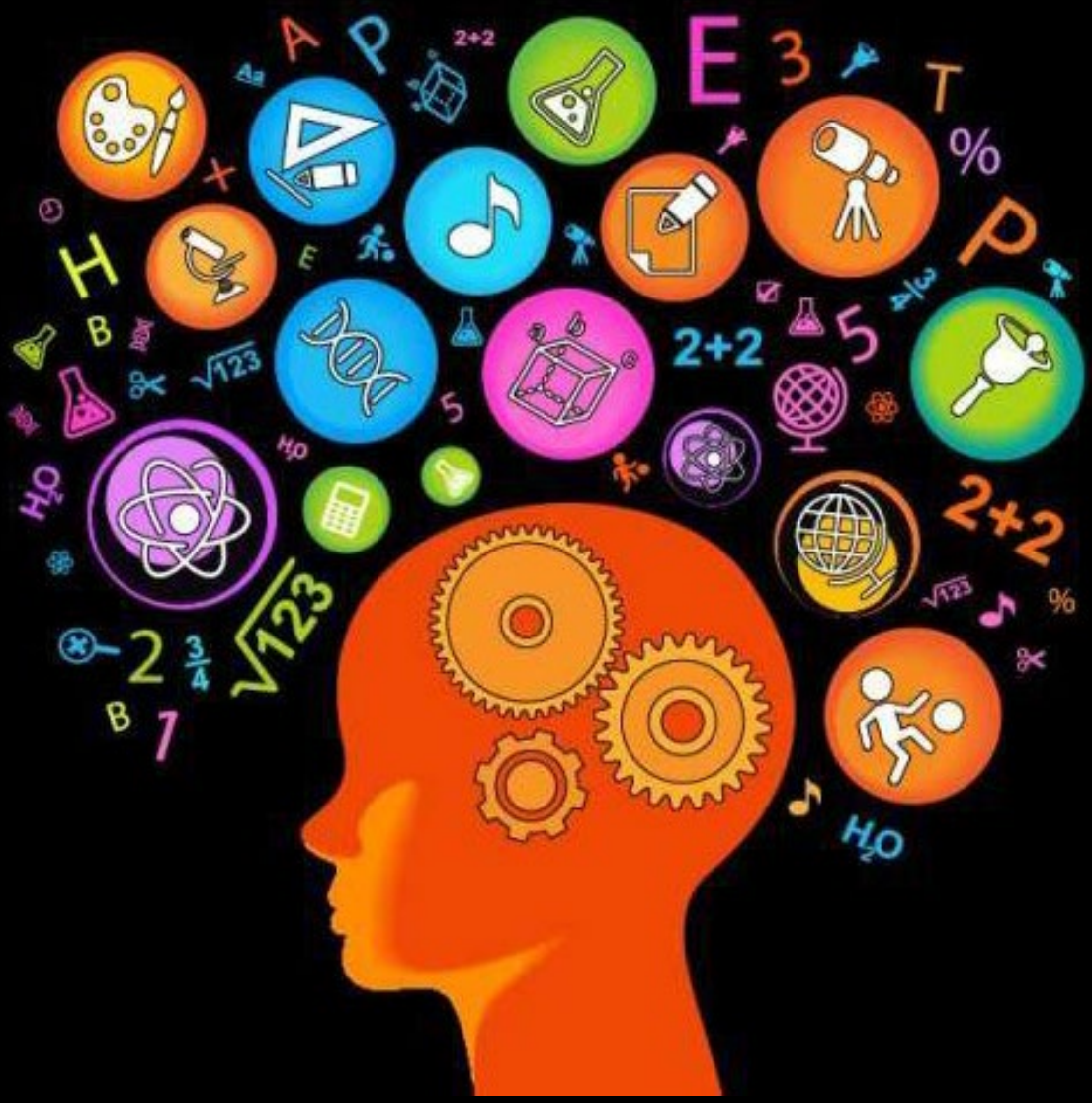


APPLIED SCIENCE

Science Department

ST PETER'S SCHOOL

LEARN, ASPIRE, EXCEED

Skills	Definitions
1	

Define the following words:

- Independent variable
- Dependent variable
- Control variable
- Continuous variable
- Discrete variable
- Ordered variable
- Categoric variable
- Accuracy
- Precision
- Reliability
- Calibration
- Random error
- Systematic error
- Zero error
- Mean value
- Anomalous results
- Line of best fit
- Gradient
- Y-Intercept

Skills	Research
2	

The follow paragraph was copied and pasted from a website. You need to put it into your own words and correctly site and reference using Harvard Referencing system where the paragraph came from.

