this time: SD; normal curve;
next time: experimental design; probability

wed: DD ch (o) 7
LN pp. 95-118

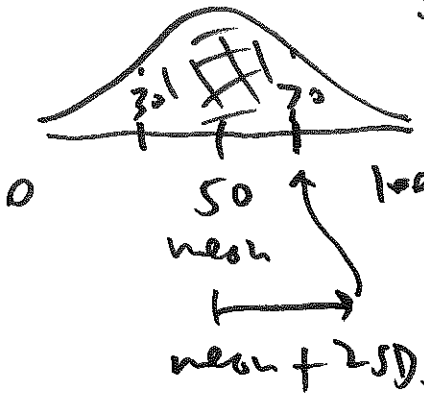
AMS 7
27 Jan 2016

①

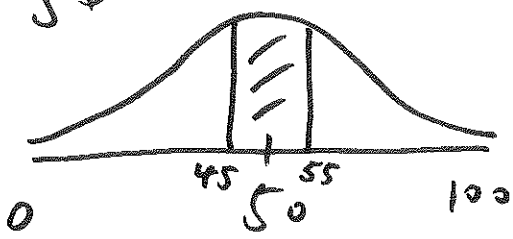
hwk 1 due this wed

DD
new office hrs: MWF 11.45am - 12.45pm
in BE 357C

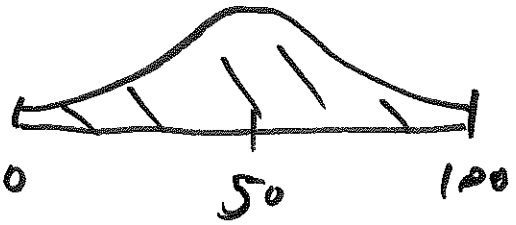
SD 10?
no
still too small



SD?



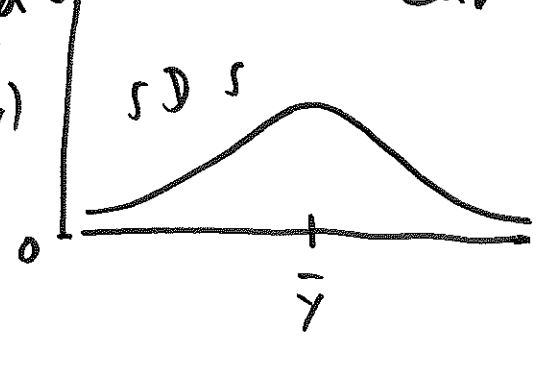
SD 5?
no
too small



SD 50?
no
too big

SD 20?
about right

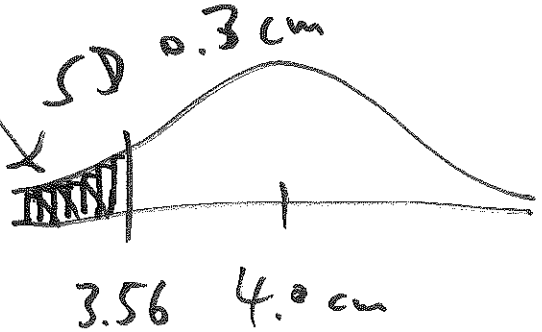
(Gaussian distribution) = (normal curve)



Q: % ≤ 3.56 cm ?

A1: exact: 2/24 = 8.3%

A2: approximate ?



butterfly wing length

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eg. male (part 2)

standard normal curve

-1.00

table:

