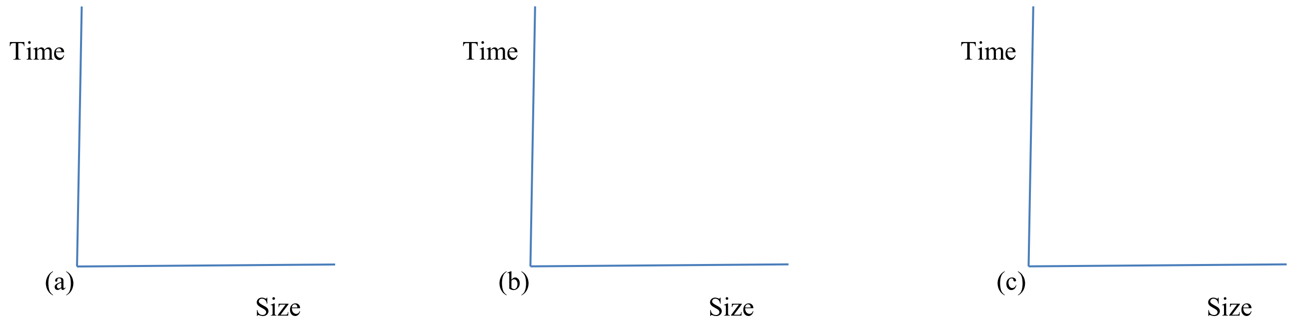
1.



2. (a)

(b)

3. (a1)

(a2)

((b1)

(b2)

(c1)

(c2)

4(a).

```
def closest(l:[int])->int:

 a = set()                     ___________

 for i in range(len(l)):       ___________

   for j in range(len(l)):     ___________

     if i != j:                ___________

       a.add(abs(l[i]-l[j]))   ___________

 return min(a)                 ___________
```

(b)

(c)

```
def closest(l:[int])->int:

  a = sorted(l)                              ___________

  m = -1                                     ___________

  for i in range(len(a)-1):                  ___________

    if m==-1 or abs(a[i+1]-a[i])<min:        ___________

      m = abs(a[i+1]-a[i])                   ___________

  return m;                                  ___________
```

(b)

(c)

5. (a)

(b)

6.

N = Problem Size	Complexity Class	Time to Solve on Old Machine (secs)	M Solvable in the same Time on a New Machine 2x as Fast
10^6	O(Log$_2$ N)	1	
10^6	O(N)	1	
10^6	O(N Log$_2$ N)	1	
10^6	O(N^2)	1	