## Creative Coding 1

## P5.js Lab 1

## Rotate To Mouse

**Question 1:**

Use JavaScript to demonstrate the rotation property of an object as follows:

**Note:** you should use the Arrow class – in the ‘classes’ folder on Teams.

The fixed Arrow object (an instance of the Arrow class) should rotate to point to the mouse location.

Assume that the ‘point’ of the bitmap is normally pointing to the right side of the canvas (this will be set up correctly in the Arrow class).

Rotation can be very useful in games and interface elements etc. Of course rotation is not limited to the mouse. Because the mouse coordinates are just x and y values, you can extend this technique to force an object to aim itself at any particular point, such as another object or the centre of the screen.

**DETAILS:**

**In setup():**

* Create an arrow object.
* Place the arrow object in the centre of the canvas.

**Within the relevant function (note that this function is called every time the mouse moves across the canvas):**

* Find the difference between the x of the mouse and the x of the arrow, and store in a variable called dx.
* Find the difference between the y of the mouse and the y of the arrow, and store in a variable called dy.
* The two variables dy and dx should be passed into the relevant trigonometric function (see Figure 17 – a right angled triangle mapped to the mouse and arrow coordinates - from ‘lecture (trig intro)’ and ‘Lab 1 Summary’) which ***returns the angle between the arrow and the mouse***. Store in a variable called angle.
* Use another property of the arrow object (see Arrow class) to rotate it according to this angle (use the assignment operator).
* Finally draw the arrow!

**Question 2:**

**Part 1:**

As in Question 1, we place an arrow object at the centre of the canvas.

However in this case, the arrow should ‘become’ the mouse cursor – so that as we move the mouse, the arrow moves accordingly. This effect works even better if the cursor is hidden as we move over the canvas.

Finally, as the arrow is moved around the canvas, it should always point towards the centre of the canvas.

**Part 2:**

Change the code so that the arrow will always point to the top left corner of the canvas.

**CODE:**

Create an object of type Arrow , and place in the centre of the canvas. Hide the cursor as it moves over the canvas.

Use the same function as in Question 1 so that it is called every time the mouse moves across the canvas. Within this function:

* Set the x and y mouse position equal to the x and y arrow position respectively (using the assignment statement).
* Remaining code is similar to ‘RotateToMouse’ – except the dx and the dy will be slightly different (We are getting the difference between ? and ?).