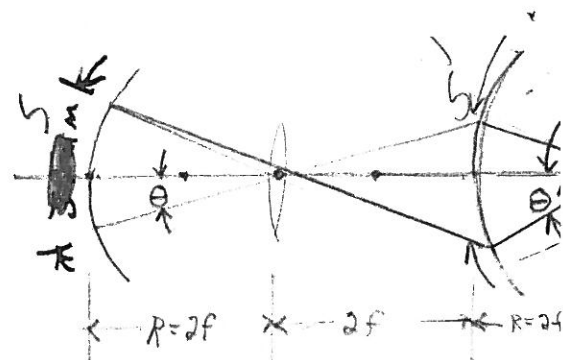


Transmitted $\sin(\theta + \theta') = 2 \sin \theta$

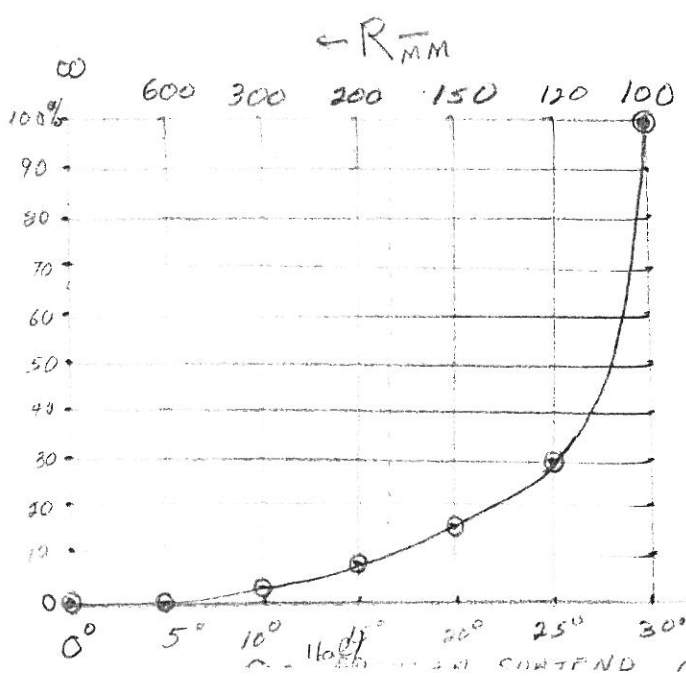
when $R = 2f$

θ°	$\sin \theta$	$2 \sin \theta$	$(\theta + \theta')$	θ'	Elevation θ'/θ
0	0	0	0	0	0%
5	.08716	.17432	10°02'	5°02'	0%
10	.17365	.34730	20°20"	10°20'	3%
15	.25882	.51764	31°10'	16°10'	8%
20	.34202	.68404	43°10'	23°10'	16%
25	.42262	.84524	57°40'	32°40'	30%
30	.50000	1.00000	90°	60°	100%
35	.57358	1.14716			
40	.64279	1.28558			
45	.70711	1.41422			
50	.76604	1.53208			
55	.81915	1.63830			
60	.86603	1.73206			
65	.90631	1.81262			
70	.93969	1.87938			
75	.96593	1.93186			
80	.98481	1.96962			
85	.99619	1.99238			
90	1.00000	2.00000			



$R = \frac{52 \text{ mm}}{\theta}$

θ°	θ_n	R_{mm}
5	.087	597
10	.174	301
15	.261	199
20	.345	149
25	.435	119
30	.522	100



To hold image at 52mm = 5'
 $\theta' = \frac{26}{60} = .434n = 24.9^\circ$
 $\Rightarrow \theta = 21^\circ = .367n$
 $S/\frac{1}{2} 60(\theta) = 22$
 $S = 44 \text{ m}$
 Vertical foreshortening = 15.5%

$\frac{26 \text{ mm}}{R} = 26C \quad 26S$

$$\Delta y = 0.065 \frac{23}{55.1} = 0.0272$$

$$\Delta y = 0.603 \text{ mm}$$

$$y = 11.5$$

$$y - \Delta y = 10.897 = 10.9 \text{ mm}$$

$$\frac{x_1}{x} = \left(\frac{11.5}{10.9} \right)^2 = 1.111$$

$$x_1 = (1.31)(1.111) = 1.455 \text{ mm}$$

sag at 25mm
at edge

Sag Calc.

