

Chapter 8: Recursion

Solutions

Multiple Choice Solutions

1. b
2. c
3. c
4. c
5. b
6. a
7. e
8. d
9. e
10. a

True/False Solutions

1. T
2. T
3. F
4. T
5. F
6. F
7. T
8. F
9. T
10. F

AP-Style Multiple Choice Solutions

1. C
2. A
3. A
4. D
5. C
6. D

AP-Style Free Response Solution

8.1

a.

```
// precondition: n > 0
public static int factorial (int n)
{
    if (n == 1)
        return 1;
    else
        return n * factorial(n-1);
}
```

b.

```
// precondition: exp >= 0
public static int power (int base, int exp)
{
    if (exp == 0)
        return 1;
    else
        return base * power(base, exp-1);
}
```

c.

```
// precondition: a has size at least 1
public static void triple (int[] a)
{
    tripleHelp (a, 0);
}

// triples the elements from k to a.length-1
private static void tripleHelp (int[] a, int k)
{
    a[k] = a[k] * 3;
    if (k < a.length-1)
        tripleHelp(a, k+1);
}
```