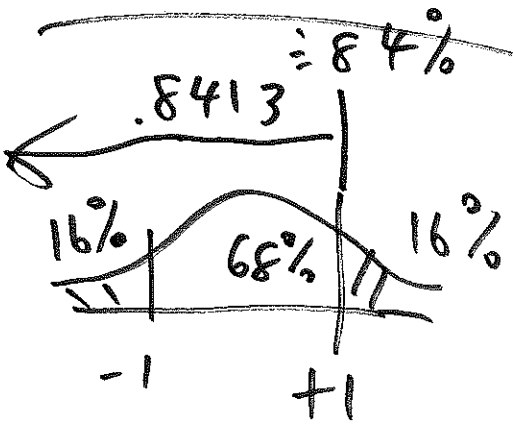
.1587 ← decimal

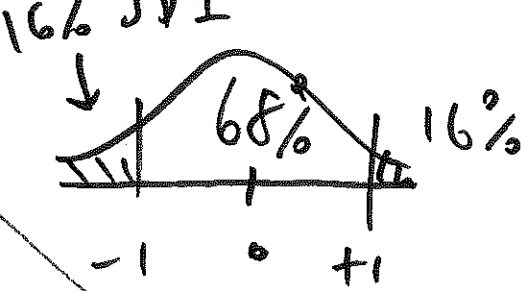
15.87% ≈ 16%

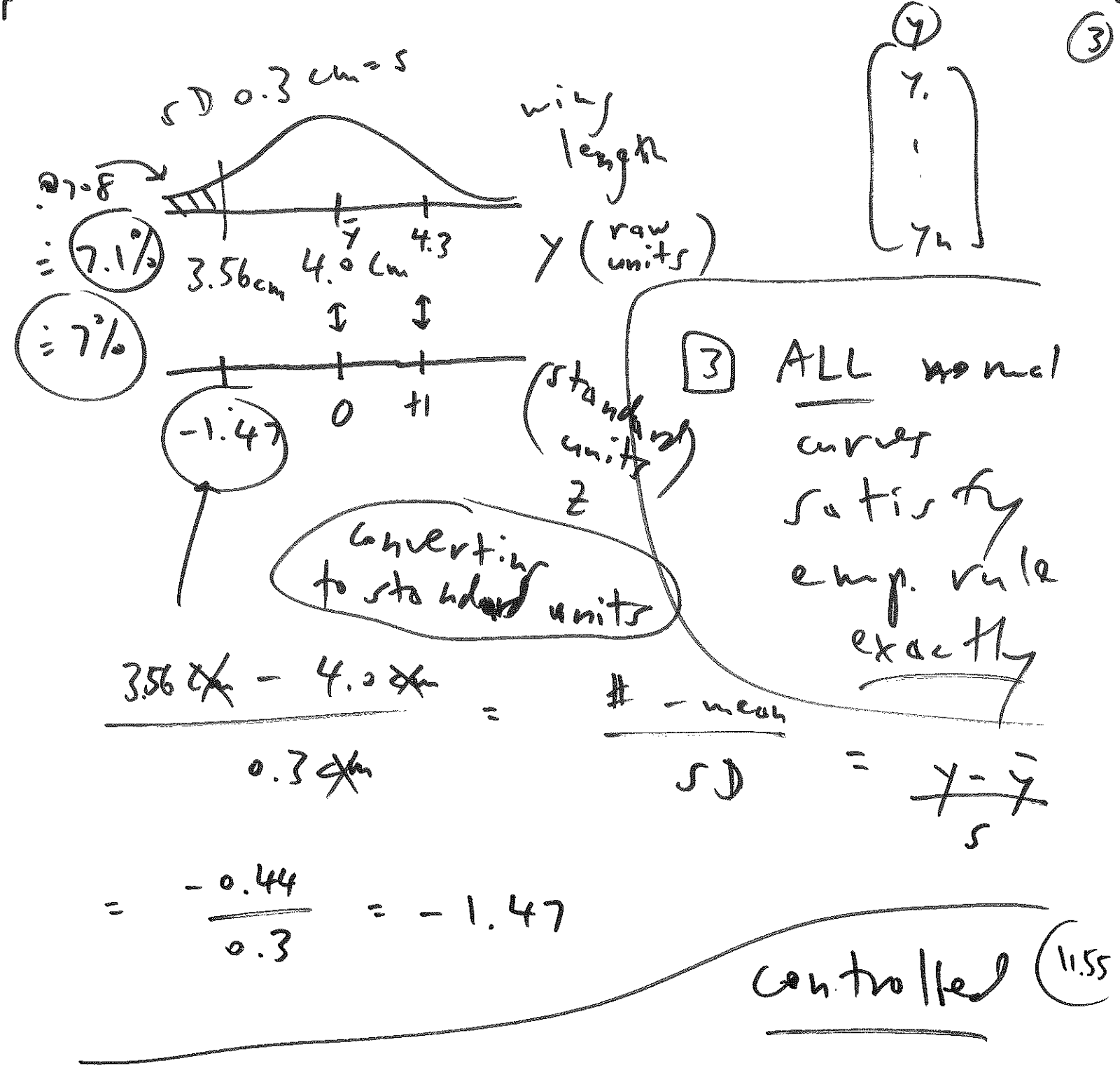
all

1. normal curves are symmetric

2. total area under each normal curve is 100% = 1.0



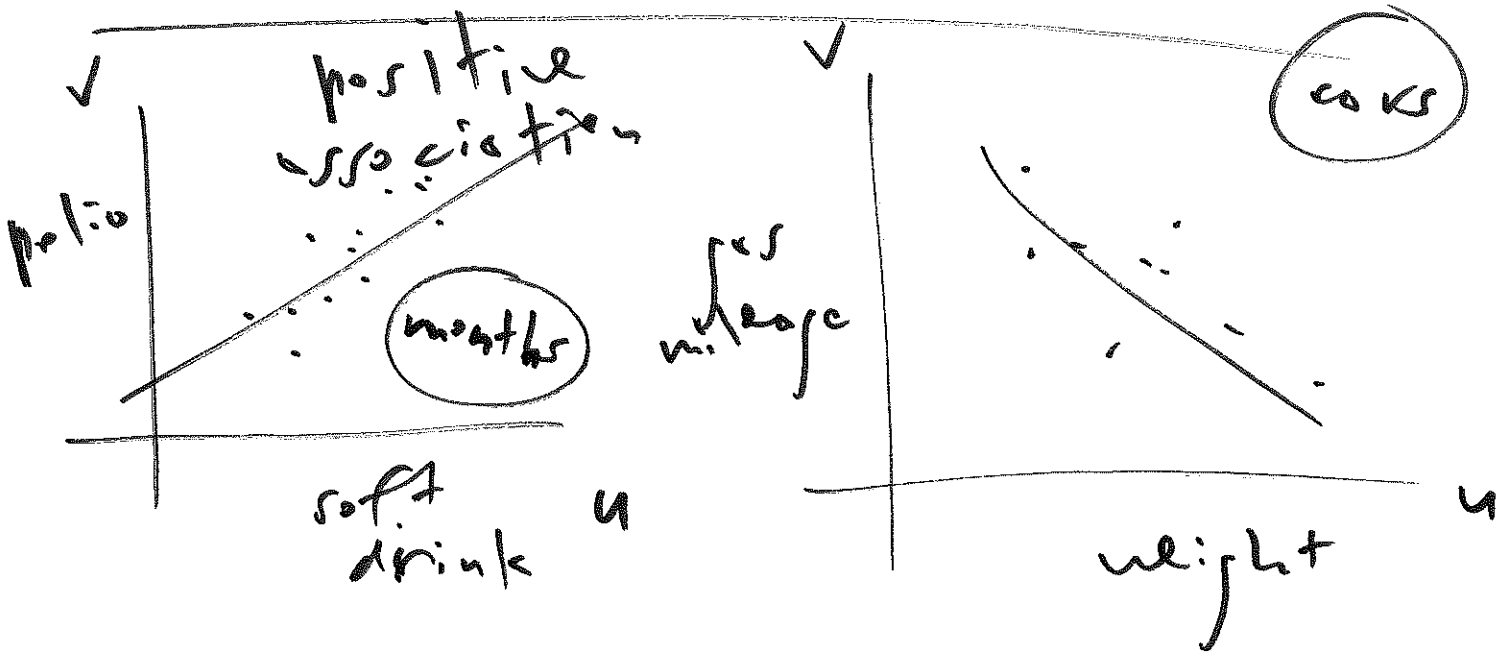



SD 0.3 cm = s
wing length
y (raw units)
3.56 cm
4.0 cm
4.3
7.1%
≈ 7%
-1.47
0
+1
(standard units)
z
converting to standard units
3
ALL normal curves satisfy emp. rule exactly
3.56 cm - 4.0 cm / 0.3 cm = # - mean / SD = y - ȳ / s
= -0.44 / 0.3 = -1.47
controlled
11.55
Experiment: there is a treatment
(T) group & a control (C) group,
& experimenters control who goes
into which group

Y (outcome): cortex weight

X (treatment): + vs. − / C vs. O

Z (potential confounding factor) (PCF): genetic background (cortex weight)



Y (outcome) — control

X (treatment) — T enriched, C depleted

Z (genetics)

as Z ↑, Y ↑ ✓

as X goes from C to T, Z ↑↓ ✓

PCFs are the enemy in experimental design because they cause bias in conclusions

how defeat PCFs?	hold them constant in T/C comparison