



(b) Y is global to current proc.  
 Z is local to current proc.  
 X is 2-levels away from current proc.

LOAD M, P, 3	Act Rec of B
LOAD M, N, 4	Get Y
<del>LOAD M, N, 4</del>	<del>Get Y</del>
ADD M, P, 4	Add Z
LOAD N, N, 3	Act Rec of A
STORE M, N, 4	Store X

5. (a)
- (1) Common sub-expression
  - (2) strength reduction
  - (3) Code motion
  - (4) minimal depth pass
  - (5) constant propagation

4. (c)  $A[5, 6]$  is at location 500

(a)  $VO = \text{Addr}[A, 6] - L_1 * M_1 - L_2 * M_2$

$M_1 = 8$   
 $M_2 = 8 * (20 - 6 * 1) = 8 * 14 = 112$

$VO = 500 - 5 * 112 - 6 * 8 =$   
 $500 - 600 - 48 = -148$

(b)  $I/5$  as  $5I/$

fits 8-bit dividend in register + ten bits of  $5I$ . This is (A+4) (10) will

(c)  $\text{address}(A[I, J]) = VO + I * M_1 + J * M_2$   
 $= -148 + I * 112 + J * 8$