$$25 \text{ mm} = 985''$$

$$\text{Scale factor} = f_c = 0.875''$$

$$\therefore 25 \text{ mm} \propto 1.125$$

which corresponds to 1.86 (or 60.95)

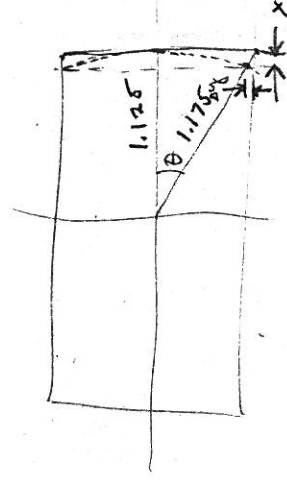
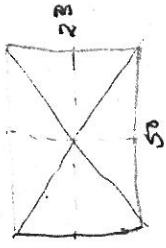
$$d^2 = 50^2 + 23^2 = 2500 + 528 = 3028$$

$$d = 55.1$$

$$\frac{d}{2} = 27.55 \propto 1.24$$

$$\text{Now: } \frac{2.5}{27.55} = \frac{1.86}{2.05}$$

and 2.05 corresponds to 1.175

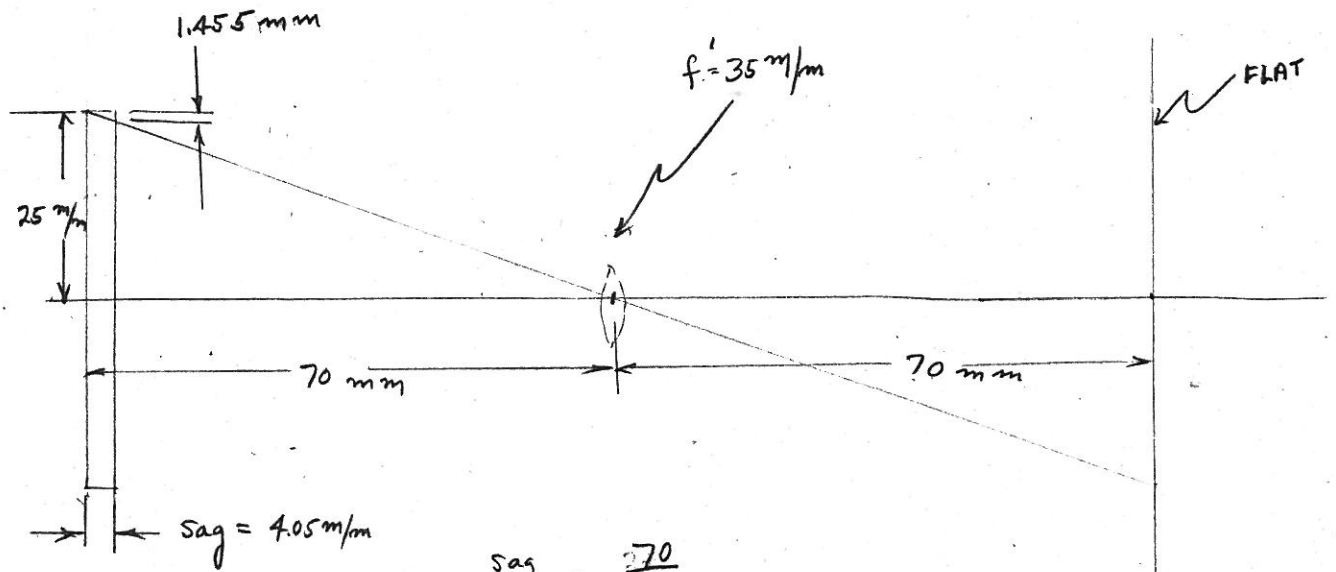


$$\cos \theta = \frac{50}{55.1}$$

$$x = (1.24)(1.175) \cos \theta = 0.065 \cos \theta$$

$$x = 0.065 \frac{50}{55.1} = 0.059 = 1.31 \text{ mm}$$

x = sag at edge



$$\frac{\text{Sag}}{f} = \frac{70}{25}$$

$$\text{Sag} = 4.07 \text{ mm}$$

$$\therefore \text{Rad} = \frac{y^2}{2x} = \frac{(11.5)^2}{8.14} = 16.25 \text{ mm}$$

