Identify and discuss particular examples where what you are learning about physics has informed what you think about animation or how you make your own animation.
When I saw 'Steamboat Willie', I couldn't help but think about how inaccurate the physics were, and this colored my view of the piece. I've noticed that I pay more attention to the spacing between frames, especially in my own work. I've done the bouncing ball exercise before, but this time I found myself aiming for more accuracy in the timing of the ball's movement. I also used projectile motion when making my hamster physics animation to calculate the trajectory of the hamster's flight.
Physics has made me think a lot more about each motion in an animation, when before I would have thought more about the piece as a whole. This means that I am spending more time on individual parts of it, which is a good thing. It's also making me pay more attention to what looks 'right' or 'wrong' in an animation, and has made it easier for me to figure out what I need to fix.
While learning physics in my program Trajectories in animation, I realize that the relationship with physics and animation are intertwined the usage of gravity such as -9.8 N/Kg.
Our analysis of motion diagrams informed my understanding of physics in animation because, like animation, they're a visual representation of motion, and the spacing of the dots pushed me towards thinking about timing of motions, acceleration, deceleration, and how this applies to the creation of an animated sequence. Lab activities such as bouncing a ball allowed me to see firsthand the motion of the object: the way it shoots down towards the floor and springs back up, slowing up until it reaches the top of its bounce and speeds back towards the floor again. Using this direct experience, I was able to see how animations either use real free-fall physics or exaggerate them. The analysis in our final project yielded similar results, as we watched clips, tracked the motion of a specific object in the clip, and analyzed graphs constructed in Logger Pro. Acceleration and velocity graphs allowed me to see how the motion in animation translates into mathematical data with slopes, periods, and frequencies. Likewise, the various chapters we've read informed my understanding of physical principles such as uniform circular motion, free fall, acceleration, velocity, and forces. I learned that an object moving up still has a downward acceleration due to gravity, that the acceleration of a circular object at constant velocity always points towards the center, and about the pulling tension force and pushing normal force. All of these natural phenomena appear in animated works, even for something as simple as tugging on a rope or swinging like a pendulum. Now that I've studied physics, I'm able to recognize these phenomena in animation, while I would have thought little of them before.
Overall combining physics and animation has greatly affected how I think about the timing of my animation. In the previous animation assignment, where we had to animate a physics motion both accurate and obscured, I chose to animate the motion of a ball. I was forced to think about things like gravity, velocity, and such as well as produce something visually appealing to the eye. I now think about these things in every animation I do, deciding whether they add to, take away from, or normalize what I am trying to animate. Usually they are helpful to making my animation look more accurate, especially because I not only know what a ball bounce should look like, but I also understand why certain things happen the way they do. For the most part, unless I am going for some crazy comical effect, accurate physics are essential to my animation showing convincing movement or not.
Studying physics has helped inform my animation by showing me how simple and uniform motions actually are. If you had asked me to draw free fall before this class I'm sure you would have gotten something far less dynamic (a ball dropping through the frame perhaps). Now I would draw the ball falling in an arc as it left someone's hand.
1. Learning about physics has helped me in my animation by helping me to identify key frames. Analyzing particle models and graphs gives me a better idea of where the changing points in the movement of an object are and how they move from that point. Physics has also given me a way of understanding the forces that act on an object and how those forces might effect the look of my object in motion and where I might use squash and stretch.
Possibly the experiment that has stuck with me the most has to be the bouncing ball, even though it is a really simple thing, it's simplicity makes it easier to observe the relationship between physics and animation. We can either obey the laws of physics or bend them, the ball can squash and stretch, or can bounce without changing it's original shape, it is up to the animator to decide what he/she wants to do in

their work.
In learning about physics and animation at the same time, I got a new way to think about animation in general. It's a lot easier to see not only the various animation techniques when watching a film (squash and stretch, keyframes, etc.) but also I notice a lot more where the artist stays true to physics and how s/he chose to bend or break those laws. For instance, I saw Tekkon Kinkreet, an anime film, and it was cool to watch these orphans basically fly from one building to another, and how the younger of the two brothers would hallucinate in worlds of watercolor. Then the next second it would be very realistic, violent scenes, where gravity reverts back to normal and friction returns, and all of these things that didn't apply earlier suddenly apply now. This class has been an interesting sort of eye-opener.
When we learned about the motion of the bouncing ball before we tried to make the zoetrope I was able to understand what the path of action was in a deeper way because I knew what I wanted the ball to do.
In this course, Trajectories in Animation, Mathematics, and Physics, I am learning a great deal. With all the formulas, theories, observations, and drawing guidelines there is no shortage of new information. One thing I used physics for in animation is where I was animating a short cut-out film about a cat being frightened. This cat jumps off a table, and while he does he smacks a ball on the table with his table, sending it also flying. But, how do I animate the ball leaving the table? I previously would have made up something - with new physics background, I turned to page 85 in the text, remembering an example done live in lecture, for a picture of how "projectile launched horizontally falls". I used this in my video, and it looks good; it looks realistic. Physics has taught me that things move according to exact laws. In learning about how acceleration works, that is, the change in speed and direction, I am more fluent with the world around me including animation secrets. Animators often change details of physics in their art for effect, for drama, for humor, but the basic truth is often there. While I can wonder about a trajectory of a ball thrown into the air in my new animation, I will now be influenced by knowing that acceleration is always affected by gravity. That is, the ball is thrown up, and being pulled by gravity. It slows down and stops momentarily in the air, because of gravity. It comes back down, at an increasing rate, because of gravity. Acceleration is always pointing down. Now that I know that, it can make more sense of the world, and help more clearly illustrate in my animations.
Our discussions on simple harmonic motion in physics helped me understand the proper placement of frames for a pendulum or other periodic motion that is modeled after a pendulum. When drawing out the images, I was able to see how each frame fit as a data point along a sinusoidal position vs. time graph of motion. Another notable example was projectile motion. Examining the changes in velocity as an object is projected into the air got me to think about how minimizing or exaggerating the changes in velocity could create a different feeling of the jump in the viewer. Extending the period of time at the top of the arc creates a feeling of weightlessness while minimizing it creates a sense of purpose.
1) When working on the first project I found the work we had done in physics to be most helpful. Looking at pendulum motion and realizing it was not the same a circular motion really changed how I approached animating a pendulum. In addition thinking about velocity and acceleration vectors has helped time and time again when I have been animating motion. If anything I believe thinking about physics has mostly helped my animation not be as "flat". Using physics while animating seems to help give my drawings more depth and dimensionality.
When creating animation I have used motion diagrams as references from physics. The motion diagrams we have learned have helped me to understand how an animated object moves. When I was shooting my second animation sequence I was able to capture the motion I had envisioned by mapping that motion out like a diagram.
Well for me Physics has opened the door to everything going on behind the moving image. If I can remember correctly Krishna said in the first two weeks of class that physics and animation are all about the in between. For example when looking at position vs. time graph for physics it is plotting points on an axis the represent what movement has occurred during this motion in relation to time. This directly relates to Key frames in animation. This has helped me create movements smoother and more accurate when animating. Also when starting the final animation project I have found it extremely helpful to dissect the animations in logger pro. It has helped me better understand how objects in animations move and how I can incorporate them in to my animation.
When we went to Wild Waves this quarter after studying kinematics, I was able to do a real time