The planet's average surface temperature has risen about 1.62 degrees Fahrenheit (0.9 degrees Celsius) since the late 19th century, a change driven largely by increased carbon dioxide and other human-made emissions into the atmosphere.[4] Most of the warming occurred in the past 35 years, with the five warmest years on record taking place since 2010. Not only was 2016 the warmest year on record, but eight of the 12 months that make up the year — from January through September, with the exception of June — were the warmest on record for those respective months.

Website: _____

Reference: _____

Rewritten paragraph:

_____
_____
_____
_____
_____
_____
_____
_____
_____

Skills	Research
2	

Harvard Referencing - To cite an online journal or newspaper article, the page numbers section from the print journal or newspaper reference is swapped with the URL or DOI the article can be accessed from and when it was accessed. So the reference for an online journal article is:

Author surname(s), initial(s). (Year) 'Title of article', *Title of journal*, volume(issue/season) [online]. Available at: URL or DOI (Accessed: day month year).

Use the following websites to cite properly using the Harvard referencing system.

https://www.sciencedaily.com/releases/2020/04/200420145031.htm

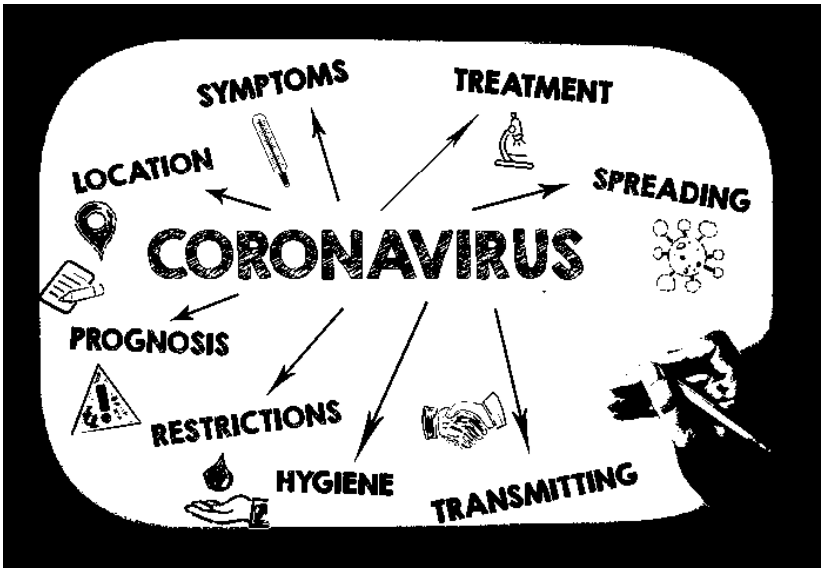
https://www.bbc.co.uk/news/technology-52361618

https://www.theguardian.com/commentisfree/2020/apr/21/doubt-essential-science-politicians-coronavirus

https://www.goodhousekeeping.com/life/parenting/g32176446/science-experiments-for-kids/

https://www.sciencemag.org/careers/2020/04/how-early-career-scientists-are-coping-covid-19-challenges-and-fears

Once you have cited them correctly, summarise each article by creating a flow chart or mind map. See below as an example (not on an article).



Skills
3

Prefixes

In Physics we have to deal with quantities from the very large to the very small. A prefix is something that goes in front of a unit and acts as a multiplier. This sheet will give you practice at converting figures between prefixes.

