

Math 153 - Quiz 2

January 24, 2019

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (1 point) We would like to obtain some samples of the numbers 1,2,3,4,5,6. To obtain samples of size five, we roll five standard, six-sided dice and record the outcomes. Will doing this produce simple random samples of size five? Explain.

YES, EACH SAMPLE OF 5 IS OBTAINED FROM 5 INDEPENDENT DICE.
EACH SET OF 5 IS EQUALLY LIKELY.

2. (1 point) We would like to obtain samples of three students. We randomly choose three different classrooms and then randomly choose a student from each classroom. Will repeatedly doing this produce simple random samples of size three? Explain.

NO, NOT EVERY SAMPLE OF 3 STUDENTS IS EQUALLY LIKELY.
IN FACT, SOME SAMPLES OF 3 (SAY FROM SAME ROOM) ARE IMPOSSIBLE.

3. (3 points) In a study of dogs' reaction times to a specific stimulus, an animal trainer obtained the following data.

Reaction time (seconds)	Frequency
2.3-2.9	10
3.0-3.6	12
3.7-4.3	6
4.4-5.0	8
5.1-5.7	4
5.8-6.4	2

- (a) What is the class width?

$$3.7 - 3.0 = 0.7$$

- (b) What are the class midpoints?

$$\frac{2.3 + 2.9}{2} = 2.6, 3.3, 4.0, 4.7, 5.4, 6.1$$

- (c) What are the class boundaries?

$$\frac{2.9 + 3.0}{2} = 2.95$$

$$2.25, 2.95, 3.65, 4.35, 5.05, 5.75, 6.45$$

4. (5 points) Refer to Date Set #2 on the class website. Do all of the following.

- Construct a corresponding frequency distribution with at least 5 classes.
- What is your class width?
- Determine your class boundaries.
- Go back to your frequency distribution and include a column for relative frequencies.
- Using class boundaries along the horizontal axis, construct the histogram associated with your frequency distribution. (Start with zero on the left rather than the smallest boundary.)

(a) Hours	Freq	(d) RELATIVE Freq.
0.0 - 3.9	16	$16/45 \approx 35.6\%$
4.0 - 7.9	12	$12/45 \approx 26.7\%$
8.0 - 11.9	10	$10/45 \approx 22.2\%$
12.0 - 15.9	4	$4/45 \approx 8.9\%$
16.0 - 19.9	0	$0/45 = 0\%$
20.0 - 23.9	2	$2/45 \approx 4.4\%$
24.0 - 27.9	1	$1/45 \approx 2.2\%$

(a) SEE TABLE (LEFT).

(b) CLASS WIDTH = 4.0

(c) -0.05, 3.95, 7.95, ..., 27.95

(d) SEE TABLE.

(e) SEE BELOW.

