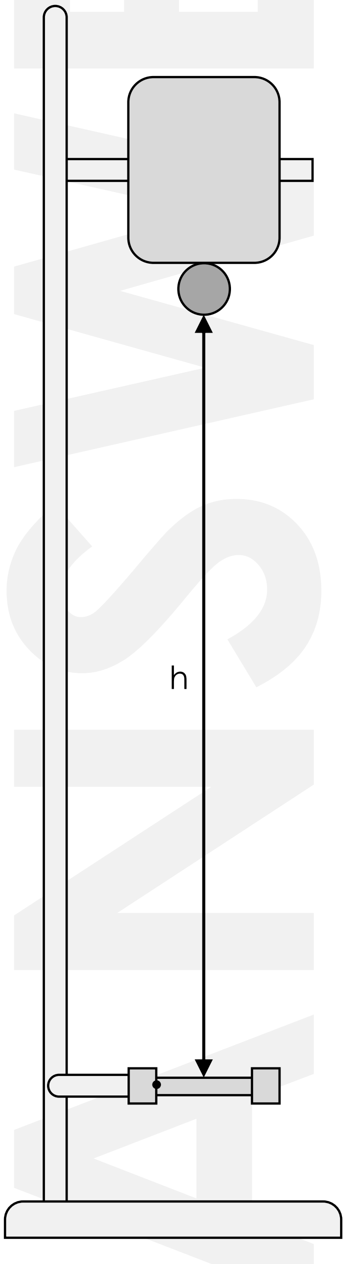
	Quantity	Unit	SI Base Units
a.	Mass	kg	kg
b.	Displacement	m	m
c.	Time	s	s
d.	Velocity	$m\,s^{-1}$	$m\,s^{-1}$
e.	Acceleration	$m\,s^{-2}$	$m\,s^{-2}$
f.	Momentum	$kg\,m\,s^{-1}$	$kg\,m\,s^{-1}$
g.	Impulse	N s	$kg\,m\,s^{-1}$
h.	Force	N	$kg\,m\,s^{-2}$
i.	Energy	J	$kg\,m^2\,s^{-2}$
j.	Current	A	A
k.	Charge	C	A s
l.	Potential difference	V	$kg\,m^2\,s^{-3}\,A^{-1}$
m.	Resistance	R	$kg\,m^2\,s^{-3}\,A^{-2}$
n.	Temperature	K	K
o.	Specific heat capacity	$J\,kg^{-1}\,K^{-1}$	$m^2\,s^{-2}\,K^{-1}$

23rd February

1. A 'trap door' method is used to determine a value for the acceleration due to gravity. A steel ball bearing of diameter 12 mm is released from an electromagnet. This release starts a digital timer which stops when the ball falls through a 'trap door', breaking a circuit.

   a. Complete the **table**

h / m	t / s	t^2 / s^2
0.200	0.212	0.0449
0.300	0.256	0.0655
0.400	0.290	0.0841
0.500	0.326	0.106
0.600	0.482	0.232 ← Anomaly
0.700	0.381	0.145



   b. **Plot** the data on the page opposite

   c. Use your graph to **calculate** a value for 'g'

