

## Formulas for calculating focal distance and f/D ratios for C band prime focus

To calculate the focal distance, you have to measure the diameter (D) and the depth (d) of the dish. Measurements should be in the same units of measure (you can't use feet for the diameter and inches for depth). For the example, we will say we have a dish that is 120 inches in diameter (D) and 18 inches deep (d).

focal distance (f) equals the diameter squared (D x D) divided by 16 times the depth (16 x d) or :

$$D \times D = 120 \times 120 = 14400$$

$$16 \times d = 16 \times 18 = 288$$

$$D \times D / 16 \times d = 14400 / 288 = 50$$

focal distance f = 50 inches

After you have calculated the focal distance (f), you can use that figure to calculate the f/D ratio of your dish. In this case, using the same diameter (D) = 120; and the calculated focal distance (f) = 50

$$f / D = 50 / 120 = .416$$

f / D = .416 which you would round up to give you a setting of .42

The list below shows how far the throat is out from the scalar rings for different f/D settings.  
EXAMPLE: A dish with a .42 f/D will have the throat about flush with the rings.

Inches --	f/D
.12 -----	.42
.32 -----	.40
.52 -----	.38
.72 -----	.36
.92 -----	.34
1.12 -----	.32

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