Clicker Qs for October 15
I want to create a fraction datatype. Which of the following is a good constructor:

A. (define NewFraction (lambda (num denom) (/ num denom)))
B. (define NewFraction (lambda (num denom) (list num denom)))
C. (define NewFraction (lambda (num denom) (list 'fraction num denom)))
D. (define NewFraction (lambda (f) (list 'fraction f)))
Answer C: (define NewFraction (lambda (num denom)
  (list 'fraction num denom)))
(define NewFraction (lambda (num denom)
   (list 'fraction num denom)))

Now we want to write various accessor methods. How do we get the numerator of a fraction?
A. (define num (lambda (f)
       (* f (denom f))))
B. (define num (lambda (f)
       (car f))
C. (define num (lambda (f)
       (cadr f))
D. (define num (lambda (f)
       (caddr f))
Answer C. \[
(\text{define num (lambda (f)}
(cadr f))))
\]
(define NewFraction (lambda (num denom)
    (list 'fraction num denom)))

Finally we need utility functions. How do we multiply two fractions?
A. (define product (lambda (f1 f2)
      (* f1 f2)
    
B. (define product (lambda (f1 f2)
      (list (* (num f1) (num f2)) (* (denom f1) (denom f2)))

C. (define product (lambda (f1 f2)
      (list 'fraction (* (num f1) (num f2))
            (* (denom f1) (denom f2))))

D. (define product (lambda (f1 f2)
      (NewFraction (* (num f1) (num f2)) (* (denom f1) (denom f2))))))
Answer D

(define product (lambda (f1 f2)

    (NewFraction (* (num f1) (num f2))

    (* (denom f1) (denom f2))))))
In standard Scheme, what will this evaluate to?

(let ([x 3])
  (let ([x 4])
    (+ x 5)))

A. 8 because x was bound to 3 first and that can't be changed
B. 9 because the most recent binding of x was to 4
C. 9 because the last binding of x was to 4
D. I'm sleepy
(let ([x 3])
    (let ([x 4])
        (+ x 5)))

Answer B: 9 because the most recent binding of x was to 4.
What will this evaluate to?

(\(\text{let } ([x 3])\))

\(\text{(begin}\)

(\(\text{let } ([x 4])\))

(\(+ x 5))\)

(+ x 10)))

A. 13 because the most recent binding of x was to 3
B. 14 because the most recent binding of x was to 4
C. 19 because the last binding of x was to (+ x 5)
D. I'm sleepy
(let ([x 3])
  (begin
    (let ([x 4])
      (+ x 5))
    (+ x 10)))

Answer A. 13 because the most recent binding of x was to 3