Symbol	Name	What it means		How to convert	
P	peta	10^{15}	1000000000000000		↓ x1000
T	tera	10^{12}	1000000000000	↑ ÷ 1000	↓ x1000
G	giga	10^{9}	1000000000	↑ ÷ 1000	↓ x1000
M	mega	10^{6}	1000000	↑ ÷ 1000	↓ x1000
k	kilo	10^{3}	1000	↑ ÷ 1000	↓ x1000
			1	↑ ÷ 1000	↓ x1000
m	milli	10^{-3}	0.001	↑ ÷ 1000	↓ x1000
µ	micro	10^{-6}	0.000001	↑ ÷ 1000	↓ x1000
n	nano	10^{-9}	0.000000001	↑ ÷ 1000	↓ x1000
p	pico	10^{-12}	0.000000000001	↑ ÷ 1000	↓ x1000
f	femto	10^{-15}	0.000000000000001	↑ ÷ 1000	

Convert the figures into the prefixes required.

s	ms	µs	ns	ps
134.6				
96.21				
0.773				

m	km	mm	Mm	Gm
12873				
0.295				
57.23				

kg	Mg	mg	g	Gg
94.76				
0.000765				
823.46				

A	mA	µA	nA	kA
0.000000678				
3.56				
0.00092				

Skills
4

Significant Figures

For each value state how many significant figures it is stated to.

Value	Sig Figs	Value	Sig Figs	Value	Sig Figs	Value	Sig Figs
2		1066		1800.45		0.07	
2.0		82.42		2.483×10^4		69324.8	
2.00		750000		2.483		0.0063	
0.136		310		5906.4291		9.81×10^4	
0.34		3.10×10^2		200000		6717	
54.1		3.1×10^2		12.711		0.91	

Add the values below then write the answer to the appropriate number of significant figures

Value 1	Value 2	Value 3	Total Value	Total to correct sig figs
51.4	1.67	3.23		
7146	–32.54	12.8		
20.8	18.72	0.851		
1.4693	10.18	–1.062		
9.07	0.56	3.14		
739762	26017	2.058		
8.15	0.002	106		
132.303	4.123	53800		
152	0.8	0.55		
0.1142	4922388	132000		

Multiply the values below then write the answer to the appropriate number of significant figures

Value 1	Value 2	Total Value	Total to correct sig figs
0.91	1.23		
8.764	7.63		
2.6	31.7		
937	40.01		
0.722	634.23		

Divide value1 by value 2 then write the answer to the appropriate number of significant figures

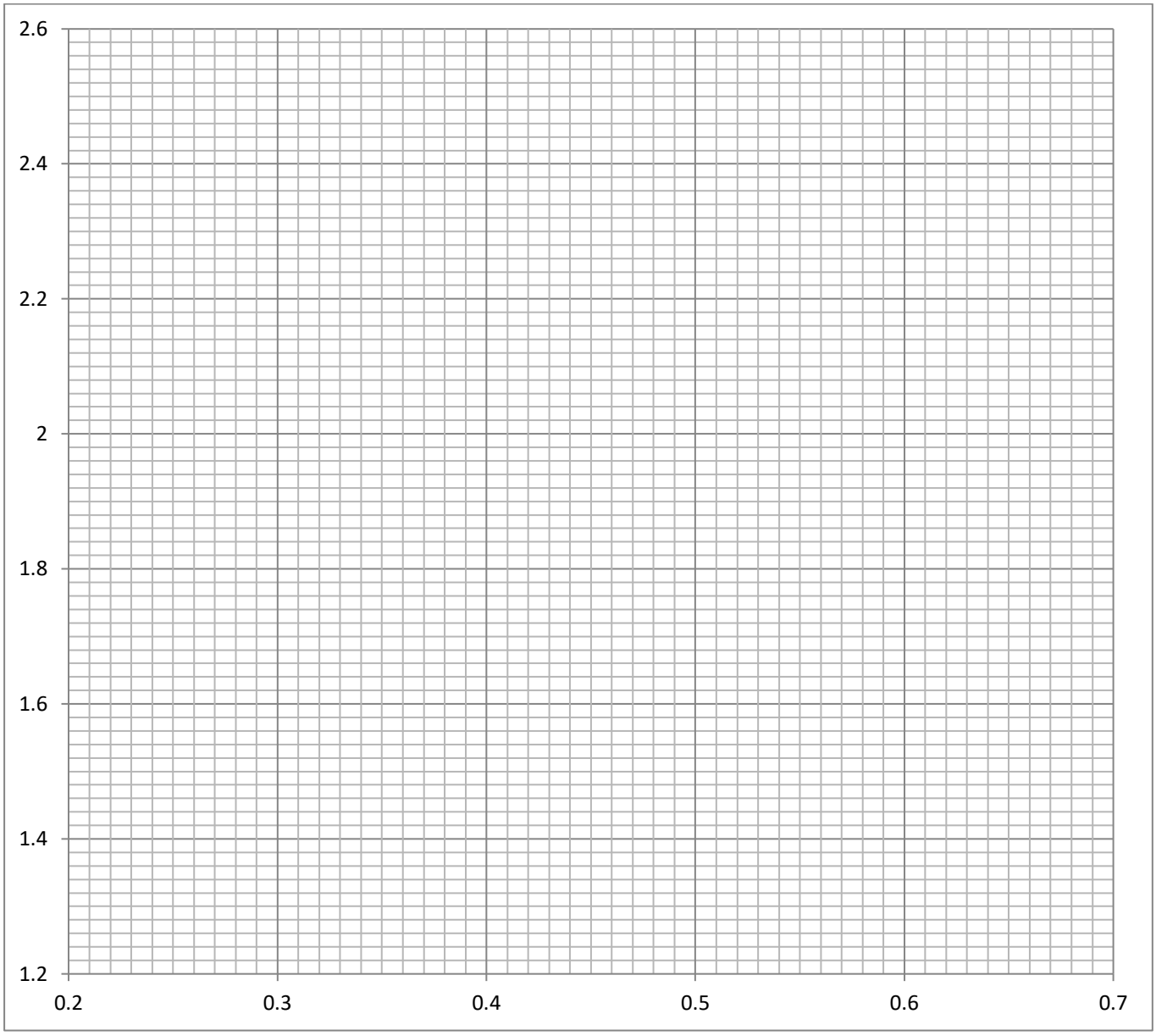
Value 1	Value 2	Total Value	Total to correct sig figs
5.3	748		
3781	6.434		
91×10^2	180		
5.56	22×10^{-3}		