comparison of the acceleration and velocity vectors compared the physical sensation imposed upon me from the rides. Being on the big wooden roller coaster known as the Timberhawk, when going down a drop, I knew I was accelerating downwards, but I had the impression of being lifted up. It made me think about all those cartoons, especially the Tex Avery ones, where the cartoon character was stretched before a big movement. It occurred to me that animation was more interesting when depicting the impression of movement, than the correct physics.
The most important thing I have learned between physics and animation is kinematics. For the second sequence I really had to pay attention to the laws of motion when animating a simple ball rolling down a track. I had to keep in mind that a real ball does not move at constant speed in this situation, it accelerates so I had to move it farther apart in between each frame. On the second half when it shot into the air I had to track the negative acceleration of gravity while keeping its horizontal motion constant as it was no longer being acted on by any forces. It produced a smooth animation of a parabola that looked like a real ball simply because I animated using these laws.
I never understood why in animation, for the audience to read the motion of something the motion has to be exaggerated. After taking physics I realize that the reason animation has to be exaggerated is because we don't feel a motion that is constant. People feel the changes in motion. Like if you're in an airplane, even though you're going really fast, you don't feel the motion until the plane turns or loses altitude. That is why motions read better when exaggerated in animation because we "feel" the change better. Understanding why I have to make my motions more extreme than they would be in reality helps me animate the motions better.
Physics has informed the realities and laws that exist in the physical world and used them to demonstrate them in a realistic or unrealistic fashion in animation. In analyzing many different forms of animation I have had the opportunity to understand the relationship that exists between the physical and the intangible, like the human mind. For example, viewing the cartoon Bad Luck Blackie by Tex Avery, we see a lot of falling objects and accidents that in real life would have caused death. But these situations in the cartoon are funny because of the flexibility that the animators took to manipulation physics and the characters in ability to die.
Learning more about physics and relating this knowledge to animation has given me a more critical eye when it comes to animation. I can't watch animation without noticing the physics and then considering the creator's reasons for portraying motion (or lack of motion, etc.) the way they chose to in the piece. When it comes to my own animation, I have come to value motion and its complexity, and the complexities that go into portraying these complex motions.
Learning about physics has informed me about thinking of animation by allowing me to gain a new perspective of how there is an interplay between the dynamics of movement and the effects on a viewer. Tex Avery chose to bend the laws of physics and many times create his own which allowed for so much more to be able to happen in his world than could be possible. In my own animations I've been able to understand how using physics or breaking physics can create interesting and interpretive effects. While working on my second sequences, we choose to to do an end scene where the mouse is up floating through space. This could be interpreted in a variety of ways, but to us it was just to bend physics in space.
As physics (specifically kinematics) is a study of how things move and, likewise, animation expresses how they move. An understanding of one is necessary for the other to succeed. In fact often, similar tools are used by individuals of either field. Timing charts for animators gauge how a motion will look through a scene where as motion diagrams track a particle or object through time. The same thing with different names. This link interesting, two worlds that in many aspects are assumed not to touch, use many of the same ideas. In observation and calculation of physics, the practice o animating is illuminating. A motion is not assumed, or guessed attempted, it is understood. A physicist can tell you that when a pendulum swings it moves fastest at the center of the ach, in between either extreme. Hey could show you data and formula and give reasons like change in velocity. An animator can se this, a the data presented. The analysis enlightens one to the a very technical level of how things work in actuality. Rom thee he animator may take artistic liberties. When analyzing data, animation can be exposed. When tracking and exploring various aspects of clips the setting, principles of the world of that animation is exposed. Perhaps, the cat has accelerated a jump by twice as much as a realistic representation, or Mickey Mouse takes a tumble down the stairs at exactly free fall. These insights can lead a viewer or new

creator to wonder why the change in physics happened, observe how it affected their experience. Or they might find themselves engaging in a similar use of timing.
It seems to me that almost all of the information we have learned in physics could be applied to motions in an animation. But specifically understanding how certain forces will act on an object is the most useful. It is extremely important to know how an object will speed up or slow down when you are trying to represent it most accurately. Also, knowing free-fall acceleration is very important, because more often than not, a cartoon character will be hit by some free-falling object.
Acceleration, velocity and motion diagrams have informed my understanding about how objects and people/animals move through the world. By studying motion analysis and rotoscoping a movement like spinning or running one can see when to slow down or speed up and action within the animation. Physics sets up a view of how actions should occur in our world. Setting up a scene where the laws of physics are observed and then following it up with action that does not follow the laws of physics makes thing funny. In the Roadrunner cartoons, the background is laid out as one would expect in the desert, the Roadrunner plays the straight character and behaves in roadrunner like movements, while the coyote acts more like a human being and breaks that expectation. Following the coyote's need for greed, he is met time after time with heavy objects falling on him or blowing him up.
A particular area of physics that has helped me think about animation and produce more fluid animation is "motion". After studding motion in physics, the way objects interact with the world around them, I was able to produce zoetrope strips with more fluid motion and realistic motion. It also helped me when I was animating on the multiplane. I looked at the cut out compared to the background and figured out how the motion would happen realistically. From there I was able to skew the motion in the ways I desired because I understood how the cut out would act normally.
One thing that I learned from physics was that you have to apply a lot of real time things, like gravity, or angle. Simple things that would have to be applied to animation. For example a ball doesn't simply look like it's bouncing in the same motion, its bounce decreases as it travels.
1. Understanding physics has been invaluable in understanding Disney's beginnings, their decent into hyperrealism, and the rest of the cartoon world's often divisive reaction to this change. It's helped me notice and get closer to understand the intentional "wrongness" of a lot of animation, and distortions of physics that go way beyond the "traditional" Road Runner-esque physics inversions. The fluidity of physics has begun to push what I'm animating into a more easy-to-comprehend light.
I have come to realize that the connection between physics and animation is fundamental. While some forms of animation are less constrained by the influence of physics (abstract direct animation comes to mind) no work of animation is truly an exemplar of the medium without showing motion, change, metamorphosis, in essence, some sort of kinetics. This transformation of objects over time is at the heart of the moving image, it is the same thing as the moving image, in life or in animation. In more mimetic and representative uses of animation, a physical intuition provides a sense of what motions are verisimilar, which are comically skewed, and which are jarring and alien.
I am learning about physical movement in my physics class, including free fall, acceleration, and friction, and am able to apply or incorporate these vectors and motion diagrams to my animation projects in order for my animations to appear realistic. For example, the first day of animation work shop was incredibly exciting in that a two hour session produced an actual realistic movement with a roto-scope and 12 frames of correctly drawn bouncing ball movement.
Calculating gravitational acceleration for animated films.
Of course the most obvious example I could think to discuss for this prompt is the example of motion diagrams. In physics we will represent an object as a single dot and mark its position on a chart at o given interval of time we use the distance in between the dots on this diagram to tell us something about the object the dot represents in physics this is usually something to do worth the objects velocity or acceleration. The idea of a motion diagram correlates so well with an animator's tool of choice the timing chart it is almost uncanny. With a timing chart an animator is visualizing a given effect that they wish to display within their animation, to use an example stolen from Norman McLaren anger as delivered by a man pounding his first on a table, and then mapping out the path of motion that will best represent the desired effect showing on objects lactation for each frame which will be played at the same time interval. For the example of the angry man pounding the table the animator will need to map out the acceleration

of his first making sure the space between the representative dot is increasing with each frame. For me personally having the opportunity to first gain a concrete understanding of the physicists motion diagram allowed me to be better able to slip into the role of the animator as I had a better understanding of how things such as velocity and acceleration could be represented through intervals of time and I had the necessary knowledge to be able to sort of do the motion diagram in reverse process to create my own motion
In my second animation sequence I represented the motion of a toy pull-back car that we did an analysis on in physics workshop. We recorded data using a motion detector and a portable data recording devise and then created graphs to represent the motion. I used this to accurately present the car's motion in animation. At the end of the clip a boulder with an exaggerated teeter and path of its fall crushed the car.

