Tutorial 05

@)

(a) $i = 0$ → 1 step
while $(i <= 4)$ → 6 comparisons
print (i) → 5 steps
$i = i+1$ → 5+5 assignments / increments

Total steps : 22

(b)

	loop
$i = 0$ — 1 step	0
while $(i <= 20) - 4$	8
print $(i) - 3$	16
$i = i+8 - 3+3$	24

Total = 14

(c) $i = 0$ — 1 tm
while $(i < 4) - 5$ tmc
$j = 1$ — 4 tmes
while $(j <= 3) - 16$ tmc
print j — 12 tmc
$j += 1$ — 12 tmes + 12 tmes
$i += 1 - 4$ tmes + 4 assignment

inner loop	outer loop
1	0
2	1
3	2
4	4
	5

(d) $i = 0$ —   1 step
       $j = 1$ —   2 step
       while $(i < 4)$ — 5 step | when $i = 0$ | when $i > 0$ |
           print (i) — 4 steps
           while $(j <= 3)$ — 4 tries + 3 Comparison (less than or equal)
               print (j) — 3 times
               $j = j + 1$ — 6 times
           $i = i + 1$; — 4 tries + 4 times.

(e) $j = 1$ — 1 step
       while $(j <= 10)$ — 11 Comparison
           $j = j + 1$ — 10 steps + 10 additions
           $a = 1$ — 10 steps
               while $(a <= 3)$ — 4 Comparisons X10
                   $a = a + 1$ — $(3 + 3) \times 10$ additions and
                                              assignments

Outer loop	Inner
1	1
2	2
3	3
4	4
5	
6	
7	
8	
9	
10	
11	