

Math 114 **ACTIVITY 1:** Establishing Teams and beginning the semester: Sampling

Why

You will be working with this team throughout the semester, so you need to begin getting to know your teammates and working with them. Reading the syllabus and recovering some of your learned algebraic skills provide two good areas for focusing your effort.

For understanding and using statistics, you need to understand the major methods involved in getting the data to be analyzed to avoid being misled by analysis of unreliable data. Sampling is concerned with obtaining a selection of individuals from the population in ways that give the best chance of reflecting the characteristics of the population.

LEARNING OBJECTIVES

1. Become acquainted with the members of your learning team
2. Learn the duties of each of the team roles, and the materials to be produced by the team for each activity.
3. Work as a team, using the team roles.
4. Understand and be able to apply the ideas of simple random sampling and stratified sampling.

CITERIA

1. Success in working as a team and in fulfilling the team roles.
2. Success in involving all members of the team in the conversation.
3. Success in completing the exercises.

RESOURCES

1. The course syllabus
2. The team role desk markers (handed out in class for use during the semester)
3. Your text - especially section 1.3 and Table 1 p. A-1 (repeated as table 4 on p. 25)
4. 40 minutes

PLAN

1. Select roles, if you have not already done so, and decide how you will carry out steps 2 and 3 (5 minutes)
2. Answer the group I questions below for each member of the team (5 minutes)
3. Answer the group II questions below on the syllabus/course structure (5 minutes)
4. Work through the group III exercises given here - be sure everyone understands all results & procedures(25 minutes)
5. Assess the team's work and roles performances and prepare the Reflector's and Recorder's reports including team grade (10 minutes).

EXERCISE

1. Group I: Information on team members. For each member:
 - (a) Name
 - (b) Hometown – How long have you lived there?
 - (c) Favorite college course (before this wonderful & exciting course)–why?
 - (d) One surprising/interesting thing about yourself that other people would probably not know
2. Group II: Syllabus/Course structure
 - (a) When will the final exam be given in this course?
 - (b) What written materials must be turned in for each in-class activity?
 - (c) How much out-of-class time should you anticipate spending on this course each week?

3. Group III: Sampling and estimation

Attached to this sheet is a table giving a data set with educational information on 78 seventh graders.

- (a) Use table 4 [p. 25] and the procedure on pp. 24-26 to select a simple random sample of six of these students. Record your procedure (starting row & column of table 4, other relevant information—remember that you must use two-digit numbers consistently, so think of student 1 as student 01), and record the identifier (OBS), gender, and self-concept score for each student chosen.
- (b) Find and record the mean (usual average), minimum and maximum of the self-concept scores and the proportion of females in your sample.
- (c) Repeat the process four times, to obtain five samples and the proportion of females and average, minimum and maximum self concept score for each sample. Indicate your starting point (row and column) and direction of movement in the table (right,down,up) for each sample.
- (d) The samples give different values for the statistics requested. With these samples, could you find the average self-concept score for the students or the proportion of females (these would be parameters)?
- (e) Can you figure how to get a random number list from your calculator? On the TI-83/84 you use `Math>PRB>randInt(smallest allowed, largest allowed, number of values)` – you need some extras, because numbers can repeat.

READING ASSIGNMENT (in preparation for next class)

In Sullivan, read sections 1.4 – 1.6 for Monday

SKILL EXERCISES:(hand in - individually - at next class meeting) p.27,#7(for b, assume a random selection, or there's not enough information to answer),11, 12

Data on 78 7th graders. GPA, IQ, gender, self-concept score

OBS #	GPA	IQ	Gender (1=F)	Self concept	OBS #	GPA	IQ	Gender (1=F)	Self concept
1	7.940	111	2	67	40	10.760	123	2	64
2	8.292	107	2	43	41	9.763	124	2	58
3	4.643	100	2	52	42	9.410	126	2	70
4	7.470	107	2	66	43	9.167	116	2	72
5	8.882	114	1	58	44	9.348	127	2	70
6	7.585	115	2	51	45	8.167	119	2	47
7	7.650	111	2	71	46	3.647	97	2	52
8	2.412	97	2	51	47	3.408	86	1	46
9	6.000	100	1	49	48	3.936	102	2	66
10	8.833	112	2	51	49	7.167	110	2	67
11	7.470	104	1	35	50	7.647	120	2	63
12	5.528	89	1	54	51	0.530	103	2	53
13	7.167	104	2	54	52	6.173	115	2	67
14	7.571	102	1	64	53	7.295	93	2	61
15	4.700	91	1	56	54	7.295	72	1	54
16	8.167	114	1	69	55	8.938	111	1	60
17	7.822	114	1	55	56	7.882	103	1	60
18	7.598	103	1	65	57	8.353	123	2	63
19	4.000	106	2	40	58	5.062	79	2	30
20	6.231	105	1	66	59	8.175	119	2	54
21	7.643	113	2	55	60	8.235	110	2	66
22	1.760	109	2	20	61	7.588	110	2	44
23	6.419	108	1	56	62	7.647	107	2	49
24	9.648	113	2	68	63	5.237	74	1	44
25	10.700	130	1	69	64	7.825	105	2	67
26	10.580	128	2	70	65	7.333	112	1	64
27	9.429	128	2	80	66	9.167	105	2	73
28	8.000	118	2	53	67	7.996	110	2	59
29	9.585	113	2	65	68	8.714	107	1	37
30	9.571	120	1	67	69	7.833	103	1	63
31	8.998	132	1	62	70	4.885	77	2	36
32	8.333	111	1	39	71	7.998	98	1	64
33	8.175	124	2	71	72	3.820	90	2	42
34	8.000	127	2	59	73	5.936	96	1	28
35	9.333	128	1	60	74	9.000	112	1	60
36	9.500	136	2	64	75	9.500	112	1	70
37	9.167	106	2	71	76	6.057	114	2	51
38	10.140	118	1	72	77	6.057	93	1	21
39	9.999	119	1	54	78	6.938	106	2	56