Chapter 3 Practice Questions

In the text, we presented the following example to simulate the growth of a population that doubles in size every hour:

```
N=1; t=0;
while(t<=5*24) { print(N); N=N*2; t=t+1; }
```

Question 3.1:
How would we update this code to simulate growth of a population that triples in size every hour?

Question 3.2:
How would we update this code to simulate growth of a population that doubles only every ten hours?

Question 3.3:
How would we update this code to show us how large the population will be after three days of growth?

Answers:

Question 3.1:
Instead of multiplying `N` by 2 every time-step, we would instead multiply it by 3, yielding:

```
N=1; t=0;
while(t<=5*24) { print(N); N=N*3; t=t+1; }
```

Question 3.2:
Instead of moving forward in time-steps of one hour (i.e. `t=t+1`), we would use time-steps of ten hours, yielding:

```
N=1; t=0;
while(t<=5*24) { print(N); N=N*2; t=t+10; }
```

Question 3.3:
In order to simulate only 3 days of growth, rather than 5, we would update the total number of iterations in `t<5*24` to `t<3*24`, yielding:

```
N=1; t=0;
while(t<=3*24) { print(N); N=N*2; t=t+1; }
```