

# Guide for New Team Advisors

**Welcome to the Math Video Challenge!** Thank you so much for serving as a team advisor this year. We've created this Guide for New Team Advisors to help get you acquainted with the Math Video Challenge and to explain your role in this program.

If you have questions at any point during the program year, please feel free to contact the MATHCOUNTS national office at (703) 299-9006 or [info@mathcounts.org](mailto:info@mathcounts.org).

## The Math Video Challenge in a Nutshell

The **Math Video Challenge** is a national program that challenges students to develop their math, communication and technology skills in a collaborative video project. Created in 2011, it is a completely free program and is open to all sixth-, seventh- and eighth-grade students. Students can participate through their school or through a non-school group.

**HOW DOES IT WORK?** The Math Video Challenge is designed to be a fairly flexible program, meaning your students will spend more or less time participating in the program depending on how much they decide to do with their video project. Here's what a typical program year looks like.



**During the fall/winter students work in teams of 4 to create a video based on a MATHCOUNTS problem.** The students must solve a problem from the *2018-2019 Math Video Challenge Playbook* ([pg. 15](#)) and show a real-world application of the math concept used in the problem. Videos can be no longer than 5 minutes; most videos are between 3 and 5 minutes in length. Students post their completed videos to the Math Video Challenge website.



**From mid-February through mid-March, the general public votes on the videos and the 100 videos with the most votes advance to the judging rounds.** Students can vote for their own video as often as once a day during general public voting, and they also can ask their friends, family members and school community to vote. Teams that submit videos by the Promo Prize Pack deadline in February receive a free pack of materials to help them promote their video.



**A panel of expert judges reviews the top 100 videos and selects 20 semifinalists to advance to the second round of judging.** Semifinalists are announced in late March; semifinalists receive certificates and recognition on the program website.



**In early April, expert judges select 4 finalist videos to advance to the Math Video Challenge Finals.** The 16 students who created these 4 videos, as well as each team's advisor, receive an all-expenses-paid trip to the MATHCOUNTS National Competition, where they present their videos to the 224 Competition Series national competitors.



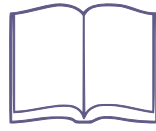
**At the Math Video Challenge Finals in May, the 224 Mathletes at the National Competition vote to determine the First Place Video.** The 4 students who created the winning video each receive a \$1,000 scholarship. All videos created during the contest are added to the [Math Video Challenge online archive](#), providing a free educational tool for students and teachers.

**WHAT IS EXPECTED OF THESE STUDENT-MADE VIDEOS?** Each video is different and your students will no doubt come up with lots of different creative ideas for their video. The Math Video Challenge gives students a lot of flexibility when it comes to the layout, production and content of their videos. The only requirements for the student videos are:



**Video Is Created by a Team of 4 U.S. Students in Grades 6-8**

More students can appear in the video and the team can seek help from others, but only 4 students are official team members for a video.



**Video Solves a Problem from the 2018-2019 Math Video Challenge Playbook**

Students can choose any of the 250 problems from this year's playbook (pg. 15). The video must explain the solution to the problem.



**Video Shows a Real-World Application of Math**

Videos must show how the math concept explored in the handbook problem could play out in the real world.



**Video Is No More Than 5 Minutes Long and Contains No Copyrighted Material**

Videos cannot include copyrighted material—such as music, images or video clips—and must meet time requirements.

When trying to gauge the calibre and general format of videos submitted to this contest, a good way to start is to watch videos in the **Math Video Challenge Archive**, including past semifinalists, finalists and winners. This archive is available at [videochallenge.mathcounts.org/videos](http://videochallenge.mathcounts.org/videos). You'll notice that the quality and style vary significantly from video to video, but all submitted videos are clearly student-made. It's a good idea to show your students some archived videos, so the idea of creating a video does not seem daunting.