$s = h$, $u = 0$, v, $a = g$, $t = t$

$s = \cancel{ut} + \frac{1}{2}at^2$

$h = \frac{1}{2}gt^2$

$\frac{h}{t^2} = \frac{g}{2} = \text{gradient}$

$g = 2 \times \text{gradient} = 2 \times 4.9$

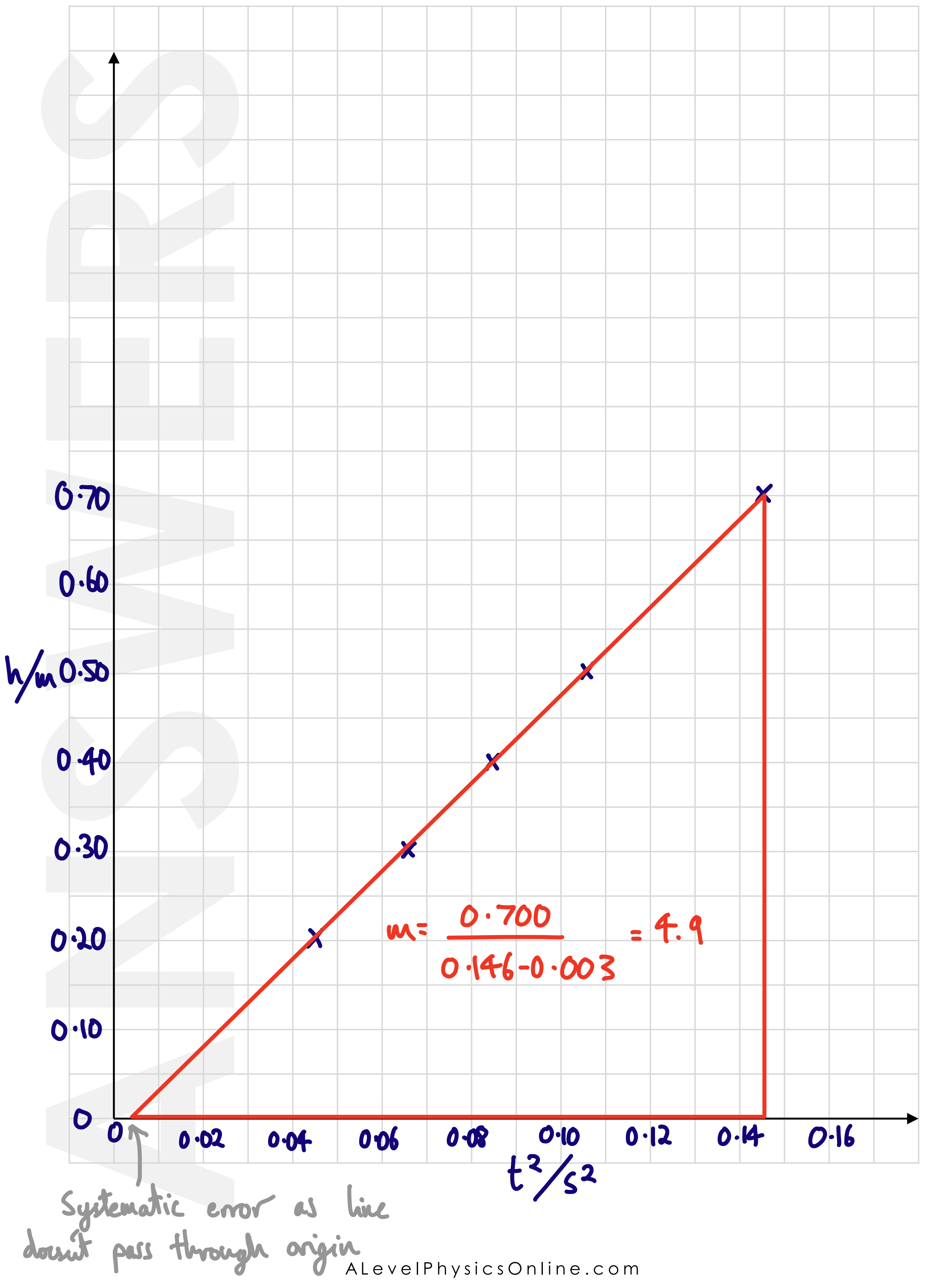
$= 9.8\ m\,s^{-2}$

   d. Discuss any **systematic** errors that may occur due to this method

Time lag as ball is released from the electromagnet.

Timing error for circuit to stop as ball opens the trap door.

