# Tutorial Competition 2017

The CryptoClub Project is pleased to announce the 2017 CryptoClub Video Tutorial Competition. Students are encouraged to create video tutorials showing their solutions to the cryptography and mathematics problems given on the next page.

**Guidelines**
Tutorials may be made by individual students or by groups of students. Videos should not contain names or faces that would identify individuals. Each video must be less than 5 minutes in length.

**How to make videos**
Any audio-video recording technology can be used, including cameras that record audio and video of solutions as they are handwritten on paper, tablet apps such as *Explain Everything* that capture narrated solutions as they are written on tablets, and screen capture software such as *Screencast-O-Matic*. The last is useful to record audio and video of a problem being solved on the CryptoClub.org website.

**Deadline**
Videos must be submitted by February 20, 2017.

**Judging**
Cryptoclub Project leaders will evaluate tutorials according to correctness of solutions and clarity of explanation. They will determine awards in each of the following categories:
- Most advanced cipher explained
- Best explanation of mathematics
- Most innovative strategy
- Best demonstration using the tools on CryptoClub.org

**How to submit a video**
To submit videos, teachers or CryptoClub leaders should submit the following information to saunders@uic.edu:
- A link, such as a YouTube URL, to where the video can be viewed.
- Teacher's name
- Name and address of school or organization

Winners will be announced March 10, 2017.

**Viewers' Choice Award**
Participating clubs will have the opportunity to review the videos to determine a Viewers' Choice Award. If you would like your videos to be considered for this award, please give us permission to make the link(s) to the videos available to all the other CryptoClubs entering the contest.

# 2017 CryptoClub Tutorial Competition Problems

Choose one of the following problems as the topic of your video tutorial. Think about what parts of the problem might be confusing for others just learning about the subject and focus on those parts as you explain your solution. Your video must be less than 3 minutes long, so you might not have time to show the complete solution. However, you should show the final solution and all critical parts.

**Math Problems:**

1. Explain how to reduce 345 mod 26. Include the reasons your method makes sense. Explain to your audience why this type of problem might come up in cryptography.
2. Give examples of numbers that make good keys for multiplicative ciphers and examples of numbers that do not make good keys. Explain what makes them good or bad keys. Your audience is students who are just learning about multiplicative ciphers.
3. Show how to construct the cipher table for an affine cipher with a key of your choice.

**Cryptography Problems:**
Crack one of the five messages on the 2017 Tutorial Competition Message Board on CryptoClub.org. Show how you cracked it in a video. Be sure to reveal the key and tell how you got it. To view the message board, go to the Challenges section of CryptoClub.org. Then, click the "Join a Group" link under the My Group Messages tab. Use the following information to join the 2017 Tutorial Competition Group:

   Group ID: 953
   Password: video