$$D = \frac{70 + 2.035}{70 - 2.035} (23.545)$$

$$= 24.955 \text{ mm}$$

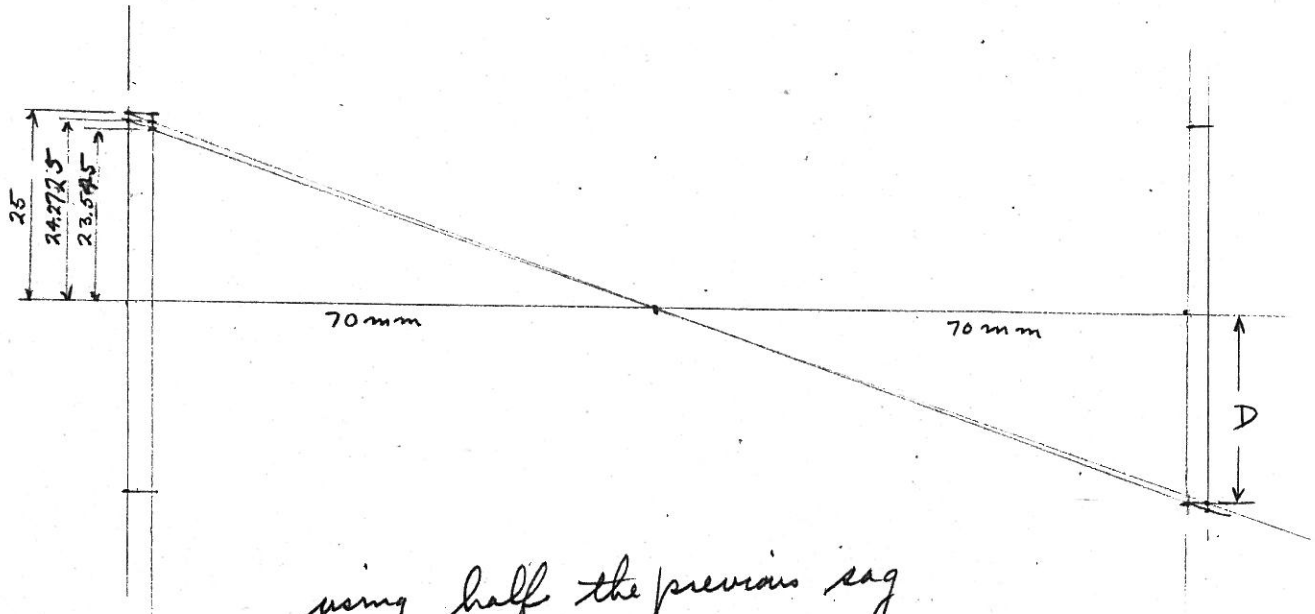
$$\text{net } D = 25.0 \text{ mm}$$

$$\therefore 70 + S = \frac{25}{23.545} (70 - 2.035)$$

$$S = \frac{25}{23.545} (70 - 2.035) - 70$$

$$S = -2.179 \text{ mm}$$

or 0.179 mm more than
sag of negative



using half the previous sag
 on each i.e. 2.035 mm

$D = 24.94 \text{ mm}$
 (instead of 25.0).

$$X = \frac{S}{2 \tan \theta} = \frac{2Sf}{W-S} =$$

$$f = 35 \text{ mm} \quad X = \frac{2(1.455)35}{48.545} = 2.095 \text{ cm}$$

$$R = \frac{4^2}{2X} = \frac{66.2}{X} = 31.6 \text{ m/m}$$

$$f = 28 \text{ mm} \quad X = \frac{2Sf}{W-S} = .05994 f = 1.675 \text{ mm}$$

$$R = 39.5$$

$$f = 10 \text{ mm} \quad X = .06 f = .6 \text{ mm}$$

$$R = \frac{31.6}{.6} = 53 \text{ m/m}$$