Solutions to Sample Quiz 2

Problem 1

Set 1: 8
Set 2: 12
Set 3: (a b c bar e f)

Problem 2

Ask in class to see the box and pointer diagrams.

Problem 3

<1> P2
<2> P1
<3> GE
<4> 3
<5> E1
<6> 9
<7> E2
<8> E2
<9> E2
<10> (+ a x m)
<11> GE

Problem 4

For part a, your modified code would be as follows:

```scheme
(define (make-inc init)
  (let ((value init))
    (define (inc-val x)
      (set! value (+ value x))
      value) ;this line was missing on the exam
    (define (dispatch m)
      (cond ((eq? m 'inc-val) inc-val)
            ((eq? m 'reset-val) (set! value 0) value)
            (else (error "Invalid message – MAKE-INC" m)))
    dispatch))
```
For part b, your modified code would be as follows:

```
(define (make-inc init)
  (let ((value init))
    (define (inc-val x)
      (set! value (+ value x))
      value) ;this line was missing on the exam
    (define (set-val x)
      (set! value x)
      value)
    (define (dispatch m)
      (cond ((eq? m 'inc-val) inc-val)
            ((eq? m 'set-val) set-val)
            (else (error "Invalid message – MAKE-INC" m)))))
  dispatch))

**Problem 5**

```

(define (map! op lst)
  (if (null? lst)
      'done
      (begin (set-car! lst (op (car lst)))
              (map! op (cdr lst))))))
```