Skills
5

Points Plotting

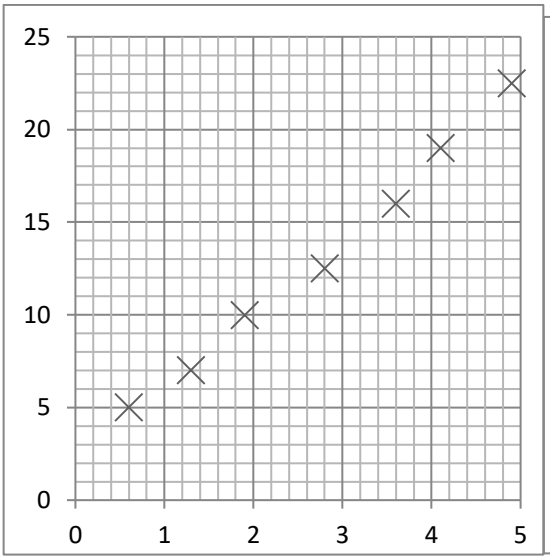
You are going to practice plotting points on a graph.

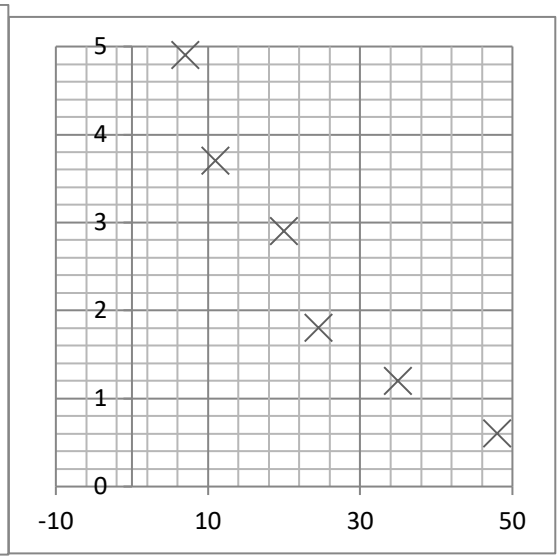
x axis	y axis	x axis	y axis	x axis	y axis
0.44	2.44	0.34	1.75	0.67	2.12
0.27	1.39	0.49	1.99	0.58	1.64
0.39	2.13	0.26	2.22	0.65	2.52
0.62	1.23	0.31	2.49	0.29	1.92
0.37	1.52	0.52	2.36	0.45	1.47
0.22	2.56	0.61	2.23	0.53	1.27
0.42	1.84	0.64	1.83	0.24	1.71
0.48	1.70	0.55	2.15	0.67	1.45