23rd February



24th February

1 2 3

1. Estimate:

   a. The **speed** of a cyclist $\approx 6\ ms^{-1}$

   b. The **mass** of a white Ford Transit van $\approx 2000\ kg$

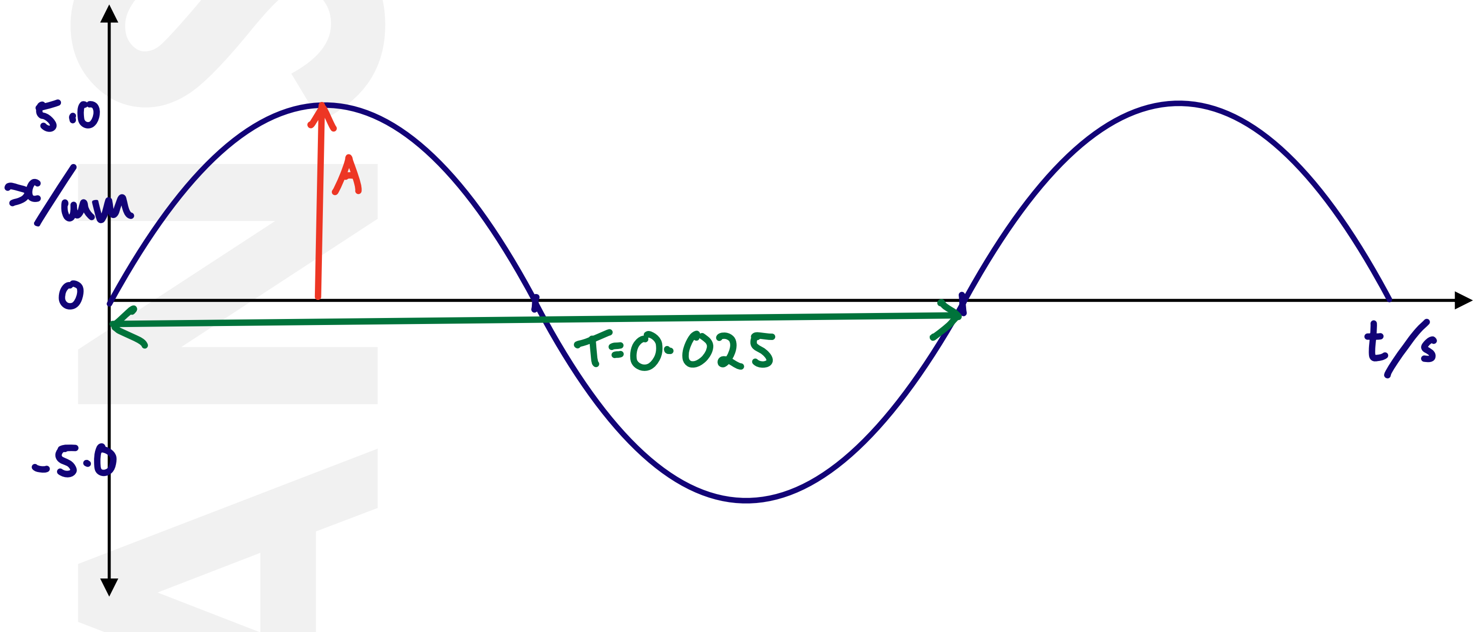
   c. The **weight** of a Lewis Matheson $\approx 880\ N$

2. Calculate the **de Broglie wavelength** of an electron travelling at 9.0% of the speed of light.

$$\lambda = \frac{h}{mv} = \frac{6.63\times10^{-34}}{9.11\times10^{-31}\times 0.090\times 3.00\times10^{8}}$$

$$\lambda = \underline{2.7\times10^{-11}}\ m$$

3. Draw a sinusoidal wave on a **displacement-time** graph with a frequency of 40 Hz and amplitude 5.0 mm. Label the time period and amplitude on your diagram.



25th February

1 2 3

1. A lamp has a potential difference of 6.0 V across it. It transfers 12 kJ of energy in a time of 15 minutes. Calculate the **current** flowing through the lamp.

$E = ItV \qquad I = \frac{E}{tV} = \frac{12000}{15 \times 60 \times 6.0} = \underline{0.22\ A}$

2. A stationary fundamental sound wave is set up in a 2.40 m long tube that is closed at both ends.

   Calculate the **wavelength** of the wave and hence its **frequency**.

$\lambda = 2L = \underline{4.80\ m}$

Speed of sound in air

$f = \frac{v}{\lambda} = \frac{330}{4.80} = \underline{67\ Hz}$

3. A seagull flies horizontally at 15 m s^{-1} as it ejects guano with a vertical velocity of 5.0 m s^{-1} downwards.

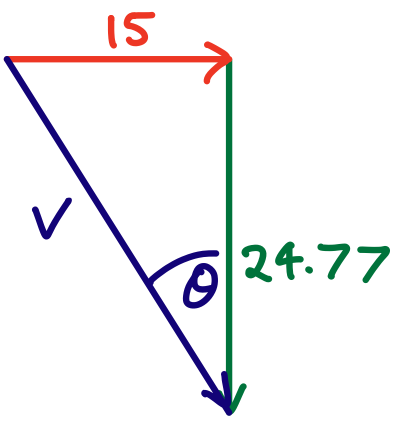
   Calculate the **velocity** (size and direction) of the bird poo as it hits a sunbather lying on a beach 30 m below.