Identify and discuss particular examples where what you are learning about animation has informed how you think about physics or the work you've done in physics.
Reflecting, again, on the bouncing ball exercise, I think about how much like an animation a motion diagram is. When I consider the theoretical motion of an object, I think about how the timing would look if it was animated, and whether that would appear accurate onscreen. Really, I can't separate physics and animation anymore. I think about how to use, or ignore, physics in my animations, and I think about motion in terms of how I would animate it.
Animation has made me think more about how to apply context to the movements we are studying in physics. While we mainly use particle diagrams in physics class, it's interesting to think about what kind of motion would prompt the motion we are studying, and how it would be portrayed in an animation. Learning about animation also makes me want to stretch the laws of physics since that is possible in the animated world.
Physics is within everything we interact with. Such as a man pushing a ball on a floor from a launching stand. In class we predicated and calculated the acceleration, velocity and the x and y location at the specific time increment.
Viewing animated shorts has allowed me to see how other animators represent the physical properties of the world. Though exaggerated, some elements of physics still hold: falling objects accelerate, the faster something moves, the more spacing between its positions from frame to frame. Our production of zoetrope strips in class has also aided my understanding and representation of physics by seeing the motions of these strips. If a motion looks wonky, then I must not have represented the physics accurately, unless I intended to exaggerate or distort them. I've also gotten a chance to represent physics visually. For example, I learned that I can accomplish oscillation by rapidly alternating between up and down positions of an object, with the motions growing gradually smaller. This reflects oscillation in the real world, where an object slows towards equilibrium.
My animation work has made it easier to visualize certain physics ideas and make them easier to understand. If I imagine a ball bouncing I see the physical motion of it and can visual how certain physics principals work visually. I am a very visual person so if I can't visualize something, it becomes very hard for me to understand. For example, working with zoetrope strips (particularly our work with any ball bounce) has helped me see where the ball moves faster, slower, stops and so on. It shows me before I even realize it the accurate physics of a ball bounce. Even if the motion is exaggerated it just ingrains the actual motion in my mind more so that when it comes time to figure out the physics behind a motion, I have a general understanding of the basic motion, even if I can't describe it at that point, it makes it easier to start to conceptualize and work with.
Animation helped me understand motion diagrams. The ideal of single frame pictures when added together create movement was a new in the context of physics but not in animation.
2. The idea of key frames works in ways, letting physics inform animation but also having the animation demonstrate the physics. Since animation is not bound to the same rules as the rest of the world it could help in analyzing physics while ignoring some rules or forces that may allow you to see something you would not otherwise be able to view. This ignoring of physical rules can be done for the sake of analyzing physics or just for the ability to exaggerate the motion.
Ruth talks a lot about movement and it's course, it is important for us as animators to understand how this works so we can recreate it. Because I've learned so much about how objects/people move in animation, it has been easier for me to observe such movements in the real world; they might not be as exaggerated as they are in the animation but a lot of them are still able to be observed.
Animation work has let me look at physics' "in-betweens", given me an important way to see where the points of interest are. With animation, I need to be able to look at a motion and think about where I need to focus on, which pieces need the most attention to start with so I can work backwards and find the rest of the motion. Physics is the same way, like in the example of a ball in flight. In order to model the flight, I'll need to find how long it takes to hit the ground, or how fast the ball was moving, what forces are acting upon the ball, the direction of its motion. Any of these things might be a keyframe, depending on the givens or what I already know. For instance, if I know it took 5 seconds for the ball to hit the ground, and I know the angle it hit at, and where the ball was thrown from, I can find the initial velocity of the ball, or I can just now the angle and velocity and know whereabouts it'll land. Finding important information, and working backwards.

In animation when we learned about the walk cycle and analyzed and focused on how the head moves in the horizontal direction I was able to understand how this could be represented as a sin graph. This was crucial in my video analysis for the cat walking in Bad Luck Blackie
Animating my kitty cat flying off the table, for instance, has informed me on physics. I wanted to draw a cat and a ball leaving a table - the ball followed very strict guidelines of physics, the cat did not. I made the cat 'sort of' defy physics and just jump straight up - something I made up for humor's sake, because cats are funny, and they sometimes defy expectation and say jump in a direction unexpected. In drawing the cat, I was free in this way. But in drawing the ball, it took much more precision. Physics teaches me that for following natural laws, it takes precision to replicate. One thing I came knowing, that was reinforced, is the idea of centrifugal force. How an object wants to keep moving in a previous direction. I believe it was the first day of animation/physics combo when we were in small groups that some saw this first. What direction does an object go if a change is removed? As in, if a ball rolls through a ¾ circle and then flys out which direction will it go. At that day I was the only one to know the correct answer. It doesn't swerve, doesn't go in a circle still, it goes in the direction that it last was headed. Seeing this exact example in an animation later in homework cemented the concept for me, and was also apparent in my example above about the ball launching off of a table: in drawing the movements, and I traced the book for reference, I was made to see first hand how the absence of the table made the object go out continuously, while only gravity pulled it down. Centrifugal force moved that thing away continuously.
Animation has expanded my view of what can be modeled by physics. Our analysis project made me realize something that is logically but not intuitively obvious: that you can measure the motion of anything that moves. In the real world, I would never think to track the motion of a nose because relative to the rest of the body, it remains at rest. In animation, there is a much greater chance that a nose might have its own spring or floppiness to it which causes it to move differently from the rest of the body. This has gotten me to start pushing my boundaries around what I think are interesting things to critically examine.
2) Since the bouncing ball workshop, I have realized that animation helps give me some groundwork for physics. My huge challenge with physics is that I have a hard time picturing what the problem is trying to communicate. With animation I have been able to think about motion more pictorially, which has helped me to tackle the problem.
Key frames in animation have helped me to understand concepts in physics. When looking at key frames in animation we see differences in each of the key frames. When looking at the key frames of a pendulum for example the key frame at its lowest point has many differences from the key frame at its highest point. Acceleration and velocity are different in these two positions.
Animation has informed my understanding of physics as much and in the same ways. Learning about plotting movements while learning how to plot and use graphs in physics at the same time really helped me get a better grounding in physics because it gave me a way to utilize what I learned in a real world application
When making our first animation "Projectile Penguin" my partner and I depicted the path of a penguin being shot from a slingshot at multiple different angles. Because we were supposed to accurately depict the physics, we had our penguins follow the parabolic arc that is associated with projectile motion. He result was a very smooth animation. Although it may be more interesting to depict unreal physics, real physics makes for a very continuous smooth reality. It really shows that as humans we have an intuitive sense for physics, and can notice when something is not quite right.
The first time I thought about physics in animation was during the animation of the ball bounce where we discussed squash and stretch. When I saw the way the ball was drawn I immediately noticed that the squash of the ball hitting the ground was an exaggeration of real physical properties; a ball does not keep its round shape at all times, when it meets a strong force/surface its weaker structure bends and squashes to accommodate the surface it has made contact with before springing up and away again. Keeping that in mind I continue to look for the physics behind each technique of animation we learn, the creators had to learn it from somewhere and what better teacher is there then experience?
Animating has helped me understand physics. For example, I was having trouble understanding the acceleration and velocity of a pendulum motion but that became much clearer to me once had a chance to animate a pendulum motion. While animating it, I had a chance to observe the motion in a way I wouldn't normally. At first I animated how I thought a pendulum moved but upon putting it in the zoetrope

