

Solutions to Sample Problems for Exam 2



Course : Introduction to Probability and Statistics, Math 113 Section 3234

Instructor: Abhijit Champanerkar

- Exam 2 will be held in class on Monday October 29th.
- Please report any typos to me.

1. (a) $Q_1 = 66, Q_2 = 75, Q_3 = 83$ (b) 55.0, 66.0, 75.0, 83.0, 98.0 (d) 2nd quartile (e) $P_{65} = 83$ (f) 18th percentile (g) 17
2. (Add 80 to the end of the list of numbers).
(a) $Q_1 = 43.5, Q_2 = 54.5, Q_3 = 61$ (b) Median = $Q_2 = 54.5$ (c) 36, 43.5, 54.5, 61, 80
(e) 2nd quartile (f) $P_{88} = 69$ (g) 79th percentile (h) 17.5
3. (a) 94.3, 116.9, 135.8, 162.95, 255.9 (b) 175.1 (c) 46.05 (d) Yes
4. z-score of Math score is 0.5 and of English is 1.25. Hence Anne is better prepared for English.
5. (a) Lake D is most polluted. (b) Lake S is least polluted.

New York Lake	Pollution	z-score	New Jersey Lake	Pollution	z-score
A	22	-0.3780	R	75	0.7742
B	15	-1.3959	S	61	-1.5821
C	29	0.6398	T	70	-0.0673
D	33	1.2214	U	70	-0.0673
E	24	-0.0872	V	76	0.9425

6. (a) $z = 1.5737$, so value is usual value. (b) $\bar{x} + s = 1821$ (c) $\bar{x} - s = 1197$ (d) Not normally distributed.
7. (a) $\frac{96 + 480}{3562} = 0.1617$ (b) $\frac{96 + 480 + 656}{3562} = 0.3459$ (c) $96/3562 = 0.0269$
(d) $\frac{752}{3562} \times \frac{751}{3561} = 0.0445$ (e) $\frac{576}{3562} \times \frac{575}{3561} = 0.0261$
8. (a) (i) $25^3 \times 9^3 = 11390625$ (ii) $25 \times 24 \times 23 \times 9 \times 8 \times 7 = 6955200$ (b) ${}_{12}C_5 = 792$ (c) $5 \times 5 \times 5 = 125$ (You can choose either 0, 1, 2, 3 or 4 of each fruit). (d) $\frac{11!}{4! 4! 2!} = 34650$
(e) ${}_4C_2 \times {}_6C_2 \times {}_8C_2 \times {}_2C_2 = 2520$ (f) Topic not on exam.
9. (a) $1/2$ (b) $3!/4! = 1/4$ (c) $1/100^3 = 0.000001$ (d) $1/(56^5 * 46) = 0.000000000003$
10. (a) $423 : 77$ (b) $3/100$
11. (a) Yes
(b) $\{(h, 1), (h, 2), (h, 3), (h, 4), (h, 5), (h, 6), (t, 1), (t, 2), (t, 3), (t, 4), (t, 5), (t, 6)\}$
(c) 12 (d) $1/12$
12. (a) True (b) True (c) False (d) 65 (e) 25 (f) 0.65 (g) false (h) False (i) False.