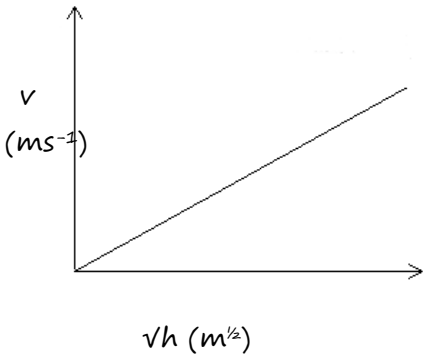
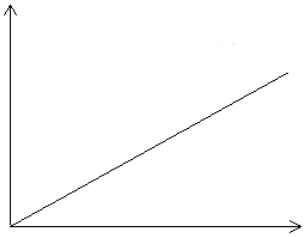
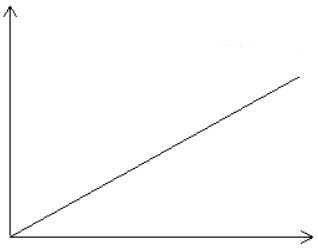
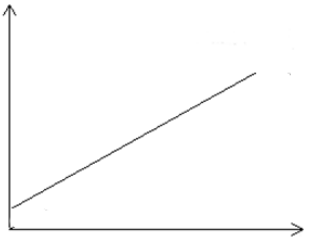
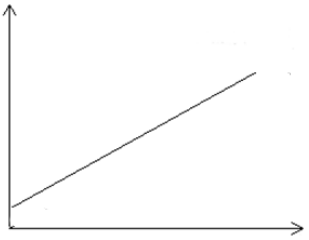
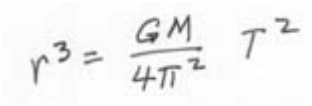
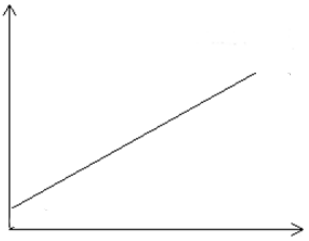
All you wanted to know about Formulae and Graphs (but were afraid to ask!) - Too

Complete the following – the first one has been done as an example:

1.	Aim: To find the mathematical relationship between the **velocity, v,** of a ball when it hits the ground, and the **height, h**, it is dropped from. Formula: $\boldsymbol{v = \sqrt{2gh}}$ What do you have to process? **height, h** to √**height, √h**	Variables: **velocity, v** **height, h**	Linear Graph you would draw:  What does the gradient tell you? **(gradient) m = √2g**
2.	Aim: To find the mathematical relationship between the **Voltage, V,** and the **current, I.** Formula: $V = IR$	Variables:	Linear Graph you would draw:  What does the gradient tell you?
3.	Aim: To find the mathematical relationship between the **capacitance, C,** and **the distance between the plates, d**. Formula: $C = \frac{\varepsilon_o \varepsilon_r A}{d}$ What do you have to process?	Variables:	Linear Graph you would draw:  What does the gradient tell you?

4.	Aim: To find the mathematical relationship between the **centripetal force, F_C,** and the **radius of a string, r,** when an object whirled above your head at constant speed. Formula: $F_c = \frac{mv^2}{r}$ What do you have to process?	Variables:	Linear Graph you would draw:  What does the gradient tell you?
5.	Aim: To find the mathematical relationship between the **angular velocity, ω,** and **the spring constant**, **k**, for different springs oscillating with the same mass attached. Formula: $\omega = \sqrt{\frac{k}{m}}$ What do you have to process?	Variables:	Linear Graph you would draw:  What does the gradient tell you?
6.	**FOR EXPERTS** Aim: To find the mathematical relationship between the **radius of orbit of a planet, r, ,** and the time it takes to orbit the Sun, T. Formula:  What do you have to process?	Variables:	Linear Graph you would draw:  What does the gradient tell you?

Answers

	formula	Variables	y-axis	x-axis	gradient
1.	$v = \sqrt{2gh}$	h v	v (ms^{-1})	√h ($m^{½}$)	√2g
2.	V = IR	V I	V(V)	I(A)	R
3.	$C = \frac{\varepsilon_o \varepsilon_r A}{d}$	C d	C (F)	1/d (m^{-1})	ε_0 ε_r A
4	$R = \frac{v_i^2 \sin 2\theta_i}{g}$	R v_i	R (m)	v_i^2 (m^2s^{-2})	Sin 2Θ/g
5	$\omega = \sqrt{\frac{k}{m}}$	ω k	ω (s^{-1})	√k ($N^{½}m^{-½}$)	1/√m
6.	$r^3 = \frac{GM}{4\pi^2} T^2$	r T	r^3	T^2	$GM/4\pi^2$