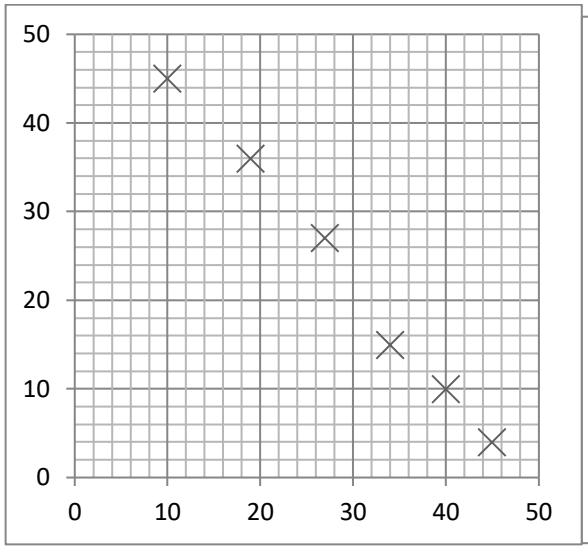


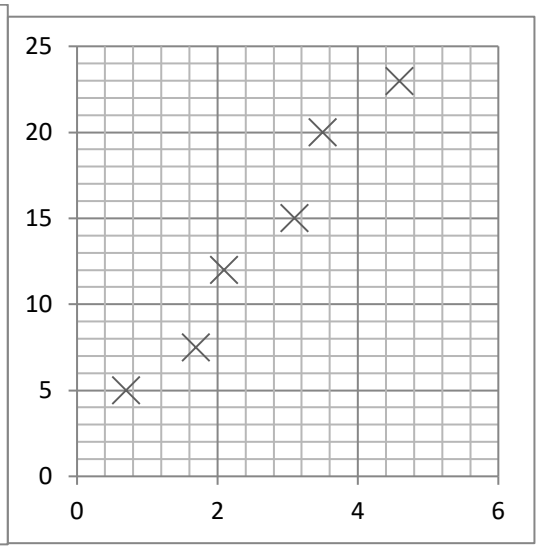
Skills	Lines of Best Fit
6	

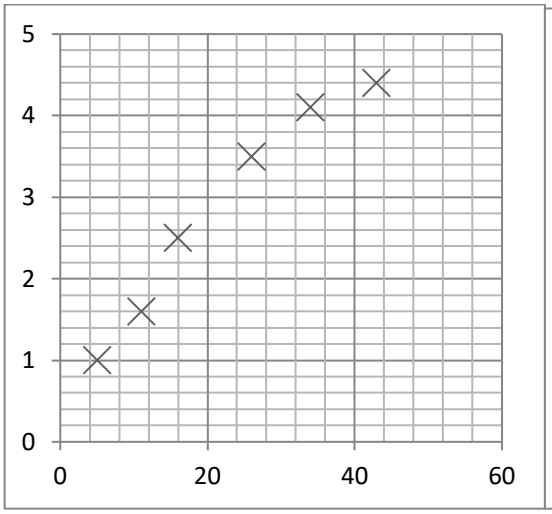
Draw a line of best fit for each of the graphs.