I realized that the motion didn't look natural. After asking for help I realized that I had been imagining the motion of pendulum all wrong and once I learned to properly animate it, I understood the velocity and acceleration better.
In making zoetrope strips, animation has informed my thinking about physics. I have had to think out simple, everyday phenomena and animated it which has proved to me that there is a lot more to these everyday interactions. In animating a pendulum, I have had to stretch and squish the pendulum to represent speed or changing direction.
Learning more about animation has had some effect on how I think about physics. Now, I see physics as not just a study of motion and stuff like that, but as a different means to a similar end to animation. Relating specific elements of the two disciplines - like motion diagrams and plotting frames - emphasizes their connection. Seeing physics and animation as inherently related helps me with my physics works; relating kinematics to something I find appealing helps me see this part of physics in a new light where it is more interesting to study.
Learning about animation has informed me in interesting ways in how I think about physics and the work that I've done on it. In my first sequence I tried to replicate the movement of a yo-yo. I was able to really link the work I was doing on my animation and what I was currently then working on in physics. It was interesting to see how motion diagrams linked between the two fields as well. Learning about key frames in in-betweens in animation allowed me to make connections to the movement that we'd recorded in physics class. I remember when in animation we were creating zoetrope strips with pendulum motion. It made me think about the actual physics in real life and how an artistic freedom can allow for bending the laws.
Physics is analytically, but animation expresses a motion, distorts it maybe but also visually shows it breaks it in to small parts and from there exposes the key element s in the motion. When producing a motion an understanding of it is achieved unlike that of observation. When tackling a physics question regarding a swing of a ball on a string, the animator practice of drawing key frames is not only absurdly helpful but innately tied to the question.
It is relatively similar when going from animation to physics as well. For example, when we drew a ball bouncing, we had to show when the ball goes faster or slower. This directly relates to the acceleration vectors of any bouncing object.
Drawing movement frame by frame gives one a clear understanding of each minutia of form through space and time. This microcosmic attention to each partial second has informed my understanding of the concepts of motion. By creating our second sequence animation based on an aspect of physics, I demonstrated my understanding of projectile motion. Specifically how an object is thrusted up into the air, its changes in velocity and acceleration can be analyzed through Logger Pro. While rotoscoping the circular spiral movement for my final animation project, then analyzing it in Logger Pro, I was able to determine the animator #1 followed the rules of physics. Whereas animator #2 chose to follow the initial curvature of velocity and acceleration, but at the close of the movement chose to alter the movement and the acceleration to compensate for 3D concept into a 2D plane.
Learning about animated films in animation showed me that animators use physics when they are animating to figure out where and how they want their characters to behave. They also use physics when they are thinking about what they want drawn on each cell because between each cell is where the human mind fills the gap with the perceived "motion". Also, learning about frame rate and they different ways to shoot animation has helped me get a better grasp for time of films, and the differences in the fluidity of motion.
2) One thing from animation that I learned about that can be related to or applied to physics, I guess would be manipulation. Here it's like a human can control his/her animation and make it do as he pleases. For physics it would be that a man/woman can apply extra forces to their experiments and change the outcome of the data and statistics.
2. Tons of physics ideas are present in animations like Country Cousin, Bad Luck Blackie, and Manipulation that I witnessed long be fore I encountered them in physics, and physics have (sometimes even unconsciously) guided the way I interact with and analyze animation, from contantly analyzing motion to understanding he exaggeration of characters, places, and things.
Animation forces the artist to consider a reductionist, simplified model of motion, broken down into freeze-

frames which define the move by elements of its path - identifying key interactions and transitions. The notion of ‘key frames’ is a useful tool for anyone trying to develop thinking tools for understanding physical systems.
Equally, the animation workshops and lectures are influencing the way I look at the physical world in day to day travel and living. I do a lot of commuting, and am impacted on the way the horizon moves down as I drive my car. As I accelerate, the movement speeds up, and the opposite happens as I slow down or back up. This was especially apparent to me recently on a foggy morning I took an early right turn down an incorrect street when I was taking my daughter to school. There was a giant dark brown coniferous tree that had lost all of its leaves standing on the left hand side of the road. Against the white foggy background, the tree was strikingly prominent. The way it stood out so well made it easy for my eye and brain to see the movement of horizon and still objects as I advanced my vehicle through the fog. I couldn’t wait to try to simulate this physics in an animation, and I set about the work of creating horizons, that when played back, would give the look of acceleration through my windshield.
Can’t think of any.
I have recently discovered a new connection between ideas learned in animation that have helped me to understand things about physics a little more clearly and that idea is the idea of key frames. The idea of key frames became most useful to me (in terms of physics work) while working on part one of our final project, I was doing my video analysis and applying all of those little dots to the appropriate places in order to achieve some nifty graphs analyzing the motion of my chosen objects in order that a mathematical description of this motion might be found. The motion I was analyzing when this connection was made was that of the black cats tongue panting in bad luck blackie it dose this silly kind of stagger rolling up into itself rolling back out getting longer rolling back up but not as far as last time then rolling back down and getting longer, I choose to analyst this motion in addition to how fun I felt the scene was, was because during animation workshop when Ruth was describing the idea behind a stager it was compared to oscillatory motion which I though was supper neat and I also thought it would make a really sweet graph. But I was wrong so very wrong I was clicking a dot for the end of the tongue in every frame and the end of the tongue was also rolling so it made this hideous awful graph that had like no pattern and was absolutely no fun at all. Then Ruth suggested I only make a dot for the end of the tongue at its most extreme locations the key frames, and low and behold a beautiful graph was born. I discovered I can use the idea of key frames to better interpret patterns in data.
One example of how what I’ve learned about animation is useful in physics is when finding the direction of the acceleration of an object. Drawing pictures of the moment of interest, just before that moment, and just after allow us to draw velocity vectors (arrows showing the speed and direction), and subtracting one from another. The sum gives us the direction of acceleration. Drawing this sequence of drawing is a lot like animation because we could animate those drawings, but more, to create a clip. In the animation I’m working on now I did video analysis on the motions within several animated films and created a series of graphs to represent those motions. I’m now going to apply those types of motions to my own animation.