**HOW ARE VIDEOS EVALUATED IN THE CONTEST?** In the first round of the contest the top 100 videos are determined solely based on general public voting. The 100 videos that receive the most votes between February 13 and March 14 (Pi Day) advance to the judging rounds. During the judging rounds, videos are evaluated based on the following criteria, in order to select the 20 semifinalists and then the 4 finalists.



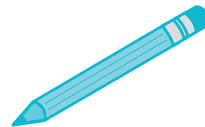
**Creativity**

Is the style well-suited for the audience/middle school students?  
Is the story engaging?  
Is the video memorable?  
Does the video show imagination?



**Communication**

Is the math communicated clearly and logically?  
Is time used effectively?  
Are important ideas emphasized?  
Is the video easy to understand and follow?



**Mathematical Accuracy**

Is an appropriate approach to solving the problem used?  
Are there any errors?  
Is the solution explained clearly?



**Real-World Application**

Does the video present a clear, real-world application of the math concepts in the problem?  
Is the real-world scenario believable?

A detailed sample assessment tool is included on [pg. 50](#) of this playbook. You can use this to evaluate the video your students create if you are using the Math Video Challenge as a group project assignment in your classroom instruction, for example, or give it to your students as a guide.

## The Role of the Team Advisor

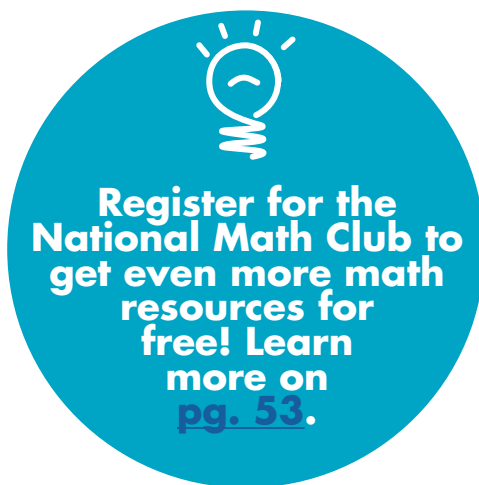
Your role as the team advisor is such an important one, but that doesn't mean you need to be a math expert or treat advising a team like a full-time job. Every team is different and you'll find the style that works best for you and your students. Some students may need more help completing this project than others. But in general **every MATHCOUNTS team advisor must do the following.**

- Initiate the registration process online and oversee the process to ensure parent/guardian approval is obtained for all 4 student team members.
- Provide guidance and suggestions, as needed, to the students working on videos.
- Ensure students are aware of program deadlines (such as general public voting and video submission).
- Review the students' video to ensure the content is appropriate and approve the video online so it can be officially submitted to the contest.
- Accompany the students to the National Competition, *if the students' video is selected as a finalist in the contest.*

*You don't need to know how to solve every MATHCOUNTS problem to be an effective team advisor.* In fact, working through the solution carefully is a crucial part of the Math Video Challenge program. Chances are, you'll learn with and alongside your students throughout the program year.

*You don't need to spend your own money to be an effective team advisor.* Your students do not need expensive video equipment to participate in this program. Many videos submitted to the contest are filmed on smartphones. There are also lots of free video editing software programs you and your students can use. Many students and teachers also have used equipment and software for free through their school's media center or a public library.

The next sections of this Guide for New Team Advisors will go into more detail on what participation in this program entails and how to create a video using the free resources provided by MATHCOUNTS.



## What Participation Means in This Contest

The Math Video Challenge is designed to work for lots of different groups. What participation looks like for your students will depend, to some extent, on how far they hope to advance in the contest. This section will go into a little more detail about team formation and registration, as well as video submission and approval.

**WHAT DO I NEED TO KNOW ABOUT FORMING A TEAM?** Because of the nature of this contest, the way Math Video Challenge teams are formed is different from typical math competitions. Here is what is most important to keep in mind when establishing a team for this program.