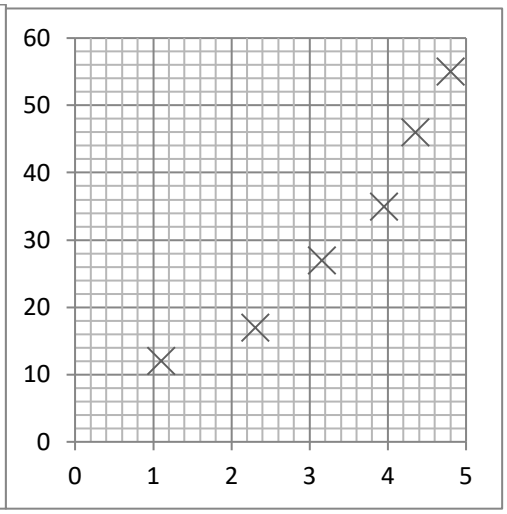






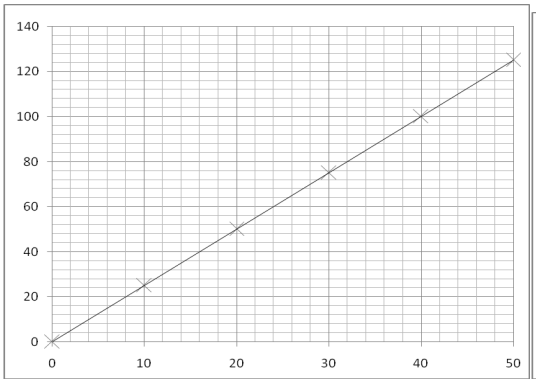


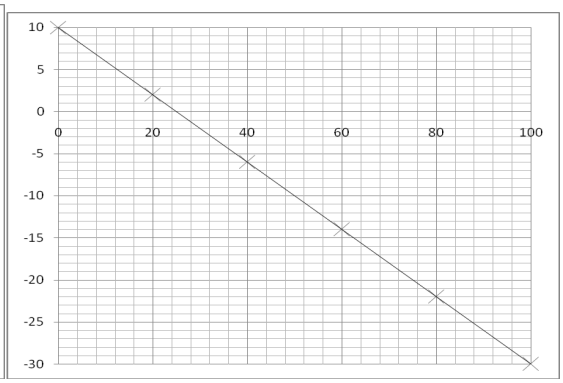


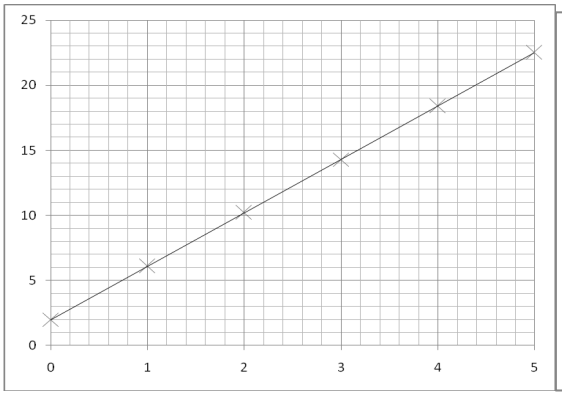


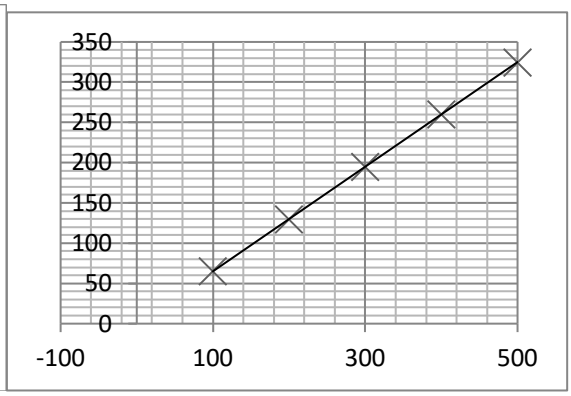
Skills	Gradients
7	

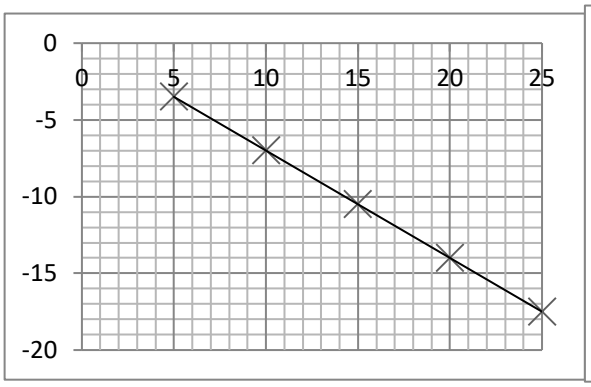
Calculate the gradients of the graphs below. Can you work out the equation for the line?