How has this learning helped you progress towards your learning goals? Has this experience influenced you to modify your learning goals? What new questions do you have as a result of the program work you have done so far?
I feel that my work in physics has helped me to improve my timing in my animation, which has been my main learning goal until recently. It's also given me a basis to compare what is accurate to what is aesthetically pleasing to an audience. I feel like this understanding will allow me to make more informed decisions in the realism or cartoon-ity of my work. In addition, my work in physics has reawakened my love for the subject, and I am now considering pursuing a degree in physics in addition to my degree in film. I believe that having a basis in the science of motion will allow me to create more enjoyable movement in my work, and, should I pursue a career in the sciences, my animation work will give me a fairly unique approach to studying motion.
Finding out if I liked animating was one of my learning goals. I've found that I do enjoy it a lot, and I think my next step will be figuring out if I feel like it's something I could do consistently in life, since it is such a work intensive form of art. I definitely want to keep taking animation classes within my general subject of integrative art.
Learning physics and calculus has increases my mathematical knowledge. In order to build sustainable homes, such as, using trigonometry and shapes to create solid or complex projects.
This learning has really pushed me to see the connections between physics and animation and just how important it is to learn about physical principles in order to create appealing animation. While static drawings allow less regard for physics, an animated sequence that unintentionally ignores physics often appears floaty, stiff, or just plain awkward. And, as timing is a crucial element of animation, examining motion diagrams, graphs, and even using stop watches gives me a better understanding of how to time things in my project. Because of the knowledge gained in this class, I'm tempted to take other curriculum alongside animation work; physics definitely helps, but there are other elements that enhance animation, like context, which can be gained through classes on art history, sociology, psychology, and even drama. I've already taken some of these classes beforehand, but now I see how the knowledge gained in other classes often connects to the animated world. Pretty visuals will only get you so far, unless you're aiming for complete abstraction, and even that requires some understanding of abstract art, I believe.
My main focus here at Evergreen has been in animation and what drew me to this program was the combination of physics with animation. It sounds like such a "duh" class, like these two subjects should always go hand in hand so of course this program is perfect for me! It hasn't changed my learning goals much because I had already envisioned this being a great learning experience and saw it as an opportunity to grow so during this I was an open book ready to take on anything that was thrown my way.
I want to make art now. Art is cool. When I first got to Evergreen I made the mistake of thinking that studying art would be a waste of money because I could never find a job in the real world. This class has changed my mind and made me think; if you love it enough maybe it's possible. My new questions are: What can I do? And how do I make a career in the arts?
3. I don't really have specific learning goals. My goal is really just to learn as much as I can. This goal works fairly well with the idea of pursuing a liberal education and has so far worked out pretty well. Learning Physics and Animation has given me a new way to look at and represent the world and right now my goal is to learn more about both of them.
I joined the class with a pretty strong media background, all the classes I've taken at Evergreen have been media related. I feel very passionate about it, and it is something I really like working with. I joined this class because I wanted to learn how to animate, and now that I know how to do it I want to become actually good at it. Yes, I have like the work I've done but I know I can do better, for this final project I will try to step my work up to the next level.
This has helped me progress to my learning goals by giving me a new context to think about physics in, and showing me some new things about art, which I've never been particularly good at. I haven't really experienced a change in my learning goals, although I wouldn't mind learning a bit more about art along the way to my original ones, but I have gotten a few new questions, like the different ways physics and animation interact. So far there's some ways that have been explored, but it is questions like: "What are all the ways that something can happen?", that get my brain working. Imagine a flip book that works by

tossing the pages out of an airplane. Maybe the can be attached to the ground by a cycloid shaped wire?
The learning has helped me progress toward my learning goal of being able to understand and relate calculus and physics in large part due to the two section of calculus homework this week. While I am by no means an expert, I am able to see connections like how the first derivative is like velocity and how that relates to the world around us. Now I am excited to see if I can help others make these connections.
I am making connections where I didn't see them before. And I think that is part of the point of an education at Evergreen. We don't just learn new things, we learn how to think about things. By integrating these concepts, by studying science and art, by paralleling physics and animation, we are seeing how the world works and how we may develop understanding of a larger knowledge and use that information and insight to better ourselves, our world, or art, and each other.
This program has given me a newfound love for math that I never experienced before. Until 7th grade, I was always fairly good at math, but when we were placed in "advanced math" or "regular math", my parents requested that I not be placed in "advanced math" because they were worried about my stress levels at the time. High school continued to bludgeon the enjoyment out of math for me by turning it into a purely social experience. After that, I just assumed math was a tool that I would have to use from time to time for quick science calculations, but that I would never really have an affinity for. This program has completely changed my outlook on mathematics. In the last 8 weeks, I have become more proficient at math than I think I have ever been, and that has made me realize that there are more opportunities open to me than I once thought. I want to be able to extend my math education beyond calculus and broaden my toolset so that I can solve a broader range of problems. This has also rekindled my interest in computational biology which I had somewhat given up on because of the math required.
3) This program fits pretty much directly into my learning goals. Coming to Evergreen I knew I wanted to learn everything about moving image and audio that I could. After working with film, video, analogue composing, and digital recording- animation seemed like the final frontier of media that I had not tackled. I also had a goal to try science once more. Physics had sort of got the best of me in high school, and I don't like to give up on things, being able to take physics once more has been a great opportunity for me to increase my learning outside of my normal focus. In terms of modifying my learning goals, this program has helped me to look at science as a tool of art. I will continue to think about physics while animating, filming , and recording.
This type of learning has helped me to develop more of an interest in animation. I came into the program with an initial interest but through the work we have done I am eager to learn more about animation.
Well my leaning goal was to learn everything that I can about both subjects be for leaving this class. So naturally everything that I have learned in this class has helped me and will continue to do so. But my academic goal is to write more comprehensively. The work that I am continuing to do on my integrative essay has helped me make great progress on this goal.
With the seminar readings on what it means to be educated, this program has really made me rethink a lot about my life. I still want a successful career in academia, and a Ph.D. is still my goal. But I don't know why anymore. I question why I feel so compelled to go to school. I feel like I'm just biding time before I do something useful with my life. I suppose I just want to get into more applied uses of knowledge. Studying change and different approached to education has really made me itch for a new set of stimuli, new experiences, and a change of scenery.
My learning goals remain the same. I really really want to work in the video game industry. The math helps as the main goal is to work on the technical aspects of games, to run the numbers as they say. This class has opened the idea of possibly analyzing animation or art as another possible entrance into the industry, with a good background in coding as well as animation I could very well design, and even animate my own creation. Just while writing this paragraph I opened up the careers page on the company I have followed the most and would love to work at. After seeing some of the requirements listed just to be an intern I have been inspired to work harder for this goal. Even now I want to bolster my knowledge of C++ and maybe even consider my own game.
My learning goals haven't changed all that much. I still want to study animation but now I know that things that are traditionally not seen as an art tool can greatly benefit my animation, like physics. The main question I have from this class is: what other teaching that is not traditionally seen as a tool for art can benefit my animation?
This interdisciplinary approach to learning has continued to surprise me with new and exciting subjects or topics to study. I am always looking for new things to study that I haven't thought about or considered and

