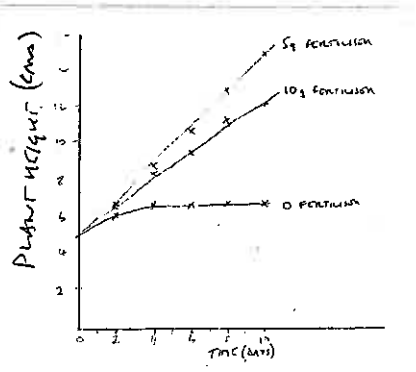
Yr 10 Science skills practice questions. Sample answers

1.
a) To find out how much light can pass through different types of glass
b) The transparent glass will let the most light through
c) Independent variable – the type of glass
Dependent variable – amount of light passing through glass
d) e.g brightness of light, distance of light from glass, thickness of glass
e) Observe brighteness of light
f) Use data logger and light sensor to measure amounts of light
g) e.g
- set up torch 30cms in front of each piece of glass
- each piece of glass is same size and thickness
- set up light sensor 30cms on other side of glass
- turn on light for 5 seconds and measure amount of light
- repeat 5 times for each type of glass
h)

Type of glass	Measure of light intensity (lux)					
	1	2	3	4	5	Avg
Transparent						
Opaque						
Translucent						
Coloured						

2.
a) amount of fertiliser
b) height of plant
c) type of plant, starting height of plant, size of pots,
d) the plants receiving most fertiliser will grow the most
e)



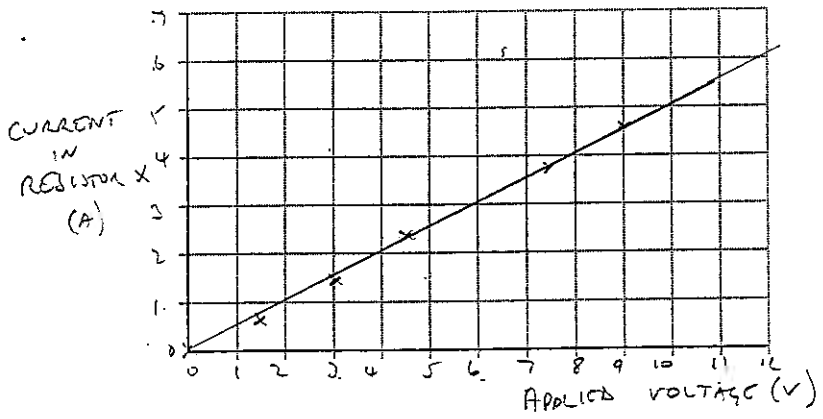
f) In 0g fertiliser plants did not grow after 2 days
Plants grew most in 5g fertiliser and grew at a consistent rate (straight line graph)
g) Fertiliser did increase height of plants
h) Results NOT reliable as only did ONE trial on each plant. For reliability need to use several plants with each amount of fertiliser and see if get similar results

i) It is a fair test as there was an independent viable and several controlled variables, as well as a control (with water only) for comparison.
j) Repeat several times (for reliability) Repeat with different plants to see if same pattern. Use different amounts of fertiliser

3.
a) Draw a single, smooth, curved line. (NOT straight line connecting dots)
b) Based on line drawn e.g 14 min T = 28C, 17 min T = 42-43C
c) 17 min less accurate as it involves extrapolation

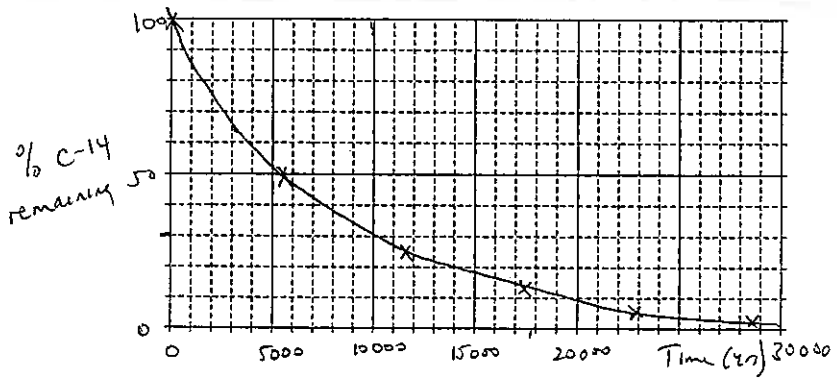
4.
a) To compare bacterial growth in tap water compared to water from a cooler.
b) e.g. volume of water tested, how bacteria grown – same temp, same time
c) First hypothesis supported as in both samples the number of bacteria increased over the 5 days. Second hypothesis supported as after 5 days have over 40 bacteria in tap water compared to under 30 in water cooler.
d) Statement NOT valid. It assumes that the bacteria are harmful and that the levels of bacteria are making water unsafe. The bacteria may be harmless and the numbers may not be at a dangerous level.

5.
a)



b)6V = 3.0A 12V = 6A (base data on graph)
c) 12V less accurate as it involves extrapolation
d) Replication of experiment to improve reliability

6.
a) 25 is missing value
b)



c) 3000-3500 yrs (If have 36% decrease then have 64% remaining)
d) 30% (based on graph)

7.
(1) To measure the effects of different sprays on how easily iron moves across the material
(2) Take information given and write in dot point form
e.g.
* Set up equipment as shown on diagram
* take 4 pieces of same material, all same size, and spray each with a different spray with one piece sprayed with water (as a control)
* each material is sprayed same way – 2 quick squeezes from 30cm
* place material on ironing board and time how long it takes iron to be pulled 50cm
(3) The water spray
(4) BY repeating experiment several times the RELIABILITY could be improved, thus making the test more valid
(5) (a) distance from material, number of sprays (2)
(b) same size pieces used
(6) (a) to pull the iron across material with the same force
(b) iron may have been too heavy to move or moved much slower
(7) To see if different materials behave differently with different ironing sprays
(8) Everything the same except using 4 different materials and testing each with the 3 different ironing sprays and the water

8.
(1) What container made of, lid on or off, where put (sun)
(2) To see if composting is quicker in glass or plastic jars
(3) To see if composting is quicker with lid on or off
(4) Make sure the container is glass in both cases.

9.	C	10.	D	11.	C	12.	C
13.	D	14.	D	15.	B	16.	A
17.	B	18.	C	19.	D	20.	A
21.	C	22.	A	23.	D	24.	B
25.	B	26.	A	27.	D	28.	D
29.	B	30.	B	31.	A	32.	D
33.	B	34.	C	35.	A		

36.
(1) Wood
(2) 80 million J
(3) If assume petrol is 45 million J and Ethanol is 32 million J
then mixture would be (45 + 32) /2 = 33.5 million J