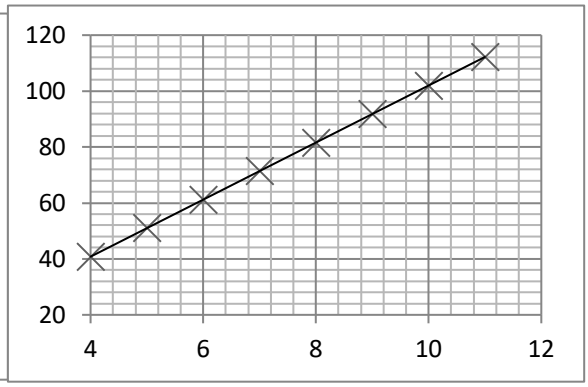


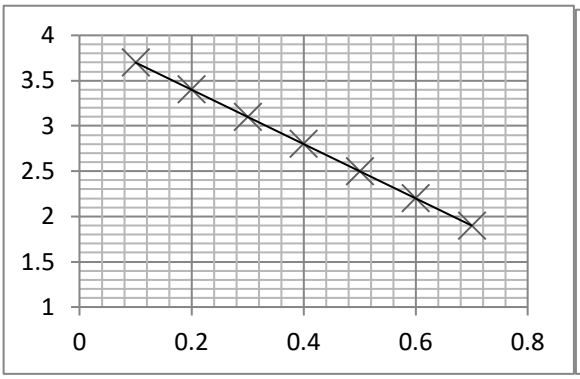










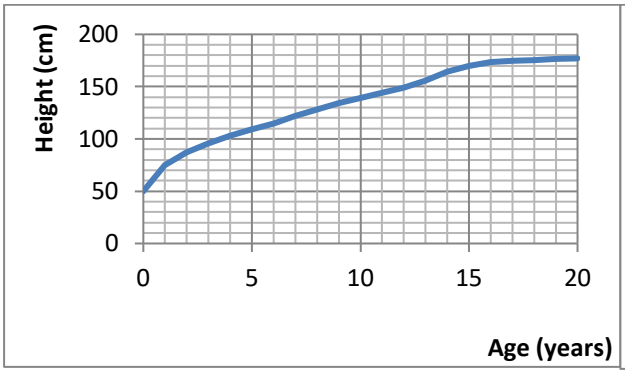


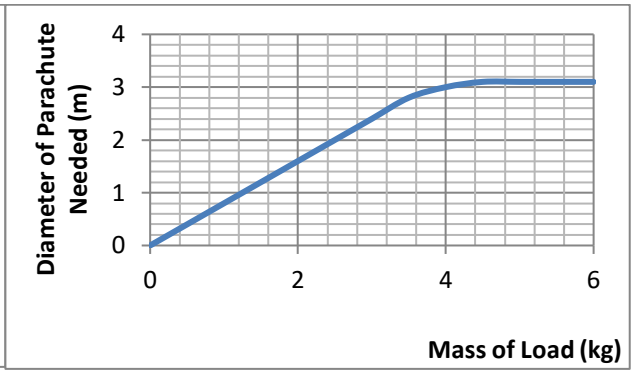
Skills	Interpreting Graphs
8	

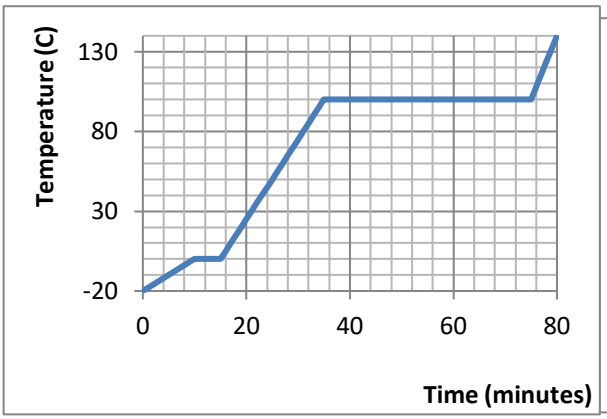
Explain the relationship between the two variables shown in the graphs below.