- A team in the program consists of exactly 4 students.
- Students can be on more than 1 team. For example, if you have 6 interested students, they could form 2 teams, with 2 students participating on both teams.
- A team can create more than 1 video. A team of students can make as many videos as they like.
- Teams cannot combine to make 1 video together. The minimum number of videos created per team is 1.
- A team advisor can oversee more than 1 team. For example, some math teachers will make the Math Video Challenge a group project that is included in their classroom instruction. In these cases, 1 teacher serves as the team advisor for multiple teams.

When forming a team, it's a good idea to consider different students' skills, interests and strengths. For example, one student may take the lead on script writing, while another student may write an excellent solution to the problem. Part of what makes this program great is that it allows students to collaborate and showcase a diversity of talents...take advantage of this when forming teams!

**HOW DO I REGISTER A TEAM?** The online nature of this contest necessitates that each of the 4 student team members get permission from a parent/guardian to participate. This adds an extra step to the registration process, but it's a really important one. Here's how the Math Video Challenge registration process works:



### Team Advisor

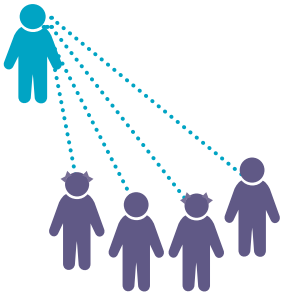
#### **Team advisor registers at [videochallenge.mathcounts.org/register](https://videochallenge.mathcounts.org/register).**

The team advisor must have a working email address in order to register a team of students for this program.

ADD TEAM

#### **Team advisor creates a new team on the program website.**

A team advisor can lead more than 1 team. If you are leading multiple teams, you would repeat this step (and each subsequent step) for each team, so all of your teams are linked to your team advisor account.



#### **Team advisor requests parent/guardian permission for each student team member—either online or offline.**

When you create a new team, you'll indicate how each team member's parent will give permission for his/her child to participate.

- *Online Permission:* The team advisor provides the parent's email address online. MATHCOUNTS emails the parent a link to an online permission form.
- *Offline Permission:* The team advisor provides the parent's first and last name online and then gives the parent the Offline Permission Form (the form is included in this playbook on [pg. 52](#)).



#### **Parent/guardian of each student team member completes the permission form—either online or offline—and submits it to MATHCOUNTS.**

Instructions for submitting this form are provided to the parent/guardian.



#### **Team's registration is complete once parent permission is received for all students on the team.**

MATHCOUNTS will email a notification to the team advisor once the team's registration is complete.

**WHAT DO I NEED TO KNOW ABOUT SUBMITTING AND APPROVING A VIDEO?** After your team's registration is complete, you'll receive an email confirming that your team is registered and can submit videos online for the contest. Included in this email will be an **access code for uploading videos**, which is unique to your team (if you are leading multiple teams, then you'll get an emailed access code for each team you register).

Once your students have completed their video (refer to the next section of this guide for detailed information about creating a video for the contest), either a student team member or you as the team advisor can upload it to the Math Video Challenge website.

**If A Team Advisor Submits the Video:** The team advisor should be logged into the Math Video Challenge website. If the team registration has been completed, then the Upload a Video button will appear. Click the button to upload your video to the contest site. After the video upload is complete, you will need to approve the video separately. You cannot approve and submit the video at the same time, and the site will require that you watch the video in its entirety before approving it.

UPLOAD A VIDEO

**If A Student Team Member Submits the Video:** In order for a student team member to upload the team's video, you must share the access code for uploading videos with him/her. The access code is included in an email sent to you after your team's registration is complete, and if you are logged in as a team advisor, it also is listed on your account next to the team's information.

Once the student has the access code, s/he should go to [videochallenge.mathcounts.org/upload-video](http://videochallenge.mathcounts.org/upload-video). S/he should enter the access code and then click the Go to Upload Form button. From there, the student will be able to upload the video to the contest site.

