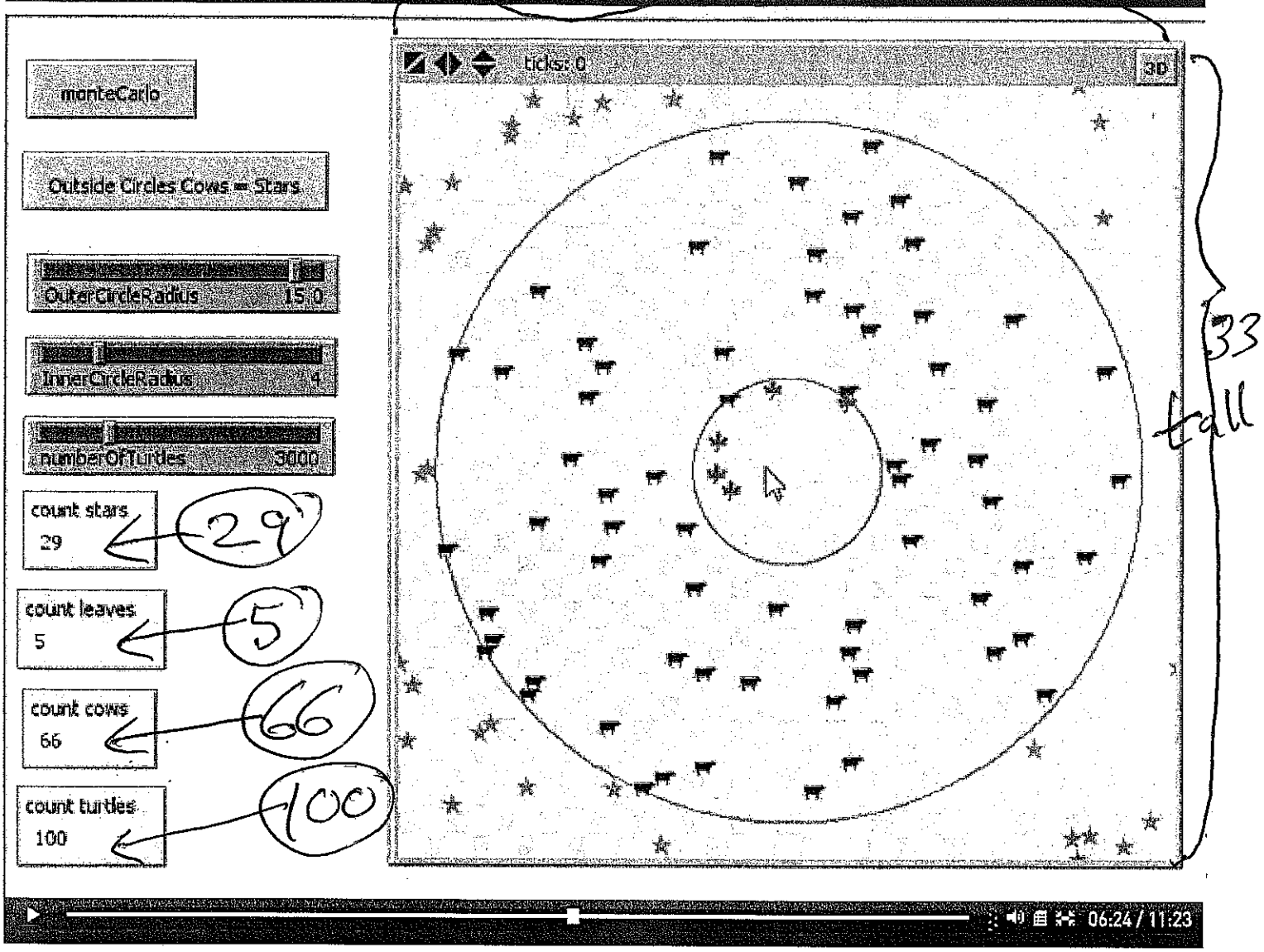
10/3/2016 Monday

33 wide



33 tall

29

5

66

100

The SLIDERS are Not relevant at all for MONTE CARLO

$33^2 = 1,089$

$33 \times 33 = 33^2 = 33 \times 10 \times 3 + 3 \times 33$
$= 330 \times 3 + 99$
$= 990 + 99$
$= 1089$

