

1.
  - a. The L1 has 1 one line and the L2 has 1024 lines.
  - b. The L1 has 1 set and the L2 has 1024 sets.
  - c. The L1 has 6 bits for b and the L2 has 7 bits for the b.
  - d. The L1 has 1 bit for s and the L2 has 10 bits for the s.
  - e. The L1 has 64 bits for the tag and the L2 has 47 bits for the tag.
2.
  - a. 64 misses.
  - b. 128 misses.
  - c. 256 misses.
  - d. 256 misses.
  - e. 2048 misses.
  - f. 400 misses.
  - g. 800 misses.
  - h. 1600 misses.
3.
  - a. 6784 cycles
  - b. 6784 cycles
  - c. 3648 cycles
  - d. 102400 cycles
  - e. 160000 cycles.

Notes/ Working out

$1 + \frac{5}{2}(1+5r) = 13 = \frac{5}{2}(k)$   $x = 5, r = 2$   
 $18 = \frac{5}{2}x + \frac{25}{2}$   $A_k = 1 + \frac{5}{3}k =$   
 $5.5 = \frac{5}{2}x$   $x = 2.2$   $32$   $b = 6$   $127$   
 $m = 5$   $b = 6$   
 off set  $= 16 \times 2$  (num. bytes / block)  
 # set  $= \frac{\text{size}}{\text{block size}} = 4$  set  $16 \times 2^4 = 2^{6+4} = 64$   
 # tag add  $32 - \text{offsets} - 4$  bits  
 $C = 40 \times 16$   $C = 12$   $\beta = 32$  bytes  $b = 5$   $w/b = 4$   
 128 lines  $32$   $8$  bytes per line  
 stride  $2$   $2 \cdot 4 \cdot 16$   $40$  bytes per line  
 stride  $8$   $2 \cdot 16 \cdot 8$   $32$  lines per line  
 $32 / 16 = 2$   $32 / 8 = 4$   $128$  lines  
 $32 / 16 = 2$   $32 / 8 = 4$   $32$  sets  
 $40 \times 16 = 640$   $40 \times 40 = 1600$   $4$   $16$  lines  
 $40 \times 16 = 640$   $40 \times 40 = 1600$   $16$  lines  
 $256 / 32 = 8$   $16 / 16 = 1$   $16$  lines  
 $142(2) + 14(160)$   $32 / 16 = 2$   $1 \cdot 32 \cdot 16 = 0.25$  mill  $16$   
 $224(1) + 32(160)$   $40 / 32 = 10$   $2 \cdot 40 \cdot 16 = 1280$   
 $1024(100)$