Lect 3 - Example 1

Q: decision D_1 D_2 D_3

state S_1 S_2 S_3

	S_1	S_2	S_3
D_1	-25	0	35
D_2	-10	5	15
D_3	8	8	8

(a) Q: pessimism

Solution Maximin, so compare to $-25 < -10 < 8$

choose D_3

(b) Q: optimism

Solution Maximax

$35 > 15 > 8$

choose D_1

(c) Q: Hurwicz $C_{opt} = 0.4$

Solution for D_1, $H_1 = 0.4 \times 35 + 0.6 \times (-25) = -1$

for D_2, $H_2 = 0.4 \times 15 + 0.6 \times (-10) = 0$

for D_3, $H_3 = 0.4 \times 8 + 0.6 \times 8 = 8$

$-1 < 0 < 8$

So choose D_3

cd) Criterion of regret

Solution

	S_1	S_2	S_3
D_1	-25	0	35
D_2	-10	5	15
D_3	8	8	8
Max	8	8	35

	S_1	S_2	S_3	$\lvert 8 - g_{ij} \rvert$
D_1	33	8	0	
D_2	18	3	20	
D_3	0	0	27	

	S_1	S_2	S_3	$\max(r_{ij})$
D_1	(33)	8	0	33
D_2	18	3	(20)	20 ← min value
D_3	0	0	(27)	27

choose 20%

(e) laplace

Solution maximum expeted payoff

assume probability is $\frac{1}{3}$

strategy	expected return
D_1	$(-20+0+35)/3 = 10/3$
D_2	$(-10+5+15)/3 = 10/3$
D_3	$(8+8+8)/3 = 8$ ← maximum

choose D_3.