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1.

Demand (cases)	10	11	12	13	14
Probability	0.09	0.18	0.16	0.24	0.33

a) - Alternatives: $A = \{10, 11, ..., 14\}$

   - State of Nature: $S = \{10, 11, ..., 14\}$

   - Payoff Matrix:

Demand (cases)

Strawberries sold

	10	11	12	13	14
10	110	110	110	110	110
11	104	121	121	121	121
12	98	115	132	132	132
13	92	109	126	143	143
14	86	103	120	137	154

b) How many cases of strawberries should Jean purchase if she uses the maximum payoff criterion?

Max payoff: $110, order 10 cases

Strawberries sold	worst-case demand	worst-case payoff
10	10,11,12,13,14	$110
11	10	$104
12	10	-$98
13	10	-$92
14	10	-$86

c) How many cases should be purchased according to the maximum likelihood criterion?

Max likelihood payoff: $154, order 14 cases

d) How many cases should be purchased according to the expected payoff decision rule?

$E(10) = \frac{1}{5}(5)(110) = 110$

$E(11) = \frac{1}{5}(104 + 121 + 121 + 121 + 121) = 117.6$

$E(12) = \frac{1}{5}(98 + 115 + 132 + 132 + 132) = 121.8$

$E(13) = \frac{1}{5}(92 + 109 + 126 + 143 + 143) = 122.6$

$E(14) = \frac{1}{5}(86 + 103 + 120 + 137 + 154) = 120$

Max expected payoff: $129.57. Order 13 cases

e) Expected Value of Perfect Information (EVPI):

$EVPI = \frac{1}{5}(110 + 121 + 132 + 143 + 154) - 110 =$

$EVPI = \$8.37$

f) How many cases should you purchase according to min. regret decision rule?

Strawberries Ordered	10	11	12	13	14
10	$110-110=0$	$121-116=11$	22	11	11
11	$110-104=6$	$121-121=0$	11	22	22
12	$110-98=12$	$121-115=6$	0	33	33
13	$110-92=18$	$121-109=12$	6	0	6
14	$110-86=24$	$121-103=18$	12	18	0

Demand (cases)

Min. regret payoff: $18, order 13 cases

g) If Jean's utility funct. is $u(t) = \sqrt{t}$, what is the optimal decision?

$E(u(10)) = \frac{1}{5}(550) = 110$ $E(u(12)) = \frac{1}{5}(609) = 121.8$ $E(u(14)) = \frac{1}{5}(291) = 58.2$

$E(u(11)) = \frac{1}{5}(484) = 117.6$ $E(u(13)) = \frac{1}{5}(723) = 113.5$