↓ $s = 30\,m$
$u_v = 5.0$
$v_v =$
$a = 9.81$
t

$v_v^2 = u_v^2 + 2as$

$v_v = \sqrt{5.0^2 + (2 \times 9.81 \times 30)}$

$v_v = 24.77$



$v = \sqrt{15^2 + 24.77^2}$

$v = 28.96 = \underline{29\ m\,s^{-1}}$

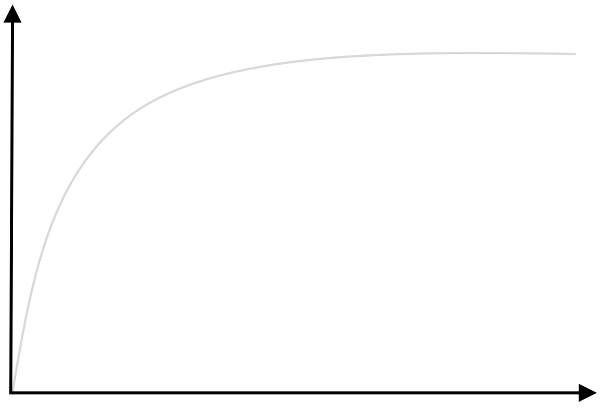
$\theta = \tan^{-1}\left(\frac{15}{24.77}\right) = \underline{31°}$ from vertical

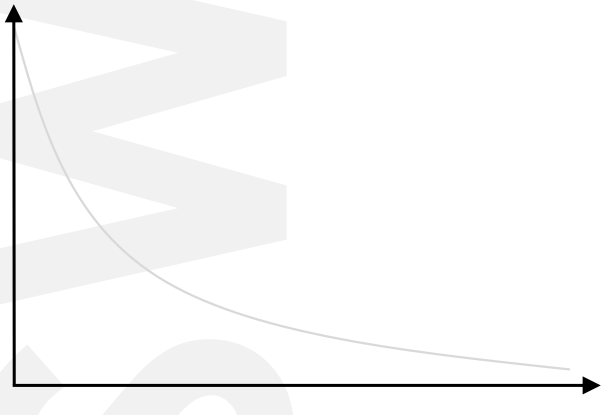
26th February – Part 1

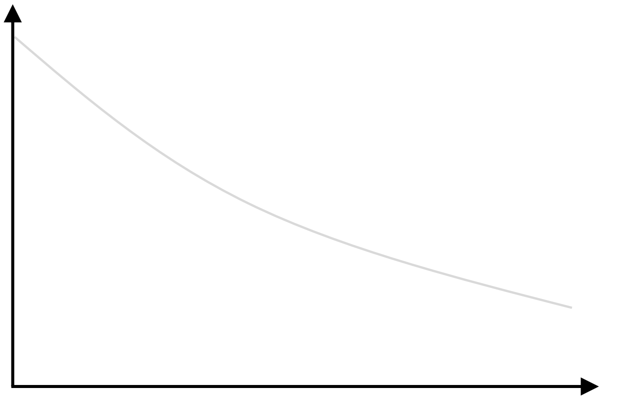
1

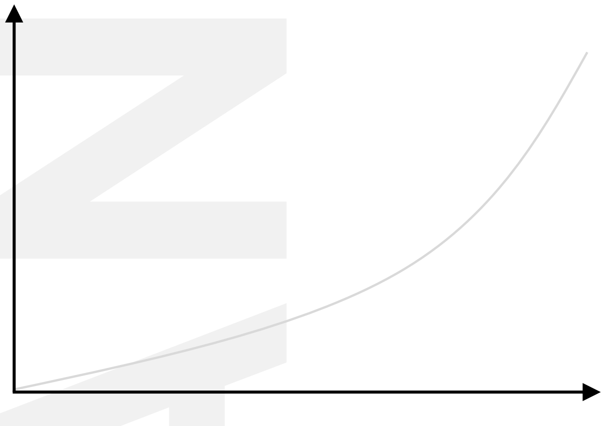
1. Trace the following **curves**.