Once the student has uploaded the team's video, you will receive an email notification that the video needs to be approved. To approve the video, log into your team advisor account. You will need to watch the video in its entirety before you can approve it.

## Upload a video for your team

Access Code \*

Enter the access code that you received from your team advisor.

GO TO UPLOAD FORM

It's important to check the content of the students' video before approving it online. As the team advisor, you must review the video to ensure that it is appropriate and follows the contest rules.

## Producer's Checklist for Creating a Video

Creating a video is so much fun and allows students to tap into their technology, art and communications talents while building their math skills at the same time. Although your students will create the video for this program, you as the team advisor will likely need to guide your students or give them suggestions—especially if your students hope to advance to the semifinals or finals.

To make it easier to keep track of what video production entails, we have created a sort of **Producer's Checklist**, based on feedback from past participants about their video making process. We recommend reading through the checklist yourself and sharing its contents with your students.

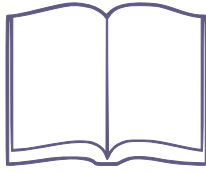
**Please note, these steps are suggestions—not requirements.** Different teams will have different methods for creating a video and you'll find what works best for you and your students. This checklist should be considered a resource for the Math Video Challenge, not a list of requirements.

## THE 10 MOST IMPORTANT STEPS WHEN CREATING A VIDEO:



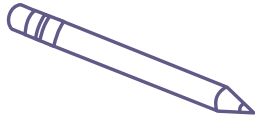
**1. Pick a math problem.**

Use this year's playbook problems on [pg. 15](#).



**2. Write the solution(s) to the math problem**

Explore different solutions to the problem.



**3. Brainstorm story ideas.**

Use the graphic organizers on [pgs. 46-47](#).



**4. Plan out the where, when and how of filming, costumes, sets and editing.**

Get the logistics in order before getting too far along in the project.



**5. Create a storyboard for your video.**

Use the storyboarding template on [pg. 48](#).



**6. Write the script for your video.**

Keep the 5-minute time limit in mind.



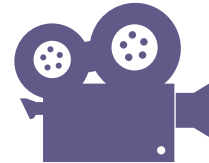
**7. Do a timed table-read and run-through to practice.**

Practice a few times before filming anything!



**8. Shoot your video.**

Be sure to avoid common pitfalls! Some are listed on [pg. 11](#).



**9. Edit your video and add desired special effects.**

Make sure your video does *not* include any copyrighted material!



**10. Show the final product to someone who hasn't seen the video before.**

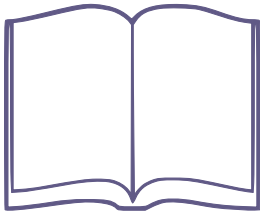
Based on his/her feedback, make any necessary changes.



The remainder of this section (pgs. 8-12) provides a little more detail about each of these 10 steps.



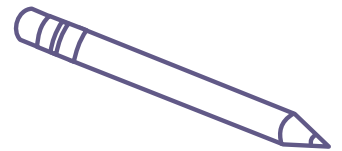
**STEP 1: PICK A MATH PROBLEM.** This may sound like an obvious step, but choosing your problem carefully is very important. When your students are deciding which math problem they want to solve in their video, it's important they think about questions like:



- How would we explain the solution to this problem in our video? How long would it take to explain it well?
- Is there a real-world application we can imagine for this problem? Do we want to create our own real-world scenario or use a problem that already has some sort of scenario?
- Can we come up with an interesting and memorable story for this math problem?

**It's important that your students choose only from the 250 problems in this year's playbook.** You can find the problems in this playbook, starting on [pg. 15](#). You'll notice that the playbook problems do not go in sequential order. This is because we have modified the *2018-2019 MATHCOUNTS School Handbook* to work better for the Math Video Challenge. Instead of separating problems into Warm-Ups, Workouts and Stretches—which are intended for the MATHCOUNTS Competition Series—we have separated them into categories by math topic. If you and your students would rather use the traditional handbook setup, you can access it at [www.mathcounts.org/handbook](http://www.mathcounts.org/handbook).