this learning has helped me progress towards my learning goals. I have not changed my learning goals, but I have added to them. As I had not considered animating in the future and now I look forward to using my camera and creating an animation by using stop-motion photography. The only questions I have so far about the program is how will we continue to build on the knowledge and intersectionalities of the program themes in the up and coming quarter.
I came to this school because of the animation programs and facilities. Through this program I've been able to take a deeper look at the work involved with animation and understand the time it takes and I have come out of it loving the process even more. Rotoscoping in the lab into the early morning hours is an experience I would not trade for anything. At the same time the program has reawakened my love for the sciences an even some enjoyment for problem solving through math. I know in approaching future programs I'll be looking to recapture this mix of arts and sciences.
have never really wanted to consider anything like learning goals (before), but being in this program has helped to create some new ones. I want to make more cross-disciplinary connections, for one. I have a hard time learning about things I don't find interesting (a common problem, of course), but still I hope to study these things I find dry. By making connections outside of the 'subject' and digging deeper into the subject itself, I can be interested enough to learn about these things I have disliked in the past. I always thought it was pointless to try and enjoy certain parts of math by relating them to something else - if you don't like this math, that's it. Math is math, relating it to something else to appeal to people who don't get it is weak. Now I don't care about that. Bring on the connections, whatever.
This learning has helped progress me towards my learning goals by giving me the opportunity to practice animation and use the physics concepts we've been learning in a very real way. I want to go into the field of animation, this learning has helped give me a new breadth of information and a new lens at which to approach the future work I create. This experience has influenced my learning goals by showing me that with hard work and motivation, anything is possible. It has been especially helpful to read the stories about individuals working in these fields. I have a lot of new questions when it comes to working in the industry field of animation. I'm interested to learn about the software used and how some effects are created. I'd like to simply explore more.
My learning goals were rather simple ones. I did not set out to master a field; fro I do not know what field to master. My learning goal is to learn. Explore and perhaps seek out something that I do want to devote a life of understanding to. I have found a new appreciation for the work involved in animating and an appreciation of it as an expressive and dynamic art form rather than a tool of the entertainment industry. I have confirmed that science particularly, mathematically based ones were not nor will be my best suite.
. I believe the information/skills I have learned have changed me slightly from the person I was 8 weeks ago. I see the world as vectors and forces, not objects unexplainably moving through space; I have a better understanding of our world and it is great! My learning goals are all based off of my success in this and later courses, therefore they have not changed because I plan on successfully completing this program. The main question that I have about all the information is what is the practicality? How will I use the information learned in my daily life?
My learning goals since the beginning of my studies include art and science as cross disciplinary coursework. My first year program included: natural history, ornithology, geology, botany, drawing and film production. My second year included: film studies, film production and technical proficiencies, film editing, critical theory related to film history and moving image, anthropology, 16mm and 35 mm direct animated film, cultural anthropology and the study of ruins. This year my focus on physics, art, and animation are meeting my goals. I am demonstrating this through creating animated moving images, applying my understanding of both physics and art to those projects, and by challenging myself to continue to take risks with my drawing and animating skills. I would also say that as much as I find the problem solving portion of physics to be my biggest challenge yet at Evergreen, I am engaged and entranced by the concepts. This engagement has increased my understanding of how things work in our world. I want to know more about time space continuum. I will probably not become an astrophysicist, but my curiosity about what is out there drives my determination to improve my understanding of physics. Regarding Animation, the wealth of animators to learn from, techniques to explore and time to practice

working on my art is key to meeting my goals.
Trajectories and the combination on physics, animation, and calculus have helped me towards my learning goals. First, I am interested in majoring in physics, therefore it has given me experience in the field I am interested in pursuing. It has also shown me connections between the visual media and physics I did not know existed. I am now starting to think about applying physics to media and potential job opportunities in that subject area. I have been interested in minoring in computer science; therefore this new found connection has made think a lot about different ways to intertwine physics into potential fields of interest. I think one of the biggest questions I have now is what other connections between physics and potential fields of interest are there and how do I go about uncovering them. In my last class, during the spring I was able to make a connection between physics and geology, by thinking about seismic activity.
I haven't learned enough there is much more to learn, but I need to step and embrace myself for the carnage of learning. The ending question that I have is not from the work but it's from me and it's; can I keep up and how did I get so far?
3. While it's done little to increase my desire to be a hand-animator (other than making me less daunted by frames and cells and more just plain terrified of repetition, inaccuracies, and light boxes, being able to actually bring my drawings and ideas into as close to life as I care to imagine has sparked a greater interest in his kind of work than truth be told I started out with when I applied to this program. It must have something to do with actually coming back from all this with results and end products, which is a pretty big change from the planning and incomplete projects I often saddle myself with.
The more familiar I have become with animation, the more I have come to see it as a meditation on motion, spatial relationships, and form. These are the key components of the worldview that physics seeks to provide. Animation is a visual language of the purest kind. Our vision-oriented brains are primed to drink in moving images, making it an excellent means of communicating across cultures, ideologies, ages, and eras. The only more universal language I can think of is that of science, expressed as pure ideas – namely, mathematics. The more this program has tackled the process and products of science, the more curious I have become about logic, mathematics, truth, and information. I wish to learn more about how we communicate, how we collectively assimilate ideas, and how we reassure ourselves that we are truly communicating at all.
I am incredibly interested in learning physics, and applying the knowledge in animation. I have modified my goals as far as the animation is concerned. I would like to continue to work with animation and make projects that exemplify astronomical ideas and phenomenon. I see the animation as an incredible tool in solidifying concepts from class. I would like to animate calculus and physics problems from my own learning perspective in order to teach and encourage children and adults to think mathematically and physically in their daily lives.
It has not changed or modified my goals in any way, but made me more serious about the realism in my animation.
Learning physics and animation at the same time has helped me to gain experience in representing and understanding motion. Representing and understanding motion is a big learning goal for me in order to pursue using physics in my career after college. I have learned a lot about physics and mathematics in this program. I've learned about motion such as that in a straight lines, circular, pendulum, and oscillatory motion. Through Calculus I've learned about rates of change which also has applications to physics and understanding motion. In the animation I'm working on now I did video analysis on the motions within several animated films and created a series of graphs to represent those motions. I'm now going to apply those types of motions to my own animation.