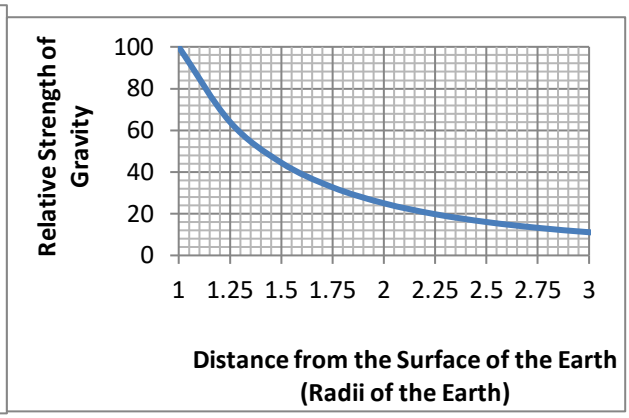
Describe the general trend/relationship. Identify sections of highest/lowest gradient

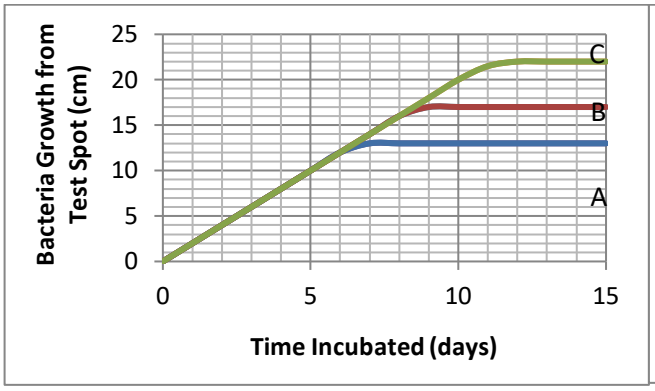
Quote any significant numerical values. Calculate any gradients you can.

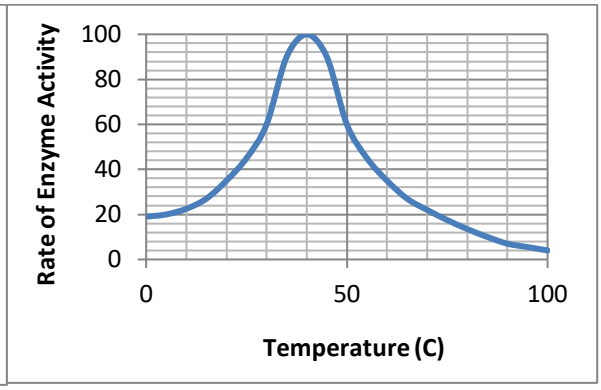


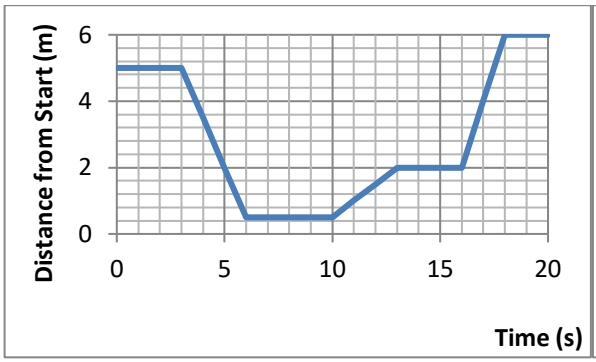


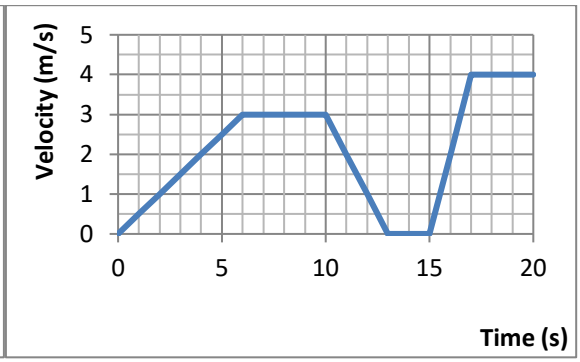












All transition work needs to be completed by the end of the 2nd week of lessons.

Please email: brichardson@stpetershuntingdon.org

if you have any queries.

Thank you and see you in September,

Miss B Richardson

Head of KS5 Science