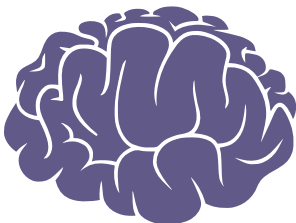
**STEP 2: WRITE THE SOLUTION(S) TO THE MATH PROBLEM.** After your students have decided which problem they want to solve, they should write a detailed, complete solution, which will be the basis of their video. The answers to all 250 problems are included in this playbook starting on [pg. 36](#).



If your students are having difficulty working through the solution to their problem, a great resource is the **Interactive MATHCOUNTS Platform**, powered by NextThought. This free online resource allows students to work through current and past MATHCOUNTS problems, chat with other students about strategies and get step-by-step solutions to all 250 of this year's handbook problems. Students and team advisors can sign up for free at [mathcounts.nextthought.com](http://mathcounts.nextthought.com). Learn more on [pg. 41](#).

Many MATHCOUNTS problems can be solved in different ways. Encourage your students to think through multiple ways to explain the solution to the problem, so they are sure to include the one they believe is best. However, including multiple solutions in the video may make it more memorable, interesting or clear.

**STEP 3: BRAINSTORM STORY IDEAS.** Let your students' creativity loose during this step! Have students think of different scenarios or stories they could use to give context to the math problem they chose. We have included a few graphic organizers you and your students can use to map out ideas ([pgs. 46-47](#)).



This step also lends itself to collaboration, as the students will need to work together to come up with an idea everyone is excited about. Encouraging students to cooperate and listen to each other's ideas will help them come up with great ideas for their video, and also will set them up for success when they need to collaborate later on the filming and editing of their video.

**It's really important to stress to the students that they do not have to use the context provided in a particular problem to create their video.** Students can change the names of the characters, locations, props or objects discussed, and even the activity the characters in the problem are doing. *As long as the same problem is solved, and it is clear which handbook problem the video explains, the students are allowed to change the context of a handbook problem for their video.*

On the next page are a few examples of how a problem could be changed for this program.

### Problem #62 from the 2014-2015 MATHCOUNTS School Handbook:

- *Original Problem Text:* The Statesville Middle School basketball team has 8 players. If a player can play any position, in how many different ways can 5 starting players be selected? (Answer: 56 ways)
- *Example of **Acceptable** Modified Text:* Molly has 8 different paint colors. If she can use any 5 colors for a painting she is creating, how many different ways can 5 colors be selected? (Answer: 56 ways)
- *Example of **Unacceptable** Modified Text:* The Statesville Middle School basketball team has 8 players. If 5 players are needed for a game, how many players are not selected in any given game? (Answer: 3 players)

You'll notice in the acceptable example, the basics of the problem are kept intact. The difficulty level, math concept and steps to solve are not affected by changing the middle school basketball team with 8 players to a girl with 8 colors of paint. In contrast, the change made in the unacceptable example has a significant impact on the problem—it is easier and explores a different math concept from the original.

### Problem #219 from the 2014-2015 MATHCOUNTS School Handbook:

- *Original Problem Text:* Ronny had 9 oranges, and Donny had 15 oranges. They met up with Lonny, who had no oranges. Lonny gave \$8 to Ronny and Donny, and the three of them shared the oranges equally. If Ronny and Donny split the \$8 in proportion to the number of oranges each contributed, how much of the \$8 should Ronny receive? (Answer: \$1)
- *Example of **Acceptable** Modified Text:* Samantha had 9 pencils, and Kaleb had 15 pencils. They met up with Ford, who had no pencils. Ford gave \$8 to Samantha and Kaleb, and the three of them shared the pencils equally. If Samantha and Kaleb split the \$8 in proportion to the number of pencils each contributed, how much of the \$8 should Samantha receive? (Answer: \$1)
- *Example of **Unacceptable** Modified Text:* Ronny had 12 oranges, and Donny had 2 oranges. If the two of them want to share the oranges equally and each orange costs \$1.50, how much should Donny pay Ronny to reimburse Ronny for the oranges he gave to Donny? (Answer: \$7.50)