What habits, ideas, or information have you had to unlearn?
I've had to unlearn a lot of art-related habits, mostly in regards to pencil and tool use. Up until this point, I'd been holding my pencils in a very inefficient way. I've also learned about varying line quality. In addition, the work in contour drawing has really helped me to improve my eye-hand connection.
I came into the class valuing style more than content, because throughout high school I was able to create beautiful products that were not very well researched, but no one noticed because they were blown away by the presentation. This class made me realize that you really can't do that in animation. I think it was Mclaren who said that good animation comes before good art. I've been trying to relearn how I create things by spending more time on the structure, and then making it look good if I still have time.
Well in calculus, since it was my first time. I learn that specific formulas and equations are not so easily remembered. In the beginning I felt that I had to reboot my brain and start fresh with all my mathematics knowledge.
I've definitely had to stop making assumptions about physics. For example, our first exam featured a problem regarding the motion of a pendulum and the direction of its acceleration vector. I initially assumed that the vector would always point center due to the arcs of the swings reminding me of circular motion. As a result, my answer came out incorrect. Likewise, the physics chapters have completely gone against previous assumptions of mine; I already mentioned the bit about free fall acceleration always pointing downward, but I never would have guessed this beforehand! As for animation, I've had to learn to simplify the line work if I want to get the assignments done on time. This rings especially true for this class due to the sheer number of projects given during these ten weeks. It's tricky because I like more complex designs, but my first piece took hours to complete due to the detailed character, and even that design wasn't as complex as others I've created in the past. As a result, I'm having to unlearn drawing detailed character models if I want to get the work done fast; this is something I'm working on for the final project, in fact.
I have not so much as unlearned as realized my stylistic approach to drawing, that is, my dark think outlines on my figures, are extremely hard to animate because they are almost impossible to replicate between each of the frames. As much as it represents me and my own personal style, it would be much easier for me to animate if I could tear myself away from that personal touch I love to add. Also, especially with physics, not everything is as it seems. Now as we are getting into our vector and forces work, a lot of it seems like wait what, how can that be true if this object obviously moves and appears to have this force acting this way, when in reality its acts opposite to what you would make sense of in your head. So with physics, you kind of have to forget everything you think you know and relearn what actually happens in the physical world, you have to detach your visual understanding of the world from your mental understand of the world and have a physics brain turn on with a make sense of everything brain turned off. You just have to be willing to trust that what you're learning is true and it does in fact make sense of the world, even if it doesn't seem to make sense in your head, it is actual physics.
I had to unlearn that I can't do calculus. Not only can I do it, I actually enjoy it.
4. I am currently working on unlearning my great skills in procrastination. I am really good at putting things off till the last minute and it's something that I need to change. Paired with my skills in procrastination is my terrible habit of rushing through things. Once you procrastinate long enough you run out of the time that you could have used to make your work better. Both are habits that I'm working on but I haven't gotten rid of yet.
I have been making better use of my time, since we have such long breaks I've been using that time to read, draw, or write. This has become a habit of mine now, when I have time to spare I often do school work.
For unlearning things, I think the biggest one has been the importance of homework. In my old math classes, homework had been devalued in the grading system, so much so that some teachers didn't grade it all. The point of homework in that system was that it was optional, either you did it and learned what you need to, or you didn't and didn't. If homework wasn't the best way for you to learn, you didn't have to do it, but if you bombed the test you needed to show the teacher that you had done homework in order to re-take the test. So, actually remembering to do math homework was something I had to learn in a very short time. And I still forget until the last moment sometimes!
I have had to unlearn just relying math to answer a problem, you need to draw a picture even if you think

you don't need to you do!!
One habit that has transformed for me is my use of my intuition. In some cases at study, it is very helpful. In others it is not. When I have worked some math problems, and have come down to an answer, sometimes it may just feel wrong. This, I must listen to. I can go back through the text, back through my notes, and ask an instructor or student for aid. But, always, for listening to these feelings, of mine or fellow students during group study, it turns out true. Something is not right, some piece of information is overlooked, or a brand new equation is not accounted for in the work. When intuition is not so helpful is when figuring out something like acceleration, or force to produce movement. A question can be put, "What is the acceleration of a 10 pound box, and what is the force that moves it?" You can think, you can draw a picture, you can plug numbers into equations. But what won't necessarily get you started is to feel your way about it. I really usually get a blank. Or a guess, in which case it is a gamble to stick to a guessed answer. Sometimes intuition is misinformative. So intuition is still a guide, but now in a more pragmatic way than ever.
I am still in the process of trying to unlearn my inner critic when drawing the first round of sketches for an animated sequence. In most areas of my life, particularly around education, I am a perfectionist. This has been a barrier in animation because it has prevented me from getting into a purely creative space and just making new things because they don't look quite right. I have found that when I am able to let go of that voice that is telling me that what I have made isn't "good enough", I am able to make interesting mistakes that lead me to new ways of drawing. I have also had to unlearn what I though math was for. Prior to this class, I thought of mathematics as a collection of procedures used to accomplish interesting things; a necessary evil for those interested in the sciences. I have since come to realize that mathematics can be deeply interesting in its own right and have their own fascinating questions to deal with, separate from other fields.
4) The big "un-learning" I have had to undergo is how I used to completely disregard science while doing creative work. The unlearning came natural, because most of my silent treatment towards science came from me not fully understanding it. This program has helped me to not shy away from physics, but to use it as a tool in my creativity.
I have had to readjust my strategies when reading text in this program. Before I would usually read a text book, article, or essay one time through. I have developed a better strategy now enabling me to gain more understanding of what I am reading. It's been an adjustment to stop while I am reading and take notes in the margins and to re-read the text several times and mentally summarizing what I have just read.
When we started to work on the subject of force I feel like I had to unlearn how I thought about the way object interact with each other. An example of this would be a problem that had to do with a baseball and a bat and which one had the greater force. Because of newton's second law they had to be equal. But my logic told me that because the ball, after making contact with the bat, flew in the opposite direction that the bat had to have more force. What helped me figure it out was that the bat had in additional force acting upon it, which was the batter. This unlearning has helped me better understand how force works in physics.
Similarly with the rest of my college (maybe school in general) career, I have been combating procrastination. I've had to really change my recreational substance use habits. Most of this class, however, has only added onto my knowledge.
Early on my physics was rusty and I was trapped in some silly ideas such as that the mass of an object might make it fall faster. Other than that the only thing I really had to get down was that for animation the quality of my drawings is not as important as how well they are animated. I always have these grand ideas for beautiful art in my head but when it comes down to it the quality of animation, it's the motion that matters.
Unlearning can sometimes be harder than learning. The main thing I had to unlearn was my hatred/fear of math. I have had many bad experiences with math that lead to me to believe I wasn't any good at it. But being in this class helped me realize that I'm not bad at math at all. I especially benefitted from the Lockhart reading about the troubles in the way math is being taught in our society. It helped me realize that my previous hatred for math was valid and that real math shouldn't be a series of memorizing