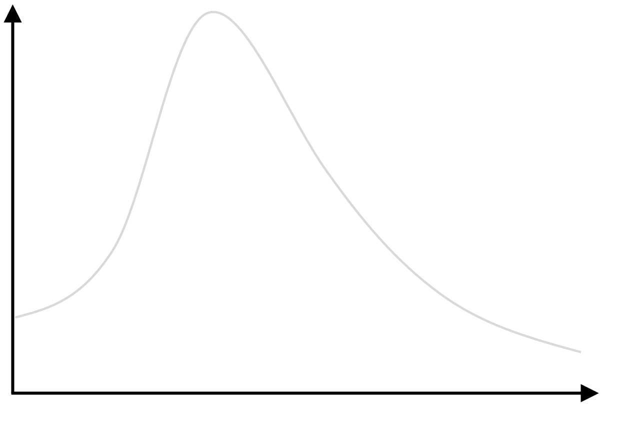
Don't forget to use a pencil for these!





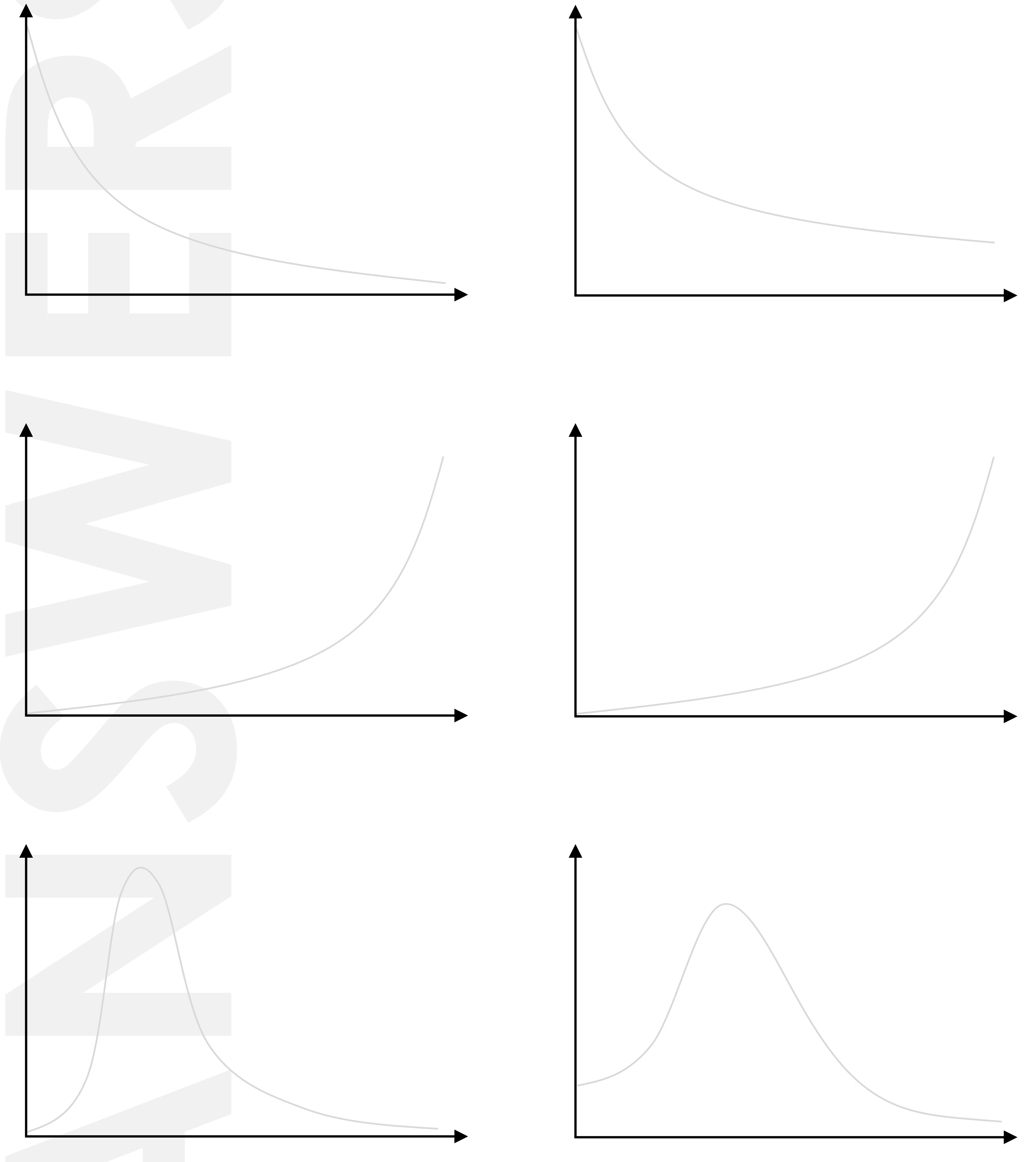






26th February – Part 2

2. Trace the following **curves**.



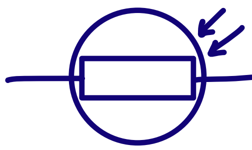
27th February

1 2 3

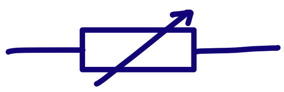
1. Draw the circuit symbol for a:

a. Fixed resistor

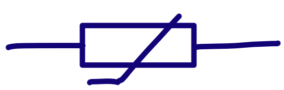
b. LDR



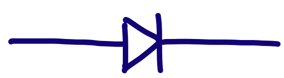
c. Variable resistor



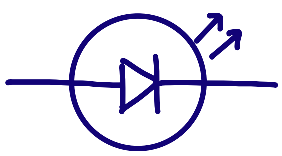
d. Thermistor



e. Diode



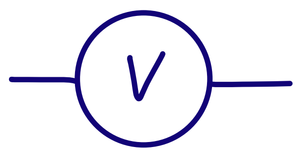
f. LED



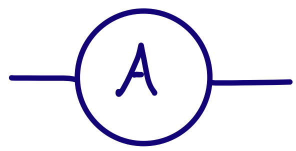
g. Fuse

h. Heater

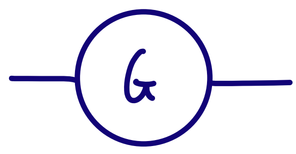
i. Voltmeter



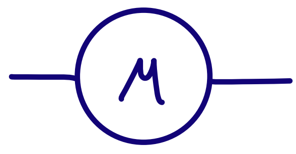
j. Ammeter



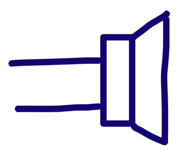
k. Galvanometer



l. Motor



m. Loudspeaker



28th February

1. **Complete** the following mega table:

	Quantity	Symbol	Unit
a.	Acceleration due to gravity	g	$m s^{-2}$
b.	Amplitude	A	m
c.	Area	A	m^2
d.	Charge	Q	C
e.	Critical angle	C or θ_c	$°$
