Name: _____

Lab 4 Worksheet

Exercise 1

This is an example of acceleration/deceleration, but applied to the size of the circle rather than its position.

For motion, the acceleration/deceleration pattern is the following:

```
position = position + speed
speed = speed + acceleration
```

- Based on the acceleration/deceleration pattern, identify the animation variables needed for this exercise and fill in the table below.

what changes?	what kind of value?	what's the starting point?	how does the value change?

When something is slowing down, the sign of *speed* will eventually change from positive to negative or vice versa. To make the speed stop at 0, use either

```
speed = max(0,speed + acceleration)
```

or

```
speed = min(0,speed + acceleration)
```

depending on whether speed is positive and getting smaller (max) or negative and getting bigger (min).

- Which (max or min) is needed here? _____

Exercise 2

The red circle moves according to a random walk. For motion, the random walk pattern is the following:

```
position = position + random(low,high)
```

- Based on the random walk pattern, identify the animation variables needed for the red circle in this exercise and fill in the table below.

what changes?	what kind of value?	what's the starting point?	how does the value change?

The blue circle has a smoothly-varying random position. The pattern for using noise:

```
{
  float x = map(noise(t),0,1,low,high);
  …
}
t = t + step;
```

where *x* is a local variable for the smoothly-varying value, *low* and *high* define the range of values, and the size of *step* defines the smoothness of the variation (smaller values are smoother).

- Identify the local variables – what values will be determined by Perlin noise for the blue circle? Fill in the table below.

what is determined by Perlin noise?	what kind of value?	what's the range of values desired? (low, high)

Exercise 4

- Draw your planned scene below, and use the picture to work out positions and sizes for the shapes.

(continued on the next page)

- For each of the following patterns, briefly describe how you'll incorporate it into your sketch (if applicable) and fill in the tables to identify the animation variables, local variables, and other details of the pattern's application.

    - Steady motion –

      Describe how you'll incorporate it into your sketch:

what changes?	what kind of value?	what's the starting point?	how does the value change?

    - Acceleration/deceleration –

      Describe how you'll incorporate it into your sketch:

what changes?	what kind of value?	what's the starting point?	how does the value change?

- Perlin noise –

  Describe how you'll incorporate it into your sketch:

what is determined by Perlin noise?	what kind of value?	what's the range of values desired? (low, high)

- Spiral motion –

  Describe how you'll incorporate it into your sketch:

  Spiral motion is circular motion where the radius of the circle also changes. Including *t*, identify the animation variables needed.

what changes?	what kind of value?	what's the starting point?	how does the value change?

- Acceleration/deceleration along a constrained motion path –

  Describe how you'll incorporate it into your sketch:

  What motion path will you use? (ramp, circular, …) _____

  Acceleration/deceleration with constrained motion means acceleration/deceleration applied to *t*. Including *t*, identify the animation variables needed.

what changes?	**what kind of value?**	**what's the starting point?**	**how does the value change?**