

Passion and Mathematics Project

This project will help you discover the mathematics inherent in your passion. You will choose three different things you are passionate about. This could be anything (that is school appropriate). Think about what you love to do - dance, soccer, skateboarding, sing, play a musical instrument, etc. You will make a video showing your passion and explaining the mathematics behind it. Make your video entertaining, mathematically accurate, and be sure we can hear you! When recording, be sure to hold your camera sideways for the widescreen view.

You will create a group of your choosing. There can be two to four people in your group (including you). Your group will either have the same passion or the same mathematics. The mathematical concept needs to be something we have covered or will cover in this course. Your group will also create a name for yourselves – be as creative as possible! **The video shall be two minutes in length.** It is okay if you go over or under by ten to fifteen seconds. Do not make a video that is too short or too long. One point will be deducted for every 15 seconds over or under the time limit.

You will be graded on multiple categories. The categories are: mathematical accuracy (procedural, conceptual, and verbal), storyboard, mathematical concept, production, educational value, and entertainment and collaboration. Look over the rubric and note that the mathematical accuracy categories are worth double the points of all other categories. The description of each category is below.

Mathematical Accuracy (Conceptual)

Be certain that your video addresses conceptual aspects that are pertinent to the mathematical concept and the passion you choose. For example, you do not need to explain every step but say your concept is the Pythagorean theorem – do not only say you are using the theorem and show the formula but instead address the “why” and “how” questions like why is it related to your passion and how does it work...

Mathematical Accuracy (Procedural)

When designing and producing the video, be certain that every mathematical step in the procedure and conceptual description is accurate. Watch for common mistakes like not including the positive and negative values if you take the square root of both sides of an equation, simplifying, inaccurately, and making sign errors.

Mathematical Accuracy (Verbal)

You should talk (or sing or rap or...) during your video. Pay attention to the accuracy of your words. For example, if you are talking about the hypotenuse of a right triangle, do not refer

to it as the leg. Also avoid using terms like “cancel” or “cross multiply,” and other common terms that are conceptually inaccurate.

Mathematical concept

Your group will choose one mathematical concept that your video will focus on. The concept has to be something we have already covered in this course or will cover in this course. Do not choose a concept from previous years or previous courses. The video should help students in this class learn a concept from this class.

Storyboard

Your group will create a storyboard – a plan for the video. You do not need to script everything verbatim. You will need to provide a plan. Have the problem worked out before you record the video. Identify certain possible procedural and conceptual misconceptions. Know who will do what in the video. You will turn in your storyboard for approval before you record your video.

Production

When recording, hold the cell phone sideways so it records in widescreen mode. External microphones are wonderful as they ensure that the video is loud enough for people to hear clearly what you are saying. The video should be in focus. You are strongly encouraged to re-record and/or edit the video as you see fit.

Educational Value

The students in the classroom should be able to learn your mathematical concept from the video. You do not need multiple examples. You do need to ensure that when someone finishes watching the video that they conceptually and procedurally learn something about mathematics while understanding and appreciating your passion. After students watch the video, your group will be asking them questions about the video to check for this type of understanding.

Entertainment and Collaboration

Every group member should be involved in the production and planning of the video. Every group member should be in the video or we should be able to hear them at some time. If someone in your group is shy, they could be the one working out a problem or making a brief appearance. The video should also be entertaining. If I fall asleep before the end of your two minute video, it is not entertaining! Remember, you want people to want to watch your video. Be creative with your ideas! Be passionate about your passion.

Math Video Rubric

Category	6 points	4 points	2 points	0 points
Mathematical Accuracy (conceptual)	The video is conceptually accurate with no mistakes.	The video is mostly conceptually accurate with one or two minor mistakes.	The video has major conceptual mistakes and/or has three or more minor mistakes.	The video includes no conceptual aspect.
Mathematical Accuracy (procedural)	The video is procedurally accurate with no mistakes.	The video is mostly procedurally accurate with one or two minor mistakes.	The video has major procedural mistakes and/or has three or more minor mistakes.	The video includes no procedural aspect.
Mathematical Accuracy (verbal)	The verbalization of mathematics is accurate with no mistakes.	The video is mostly verbally accurate with one or two minor mistakes.	The video has major verbal mistakes and/or has three or more minor mistakes.	The video includes no verbalization of mathematics.
Category	3 points	2 points	1 point	0 points
Mathematical concept	The mathematical concept identified is developmentally appropriate for the course.	The mathematical concept is within one grade level of the standards for the course and/or has one minor error.	The mathematical concept is within two grade levels of the course and/or has two or more minor errors.	The mathematical concept is missing.
Storyboard	The script is supplied, the story is mapped, the mathematical concept is identified, the passion topic is identified, the problem is worked through, and the team name is identified.	One or Two of the six criteria for the storyboard are missing and/or two or more portions of the storyboard are unclear.	Three to five of the six criteria for the storyboard are missing and/or three or more portions of the storyboard are unclear.	The storyboard is missing.

Production	The video is clear and shot in widescreen version. The video is turned in via a format that can be accessed with PC or Mac video players. The audio is the proper volume.	One of the three criteria for the production is poor.	Two of the three criteria for the production are poor.	All of the criteria for the production are poor.
Educational Value	The audience understands the procedural skill(s) for the lesson. Students understand conceptually what the lesson entails. Students can identify any pertinent information (such as a formula) from the video.	One of the three criteria for the educational value of the video is unclear or missing	Two of the three criteria for the educational value of the video are unclear or missing.	All of the criteria for the educational value of the video are unclear or missing.
Entertainment and Collaboration	The video is entertaining in that it engages learners and encourages them to watch. All group members have a visual and/or auditory presence in the video. All students collaborated while making the video.	One of the three criteria for entertainment and collaboration is missing. This includes if any one student is not present in the video.	Two of the three criteria for entertainment and collaboration are missing. This includes if any one student is not present in the video. 	All of the criteria for the entertainment and collaboration are missing. This includes if any one student is not present in the video. If the teacher falls asleep during the video, you get a zero in this category!!!
Total				