f.	Current	I	A
g.	Density	ρ	$kg\ m^{-3}$
h.	Diameter	d	m
i.	Efficiency	η	—
j.	Elastic potential energy	E_e	J
k.	Electromotive force	E or ε	V
l.	Force	F	N
m.	Frequency	f	Hz
n.	Fringe spacing	w or x	m
o.	Gravitational field strength	g	$N\ kg^{-1}$
p.	Gravitational potential energy	E_p	J
q.	Height	h	m
r.	Intensity	I	$W m^{-2}$
s.	Internal resistance	r	Ω
t.	Kinetic energy	E_k	J
u.	Length	L	m
v.	Mass	m	kg
w.	Moment	M	Nm
x.	Momentum	p	$kg\ m s^{-1}$

29th February

1. **Complete** the following mega table:

	Quantity	Symbol	Unit
a.	Period	T	s
b.	Planck's constant	h	Js
c.	Potential difference	V	V
d.	Power	P	W
e.	Radius	r	m
f.	Refractive index	n	—
g.	Resistance	R	Ω
h.	Resistivity	ρ	Ωm
i.	Slit separation	a or s	m
j.	Speed	v	ms^{-1}
k.	Speed of light	c	ms^{-1}
l.	Spring constant	k	Nm^{-1}
m.	Strain	ε	—
n.	Stress	σ	Pa
o.	Temperature	T or θ	K or $°C$
p.	Time	t	s
q.	Velocity	v	ms^{-1}
r.	Volume	V	m^3
s.	Wave speed	v or c	ms^{-1}
t.	Wavelength	λ	m
u.	Weight	W	N
v.	Work done	W	J
w.	Work function	ϕ	eV or J
x.	Young modulus	E	Pa