Again, you'll notice in the acceptable example, the basics of the problem are kept intact. The difficulty level, math concept and steps to solve are not affected by changing the names and objects in the problem. In contrast, the change made in the unacceptable example makes the modified problem so different from the original problem that it is unrecognizable as Problem #219.

**STEP 4: PLAN OUT THE WHERE, WHEN AND HOW OF FILMING, COSTUMES, SETS AND EDITING.** It's important that your students plan out the logistics of their video project, and it can be easy for tasks to fall through the cracks. After your team has finished the imaginative side of their project, have them plan out how they will actually do this project. Here are some things to think about:

#### Costumes

- Do we want costumes or is wearing our regular clothing good for our story?
- If we will be using costumes, do we need to find or buy materials to make them?
- If we will be using costumes, do we have someone who knows how to sew (or glue) them together?



#### Sets and Location

- Do we need to create any sets or backgrounds for our video?
- Could we create backgrounds or sets in the video editing stage using moviemaking software?
- Is there a place we can go to film our video that is the right setting for our story, so we can minimize the number of sets we need to create?
- Would it be easier for us to shoot the film inside or outside?
- Do we need to make arrangements with someone in order to film at a particular location?

#### Filming and Equipment

- Are we going to film the entire video in one day or space it out? Do we need to reserve space for extra days or make arrangements for our costumes and sets if we're filming for longer?



- Are we going to film the scenes in order, so it's easier to edit? Are we going to film the scenes as they are ready so we can possibly finish filming sooner?
- Are there days that work for everyone on the team?
- Does every team member need to be present for all days of filming?
- Do we have a camera (or a phone with a camera) we can use to shoot our video?
- If we do not have a camera, can we borrow one from our school's media center or the local public library? What is the process for checking out the camera?

## Editing

- Does at least 1 team member know how to use video editing software? Do we need to find online resources to get help editing our video?
- Do we have access to film editing software through our school or local library, or do we need to download a free film editing program?
- Are we going to add any music, images or video clips to our video? Do we have a way to make sure we are not using copyrighted material in our video?
- Are we going to do voiceovers for our video or can you hear the audio in the filming well enough without it? Do we need to add captions?

**STEP 5: CREATE A STORYBOARD FOR YOUR VIDEO.** A storyboard is the outline of your video's plot, scene-by-scene. It includes drawings and/or descriptions of the basic action of your video. Storyboarding is a really useful step to do before writing the script. It helps ensure the script is not scattered or missing important plot points. It also can help your students decide whether they want to have in-person acting, animations or a combination of both in their video. Students should include the following information in their storyboard:



- Who the characters are
- Where the action takes place
- What happens in the video
- How the math problem is solved

This playbook contains a storyboarding template on [pg. 48](#) that you and your students may want to use, but it also may be helpful to have a large board with post-its and do a single storyboard that is large enough for all of the team to see and contribute to. You also can go to [videochallenge.mathcounts.org/storyboard](https://videochallenge.mathcounts.org/storyboard) for a short video that explains how to storyboard.

**STEP 6: WRITE THE SCRIPT FOR YOUR VIDEO.** Every video needs a script! Even if your students are master improvisors, having a script will help ensure that the video makes sense and explains the real-world application and solution to the math problem.

### Scene: The garage at Larry's house.

Larry's sister, Dee, is frustrated and has pieces of wood scattered everywhere. Larry enters.

