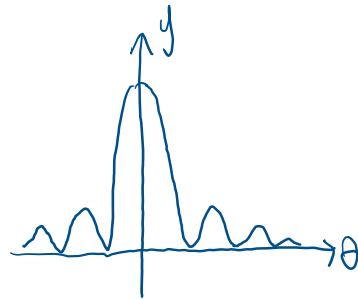


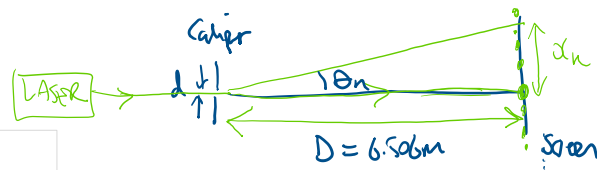
MEASURING THE WAVELENGTH OF GREEN LASER LIGHT USING DIFFRACTION FROM A DIGITAL CALIPER  
Dr Andrew French, Winchester College P5. 23/10/2020.

Distance from caliper to screen D / mm 6506 caliper separation error / nm 5000

Caliper separation / mm	Pixels of 300mm ruler	Pixel separation between nth minima either side of central maxima	xn / mm	n	nD/xn	n/sin(atan(xn/D))	d / nm	d/515nm
0.10	1947	828	63.79	2	203.98	203.99	100000	194.17
0.14	2342	741	47.46	2	274.17	274.18	140000	271.84
0.17	1872	731	58.57	3	333.22	333.23	170000	330.10
0.20	2282	993	65.27	4	398.70	398.72	200000	388.35
0.23	2461	944	57.54	4	452.30	452.31	230000	446.60
0.29	2333	713	45.84	4	567.69	567.70	290000	563.11
0.34	2581	981	57.01	6	684.69	684.71	340000	660.19
0.42	2521	795	47.30	6	825.24	825.26	420000	815.53
0.52	2547	754	44.41	7	1025.60	1025.62	520000	1009.71
0.63	2273	485	32.01	6	1219.64	1219.66	630000	1223.30
0.73	2359	585	37.20	8	1399.22	1399.24	730000	1417.48
0.78	2378	475	29.96	7	1519.98	1520.00	780000	1514.56
0.93	2551	339	19.93	5	1631.94	1631.95	930000	1805.83
1.13	2507	322	19.27	7	2363.85	2363.86	1130000	2194.17
1.23	2501	368	22.07	7	2063.42	2063.43	1230000	2388.35
1.35	2631	257	14.65	6	2664.17	2664.18	1350000	2621.36
1.49	2741	325	17.79	8	2926.43	2926.44	1490000	2893.20
1.68	2867	250	13.08	7	3481.84	3481.84	1680000	3262.14



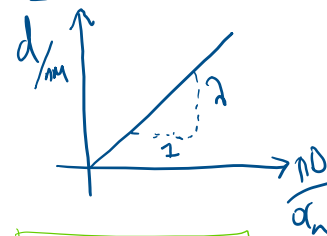
Minima when  $d \sin \theta = n\lambda$   
for single slit pattern



$$\theta_n = \tan^{-1}\left(\frac{x_n}{D}\right)$$

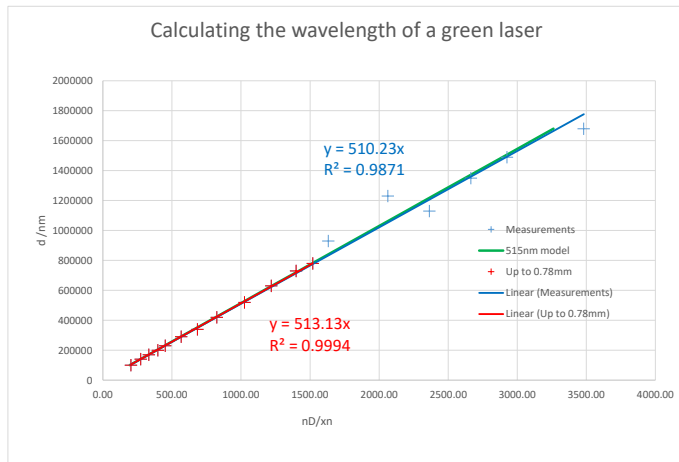
$$\text{so } d = \frac{n}{\sin\left[\tan^{-1}\left(\frac{x_n}{D}\right)\right]}$$

$$d \approx \frac{nD}{x_n}$$



Green laser :  $\lambda \approx 532 \text{ nm}$

(Some are 520nm)  
" " 515nm



Looks like the laser is probably 515nm wavelength.