Measuring Latitude and Longitude of a given point (X)

Latitude:

1. Measure the distance between the first two intervals in the N-S direction [**A**]:
Distance A = 1.0625 inches

2. Count how many minutes occur in that interval:
Distance A = 48°35'00" - 48°37'30"
Distance A = 2 minutes 30 seconds = 2.5 minutes

So now you have: $\frac{\text{1.0625 inches}}{\text{2.5 minutes}}$

3. Measure the distance to the point you want to measure [**B**]:
Distance B = 1.327 inches

4. Now you want to determine B in decimal degrees:
So now you have: $\frac{\text{1.327 inches}}{\text{X minutes}}$

5. Now calculate the distance in decimal degrees that occurs over that time by setting the 2 equations equal to each other then cross multiply:

$$\frac{\text{1.0625 inches}}{\text{2.5 minutes}} = \frac{\text{1.327 inches}}{\text{X minutes}}$$

1.0625 (X) = 3.3175

X = 3.122 minutes

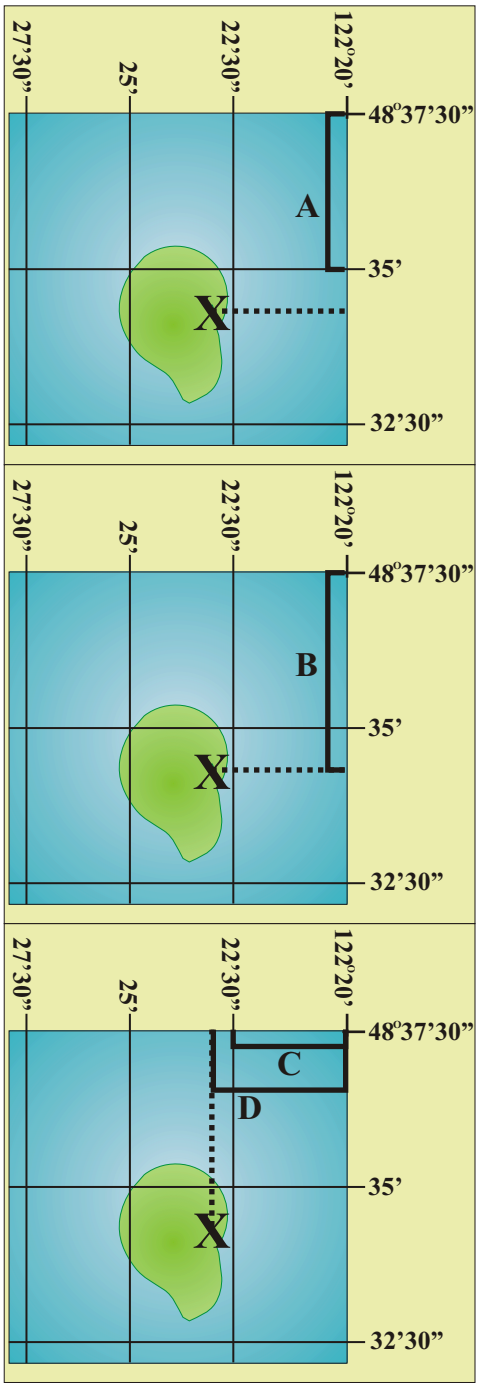
6. Convert to minutes and seconds (if needed):
Multiply everything after the decimal by 60:

3.122 minutes = 3' 7.3"

7. Add the measured distance to the distance that you measure from in B:
(Since we measure down from the larger number we subtract from the top number)

48°37'30" - 3'7.3" = 48°34'22.7"

8. Add label:
(All points in the US are labeled N (because north of equator) and W (because west of England))
Latitude = 48°34'22.7"N



Longitude:

9. Now do everything again in the E-W direction:
C = 122°20' - 120°22'30" = 2.5 minutes

C = 0.8125 inches **D = 0.9375 inches and X minutes**

$$\frac{\text{0.8125 inches}}{\text{2.5 minutes}} = \frac{\text{0.9375 inches}}{\text{X minutes}}$$

0.8125 (X) = 2.34375
X = 2.8846 minutes
= 2'53.1"

= 122°20' + 2'53.1"
= 122°22'53.1"W

10. So now the complete latitude and longitude of X is:

(48°34'22.7"N, 122°22'53.1"W)