**Larry:** *Hey, Dee. What's up?*

**Dee:** *I'm almost finished with this bird house, but I can't figure out how to make the roof.*

**Larry:** *You need to make sure you start with the correct angle.*

**She holds up the roof of the birdhouse.**

**Dee:** *You mean like this?*

**Larry:** *No. Try a 90-degree angle like this.*

**Superimpose:** Angle measurement graphic with "90°"

The script should describe the setting, action of the characters, the dialogue and any superimposed words or images (for example, graphics that explain the solution). It also may help to divide the script into scenes or acts. A sample script is included at the left.

**Remind students the maximum time limit on their video is 5 minutes.**



**STEP 7: DO A TIMED TABLE-READ AND RUN-THROUGH TO PRACTICE.** It's important that students have the opportunity to hear how their script sounds when read aloud before they film anything. A table-read is exactly what it sounds like: rather than acting out the parts, the actors simply sit around a table and read the script from beginning to end—hopefully with the emotion and emphasis they have planned for the final product.

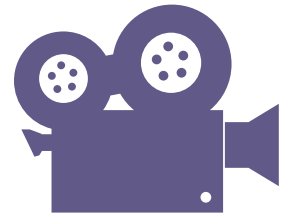


Have the students time their table-read so they can ensure their final product is no more than 5 minutes in length. If reading the script aloud takes significantly more than 5 minutes, then the students will likely need to cut some scenes or trim the dialogue. On the other hand, if the table-read only lasts a few minutes, the students may want to consider adding to their script to improve their final product.

If students are going to be filming anything in-person, they should do a run-through to practice their acting and dialogue. It may be a good idea for the students to perform their script for others and get feedback before filming. If the students are making a video that is entirely animated, then a run-through is not necessary.

**STEP 8: SHOOT YOUR VIDEO.** The Math Video Challenge accepts a number of formats for videos, meaning your students can use lots of different recording devices and editing programs when creating their video. Most videos submitted to the contest are filmed with a camera, camcorder or smartphone.

It's important to emphasize to your students that mistakes are OK! A big part of the editing process will include deleting scenes that didn't work or adding a voiceover to the video to make it easier to understand. Your students may need more than a few takes—and possibly more time than they originally planned for—in order to get their video where they want it to be. If students are planning to do in-camera editing (meaning all of the scenes of their video are shot in order), they should keep this in mind when they are filming so they can minimize the amount of editing needed.



Here are some common pitfalls your students should try to avoid when filming:

- **Pitfall: It's difficult to understand what is said in the video.** Students must enunciate and speak loudly during filming. It would be a good idea to have someone listen to their video who is not familiar with their script (the team advisor, a parent, etc.), so they can identify any spots where the dialogue is unclear.
- **Pitfall: Background noise interferes with dialogue.** Wind and other students talking can be distracting or even make the dialogue in a video incomprehensible. No matter where students are filming, they should try to minimize background noise. This may mean they have to reschedule a filming session, reshoot a scene or adjust the audio during editing.
- **Pitfall: Filming is too far away or blurry.** Students should carefully consider the placement of their camera, so the action of the video can be seen clearly and the actors are able to face the camera when speaking. The filming quality can also be affected by the size and resolution of the video file.

Avoiding these common mistakes during filming will help your students avoid frustration during the editing process and make their video even better!

**STEP 9: EDIT YOUR VIDEO AND ADD DESIRED SPECIAL EFFECTS.** Students can opt to do in-camera editing during filming, in order to minimize the amount of time needed for the editing process. For in-camera editing, students must film all of the scenes of their video in order with no overlapping scenes or dialogue. Then, once they finish filming, they simply need to combine all of the scenes together.



If students decide not to do in-camera editing, or if they want to add any special effects or voiceover recordings, they will need to use video editing software. There are a number of free software programs available, and many schools also have video editing software, such as Windows Movie Maker or iMovie, installed on computers in the media center. Using video editing programs allows students to create more interesting transitions between scenes; add music, captions or images; and cut scenes or dialogue to improve their video.