1,089 paths

AAA

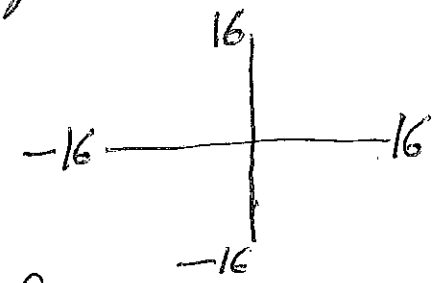
$$a = \frac{b}{c}(d)$$

See page CCC of the handout (9/30/16) MonteCarlo11_14_2012.pdf

(d) is the entire area where turtles were created — (darts were thrown).

$33^2 = 1089$ square patches.

(16 + 1 + 16 = 33 rows
16 + 1 + 16 = 33 columns)



(1) Estimated proportion of small circle, the inner circle —

(b) = 5 leaves
(c) = 100 turtles total

$\frac{5}{100} = \frac{b}{c} = 0.05$ is the proportion.

(4) Estimated area of inner circle is that it is 5% or 0.05 of entire area if 5 out of 100 turtles landed there (and hatched leaves).

$$a = \frac{5}{100}(1089) = (0.05)(1089)$$

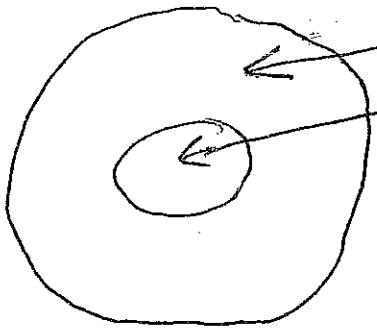
Area of inner circle by Monte Carlo estimate $= (0.05)(1089)$

$a = 54.45$

(1) What is the estimated proportion of the entire area taken up by the inner circle?

(4) There are 33 rows and 33 column s of patches. 33 * 33 = 330 * 3 + 33 * 3 = 990 + 99 = 1089. Give the estimated area of the inner circle?

(BBB) (2) Estimated proportion of the entire 1089 patch area taken up by the larger circle, the outer circle—



66 cows
5 leaves
66
+5
71 turtles inside the larger circle—

(5) Give the estimated area of the outer circle?

$\frac{71}{100} = 0.71$ or 71% of all the turtles (free throws) were in the large circle.

0.71 is the proportion—

(5) Estimated (by MONTE CARLO)
(6) area of large circle:

$a = \frac{71}{100}(1089) = (0.71)(1089)$

Area a = 773.19 square patches.

(2) What is the estimated proportion of the entire area taken up by the outer or larger circle?

(CCC)

(3) Estimated area that is outside the circles, outside the larger circle? First proportion:

Count of stars = 29

or $100 - 71 = 29$

$\frac{29 \text{ stars}}{100 \text{ turtles}} = 0.29$ is proportion, or 29%.

(6) Estimated area of the stars area:

$$a = \frac{29}{100}(1089)$$

$$= (0.29)(1089)$$

$$= 315.81 \text{ square patches}$$

(3) What is the estimated proportion of the entire area that is outside the circles?

(6) Give the estimated area of the area outside both circles of trust.

Add up inner circle area (#4),
outer circle area (#5),
and outside circles
stars area (#6).

DDD

#4	54.45
#5	773.19
#6	315.81

```
  1 1 1 1
   54.45
  773.19
+ 315.81
---------
1,143.45 ≠ 1,089
```

oops, ?? confusion, why (1143.45)

Should be 1089 !!

Why is this wrong?
How off is it?

```
  1143.45
- 1089
--------
   54.45
```

Its 54.45 units
too large an area.
Where have we seen that #
before?

EEE

Oh, 54.45 is the area of the small circle.

773.19 is the area of the large outer circle, which includes the small circle.

$$\begin{array}{r} 773.19 \\ -\ 54.45 \\ \hline 718.74 \end{array}$$ is area of the donut

If the circles both represent fences, we could say the cows have 718.74 patches of pasture as the area they can graze.

$$54.45 + 718.74 + 315.81 = 1089$$

Note: $\left(\frac{66 \text{ cows}}{100 \text{ patches}}\right)(1089) = 718.74$ patches

= area of cows region

= area of donut too.

Use 66 instead of 66.5 if want to know donut area between "fences".