useless equations, but a way to become a creative problem solve. Also, somehow over my short one year break from animation I had gotten the idea that there are short cuts in animation. NOPE. The only way to create good animation is to understand motion and be extremely patient. It also helps to have a lot of free time.
As most of other students, I have had to unlearn many physics ideas I thought were correct. Like the swinging pendulum. I thought that the acceleration vector would always point towards the pivot point but instead the acceleration vector points to the left if the pendulum is at its heights point in its swing then the vector points towards the pivot point at the lowest point of its swing, etc.
I had to unlearn shame over things that are resultant of only my own faults. I'm not sure if that is a good thing… I also had to unlearn my dislike of kinematics. I've had to try and actually do my work on time, and stop rushing in wait for the day to be over and letting non-solidified work - assignments on paper and in the mind, assignments that take place when I am away from class - float away.
I've had to unlearn the idea that animation has to be aesthetically pleasing. The idea that art is tied to animation was a huge misconception I had. I've learned that it's really about the movement that takes place and how successful that is. I've also had to unlearn the idea of perfection and knowing that it's okay to make mistakes and ask questions.
I have had to unlearn compartmentalizing. Things are so intergrade and cohesive that, it is not possible to think of each thing as an individual concept but must be observed as a whole. A lot of preconceived notions of two subjects not belonging together had to be re-processed.
Since this is my first year straight out of high school there have been many practices I had to give up and acquire. I used to skate through school, only doing the bare minimum of work and I would still end up with pretty decent grades. That simply won't work here. It has been pretty tough for me to get in the routine of devoting hours each night to school work, but it has to be done.
My study habits are sound, but this year I have had to adapt to the rigors of solving physics problems, relax about my learning curve, start a bit earlier than normal in reading. I have been able to reach out to several peers regarding solving problems and each time I have had success on different levels. I need to take more risks with my drawing and animating style. I found I rely on pencil too much. Love that erasure. Now I am looking at different drawing implements, trying out new papers and am considering using watercolor in my last project.
I have had to unlearn the idea that art and science are separate fields. I have also had to unlearn that the weekend is for relaxing, "well it isn't!"
One habit that I have to work on his procrastination, it's like no matter what I do I try to hold things off until last minute. The achievement from this is that I'm going to fail.
4. Getting nervous and embarrassed has been a tremendous problem over the years, and especially in the animation portion of the class, it's become increasingly pointless and unimportant. My personal stickler definitions for ideas like avant-garde have been contested and overthrown on multiple occasions.
I have been un-learning a lot of my old, poor study habits - which is a bit of a surprise, considering how long I have been grappling with many of them. My work ethic has improved dramatically, and I have been able to keep up with readings and homework far better than in previous years. I have been re-visiting many ideas that I have been taught or studied on my own before, and many of them are richer or subtler than I remember being told the first time around. The idea of action-reaction pairs was strangely stimulating, considering that I thought I already knew about it. The idea of vector components seems obvious in hindsight, but provided new and useful perspectives regarding acceleration and velocity. In animation, however, my biggest surprise has been having to shift my priorities from detailed, complicated graphism to an acute and honed sense of relative motion, balance, and distilled imagery.
I have had to resist the desire to overcomplicate my projects in this heavy class. My initial inklings have been to make extravagant animations and drawings that I do not have time to complete considering my busy schedule. I am learning to find value in learning the basics very well by creating simpler projects
Unlearned habit: No sleeping, No eating, just drawing.

Imagine over Thanksgiving break a member of your family or a friend asks you what you have done and learned in college this quarter. In 50 words or less, what would you tell them? (As an additional challenge, what can you compose in 140 characters or less?)
I am gaining a joint education in physics and animation, with the intention of pursuing a career in the latter.
I'm in an interdisciplinary class that combines physics and animation. This means analyzing animations to see how they obey the laws of physics, and creating animations that show a specific motion.
What I learned through Trajectories in animation, mathematics, and physics. Calculus and physics does have a role in all aspects in art animation such as 2-d, 3-d, cartoon and manga.
I have learned that animation takes physics and utilizes them either through abstraction, accurate representation, or a combination of both. From this I've taken physics and used my new knowledge to make my own animations.
I have been learning about animation and physics and how to combine them. Putting physics motions into my animation and have my animation help me visualize my physics work; they actually go hand in hand. I have improved my animation and visualization skills a lot because of it.
I'm studying the way art and science merge by combining physics, calculus, and animation.
5. During this quarter I have learned physics and animation. Through both I have learned techniques for understanding and representing motion.
I have learned about the relationship between physics and animation, and how they work with one another in the real and animated world. They both complement each other and it is important to learn how closely they are connected.
140-character-or-less version: I learned to model any kind of world I want; either with math or a pencil. 50 words: Basically, I've been learning how physics, calculus, and animation come together to provide models of the way things move and change. The best part is using them to model the real world, or making up crazy ones by tweaking the numbers, or even ignoring them, for a while.
I have learned how the physics that you see every day can be manipulated to produce different desired effects in animation and how calculus can help explain physics.
In telling people already during this quarter what I am up to I have relayed that I am studying more math, new to physics, and animation. And that I didn't see the connection before, except that I'm a musician and I know math is very much part of sound and composition, and that any art must have relation or basis in math. With that in mind, there are fascinating correlations with animation and physics. They always understand, smile, and nod.~
I've been learning the fundamentals of non-digital animation, classical mechanics in physics, and differential calculus.
5) I have been using animation and physics as complementary art forms to both strengthen the believability of my animations, and pictorially show laws of physics. In doing so you are able to see that there is no bridge between art and science, but rather they are the same thought and process, only the product is different. (sorry seven words over)
Coming into the program I thought little about how animation and physics were related. After the first quarter here I have a better understanding of the important relationship physics and animation have. There are physics concepts that animators need to know and understand in order to create good animation. The laws of physics are broken in a lot of animation, yet an animator needs to know and understand physics before they can break them.
I have been learning how the world works, and how to animate through through my interdisciplinary study of Animation and Physics.
We have studied change. Change, of motion, of styles of animation, and how to accurately model it (via graphs/ functions, or animation).
Art and math are not so different, animation relies on physical interpretations of the world, math can be be interpreted as an art form.
Studying motion through physics has greatly benefited my animation. Through physics I have had the opportunity to critically examine subtle, everyday motions in a way I don't think I could have without physics.

I would tell them: I have been studying the intersectionalities and relationships between animation, physic and calculus. Using the calculus to understand the mathematical and mechanics behind the concepts and ideas learned in physics, then using animation to express and demonstrate the learning that has taken place.
We've been looking at kinematics for describing motions and applying our knowledge to building a better understanding of movement in animation.
We have been working to relate animation and physics - how to look at the disciplines through a similar lens... Been doing some animation, some physics (and some drawing) - putting it all together -
I've expanded my knowledge on animation through screenings and projects, while using my newfound understanding of physics concepts to interpret it.
I draw better, can make those drawings move and tell you why such a movement behaves as it does.
TWEET A cross disciplinary program like TAMP provides an opportunity to experience the connection of art and science in practical applications. I am taking a cross disciplinary program like TAMP because I believe in order for people to grow and be successful, each individual in school needs to understand how to connect different aspects of our world. By studying physics, drawing and animation I can demonstrate that connectivity and how we all can see the similarities. Those connections are key to evolving our understanding of the world and each other.
I have studied physics, calculus, and animation. I have learned the ties between them and formed new ideas about the subject areas. I have developed animation techniques in various media.
Due to my disabilities, I was unable to learn a lot, however I was able to learn how to make animations in many different ways
5. Starting to get the basics of both simple animation and physics, and am learning how to animate with cutouts, cells, and direct animation. Physics is coming more naturally, which is odd because I never figured math would make sense again. I'm quite a way off, but am hopeful.
I have been learning about representations of motion and models of change in the world, approached through physics and mathematical modeling, and using the practice and principles of animation as a tool for better understand how we perceive and depict motion.
I learned how to use professional animation lab equipment that allows me to produce animated movies! I learned in physics how to draw vectors and motion diagrams and analyze movement using equations or a program called Loggerpro, and from that can study specific artists' works and kind of "get inside their heads." I can attempt reproduction and in so doing, learn step-by-step how to create my own animations. With practice I will develop my own style and passion for the art and physics of animation
Animation director.
I've learned about how to represent motion through animation, and to understand many types of motion through physics. I've also learned about forces and how to use them to understand interactions between objects. I've also improved my writing through weekly seminar assignments and one longer essay about how animators use physics to create what is funny. Through calculus I've greatly improved my understanding of mathematics