

Exercise 5Question 1

$$Z = \{a, b, c\} \quad A_S = \{1, 2, 3\}$$

$$B = \{B_1, B_2, B_3\}$$

a) What is the valuation function :

	1	2	3
$v(\{a\})$	3	0	0
$v(\{b\})$	0	0	3
$v(\{c\})$	1	5	4
$v(\{ab\})$	5	6	11
$v(\{ac\})$	3	5	4
$v(\{bc\})$	1	5	15
$v(\{abc\})$	7	14	15

↳

↳ Map so, who is the winner?

	1	2	3	Total
$\{a\} \{b\} \{c\}$	$\{a\} = 3$	$\{c\} = 5$	$\{b\} = 3$	11
$\{ab\} \{c\}$	0	$\{c\} = 5$	$\{ab\} = 11$	16
$\{ac\} \{b\}$	0	$\{ac\} = 5$	$\{b\} = 3$	8
⇒ $\{bc\} \{a\}$	$\{a\} = 3$	0	$\{bc\} = 15$	18
$\{abc\}$	0	0	$\{abc\} = 15$	15
	$A_{S_1} = 3$	$A_{S_2} = 0$	$A_{S_3} = 15$	

c) What is price if $V < C$?

$\overline{A_{S1}}$	1	2	3	
$\{a\}\{b\}, \{c\}$	0	$\{c\} = 5$	$\{b\} = 3$	8
$\Rightarrow \{a\}\{b\}, \{c\}$	0	$\{c\} = 5$	$\{a\}\{b\} = 11$	16
$\{a\}\{c\}, \{b\}$	0	$\{a\}\{c\} = 5$	$\{b\} = 4$	9
$\{b\}\{c\}, \{a\}$	0	0	$\{b\}\{c\} = 15$	15
$\{a\}\{b\}\{c\}$	0	0	$\{a\}\{b\}\{c\} = 15$	15

$$P_1 = (5 - 0) + (11 - 15) = 1$$

$\bar{A}_{5,2}$	1	2	3	
$\{a\} \{b\} \{c\}$	$a=3$	0	$c=4$	7
$\{a\} \{b\} \{c\}$	$c=1$	0	$ab=11$	12
$\{a\} \{b\} \{c\}$	$ac=3$	0	$b=3$	6
$\Rightarrow \{b\} \{c\} \{a\}$	$a=3$	0	$bc=15$	18
$\{abc\}$	0	0	$abc=15$	15

$$P_2 = (3-3) + (15-15) = 0$$

$\overline{A}_{5,3}$	1	2	3	
a, b, c	a=3	c=5	0	8
ab, c	ab=5	c=5	0	10
ac, b	0	ac=5	0	5
bc, a	a=3	bc=5	0	8
$\Rightarrow abc$	0	(abc)=14	0	14

$$P_3 = (0-3) + (14-0) = \underline{\underline{11}}$$