

FACULTY NOTES

The LTAs and Spinoffs are designed so that each professor can implement them in a way that is consistent with his/her teaching style and course objectives. This may range from using the materials as out-of-class projects with minimal in-class guidance to doing most of the work in class. The LTAs and Spinoffs are amenable to small group cooperative work and typically benefit from the use of some learning technology. Since the objective of the LTAs and Spinoffs is to support the specific academic goals you have set for your students, the Faculty Notes are not intended to be prescriptive. The purpose of the Faculty Notes is to provide information that assists you to take full advantage of the LTAs and Spinoffs. This includes suggestions for instruction as well as answers for the exercises.



SPINOFF 1A

How a Change in the Number of Flights per Year Affects the Probability of Sufficiency

1)

Table 1

Flights per Year	Total Projected Operating Time (TPOT)	Lambda (λ)
8	6384	0.01902
12	9576	0.02853
15	11970	0.03567

2. a)

Table 2 (answers are percents)

S (Total Spares)	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
POS (8 flights per year)	0	2	6	15	28	44	60	74	85	92	96	98	99	100	100	100	100
POS (12 flights per year)	0	0	1	2	5	11	21	32	45	59	70	80	87	93	96	98	99
POS (15 flights per year)	0	0	0	0	1	3	7	13	21	31	43	55	66	76	83	89	93

- b) 9 spares for 8 flights
13 spares for 12 flights
16 spares for 15 flights

- c) 75 times out of 100 (or 3 out of 4 times) a spare will be available

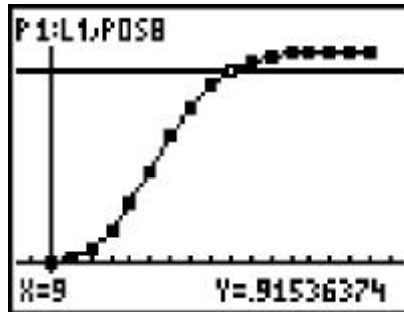
- d) 8 spares for 8 flights
11 spares for 12 flights
13 spares for 15 flights

- e) Answers will vary.

3) TI-83™ graphs

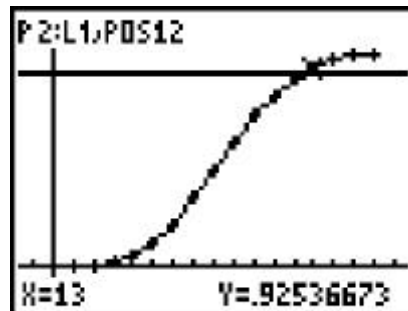
L1	L2	POSB # 3
5	.16035	.44402
6	.16062	.60465
7	.13791	.74256
8	.10361	.84617
9	.06919	.91537
10	.04159	.95695
11	.02272	.97967

POSB(10) = .91536373...



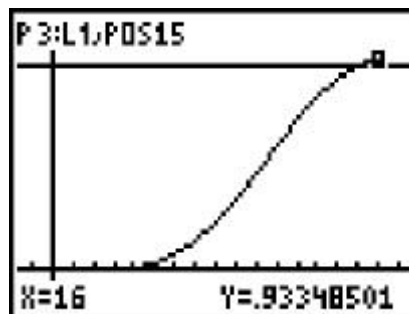
POSB #	L3	POS12 5
.95695	.11878	.70415
.97967	.09735	.8015
.99106	.07314	.87464
.99632	.05072	.92537
.99858	.03266	.95803
.99948	.01963	.97766
.99982	.01106	.98872

POS12(14) = .9253667...



POS12	L4	POS15 7
.8015	.11898	.54687
.87464	.11176	.65863
.92537	.09691	.75553
.95803	.07802	.83355
.97766	.05863	.89218
.98872	.0413	.93349

POS15(17) = .9334850...



To determine how many spares are necessary to reach a POS of 90% it may be helpful to also graph the line $y = 0.9$ (or $y = 0.75$ to see how many spares are necessary for a POS of 75%). That way it is easy to see where the POS reaches the 90% or 75% level.

4) The answers should be the same.