

1. (8 pts, 1 pt each) What is the output of the following program segment? **Write your answer below each cout statement.**

```
typedef int * intPtr;
intPtr    p, q;
int       x=5, y=10;

p=&y;
q=p;
*q = *p+10;
x=*q - 10;
y= x - 5;
cout << x << " " << y << " " << *p << " " << *q << endl;
```

```
p=new int;
*p = 5;
*q = *p + 5;
x = *q;
cout << x << " " << y << " " << *p << " " << *q << endl;
```

2. (2 pts) Show the C++ statement to release the memory space pointed at by the pointer 'p'.

3. (2 pts) Suppose the following structure and variables are declared:

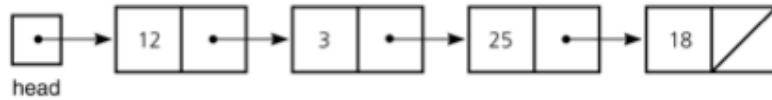
```
struct Student {
    string  name;
    string  email;
};
Student    Peter;
Student*   p = &Peter;
```

Which of the following statements assigns a new email to Peter?

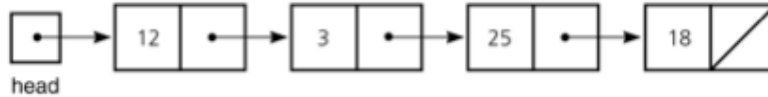
- (a) p[email] = "Peter@mtsu.edu";
- (b) p→email = "Peter@mtsu.edu";
- (c) p.email = "Peter@mtsu.edu";
- (d) Peter[email] = "Peter@mtsu.edu";
- (e) Peter→email = "Peter@mtsu.edu";

<more questions on the back>

4. (16 pts, 8 each) For each of the 4 questions a-d shown below, only the head of the **linked list** is given. Show the code for that specific linked list only. Do not need to write the code for a general problem.



- a. Show C++ loop statements needed to print all the values in the linked list, one value per line.



- b. Suppose pointer variable *prev* points to the first node (node with value 12) in the list and *cur* points the second node (node with value 3). Write the C++ statements to **remove the second node from the list and free its memory**.