Name Solutions

Tables for simple Models (Densities) Math 151

Day 7

Each small square has area 1/100 or .01. (Each big square has 25 small squares, or 25/100 or .25.)

1) Convince yourself that each density actually has area 1, using geometry and/or counting squares.

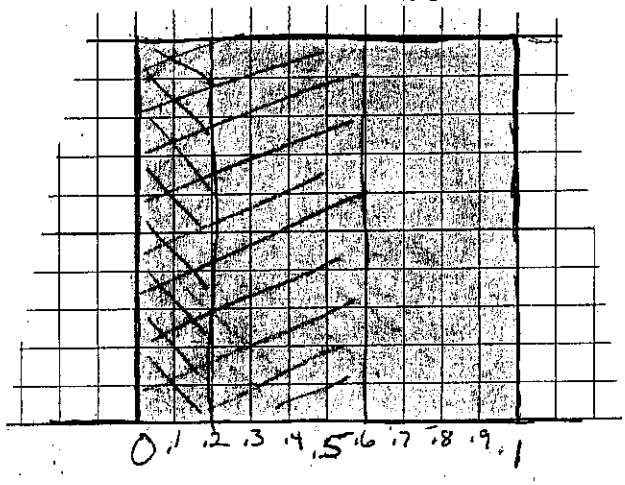
2) Fill in the missing values in the tables, using geometry and/or counting squares and parts of squares. Each value is the area under the curve to the left of the "x" value. It represents the proportion of observations below x.

3) Answer the extra questions.

A. Uniform

x	Area to the left of x
0	0
.1	.10 (ten squares)
.2	.20
.3	.30
.4	.40
.5	.50
.6	.60
.7	.70
.8	.80
.9	.90
1.0	1.00
1.1	1.00 (no new stuff added)

Uniform from 0 to 1



a) The area below (to the left of) .6 is .60 To the right of .6 is .40. They sum to 1

b) The area to the left of .6 is .60 Below .2 is .20. Between .2 and .6 is .40

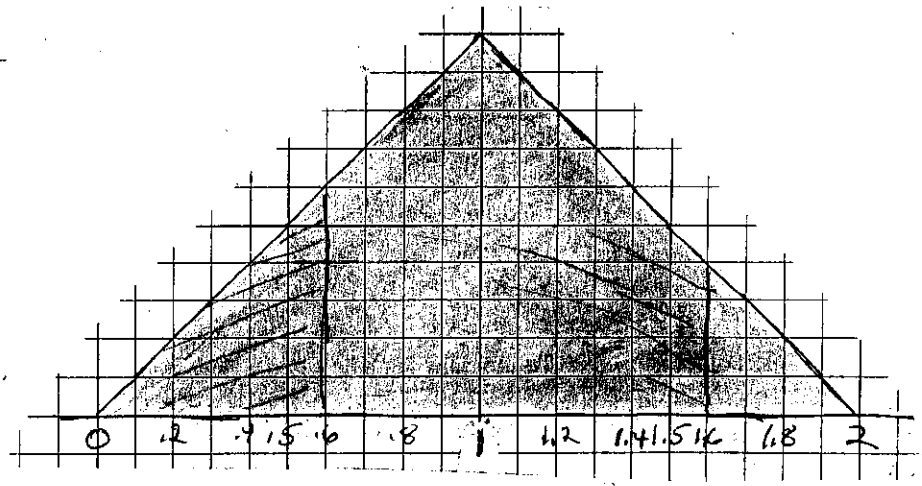
c) What x value has area .4 TO THE RIGHT OF it? .6

What is the 60th percentile? .6

B. Triangular

x	Area to the left of x
0	0
.2	.02
.4	.08
.6	.18
.8	.32
1	.50
1.2	.68
1.4	.82
1.6	.92
1.8	.98
2.0	1.00

Triangular from 0 to 2



a) The area to the left of .6 is .18 To the right of .6 is _____. They sum to 1

b) The area below 1.6 is .92 Below 1 is .50. Between 1 and 1.6 is .42 (.92 − .50, or count)

c) What x value has area .92 ABOVE it? .4

(Hint: What x value has area .08 Below it?) What is the 8th percentile? .4

C. Trapezoidal

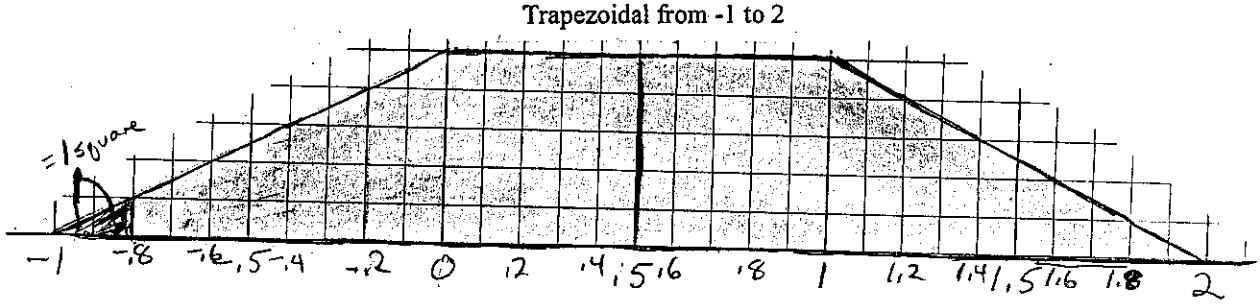
x	Area to left of x
-1.0	0
-.8	.01
-.6	.04
-.4	.09
-.2	.16
0	.25
.2	.35
.4	.45
.6	.55
.8	.65
1.0	.75
1.2	.84
1.4	.91
1.6	.96
1.8	.99
2	1.00

← Q_1 : .25 = 1/4 to the left of 0

← Median is in here. We see from the symmetry of the picture that the median is at .5. .50 is to the left of .5

← Q_3 : .75 = 3/4 to the left of 1.0

Trapezoidal from -1 to 2



a) The area to the left of -.8 is .01 To the right of -.8 is .99. They sum to 1

b) The area to the left of 1 is .75 To the left of -.8 is .01. Between -.8 and 1 is .74

c) What are the Quartiles (x-values that divide the density into quarters) Q1 0 Median .5 Q3 1