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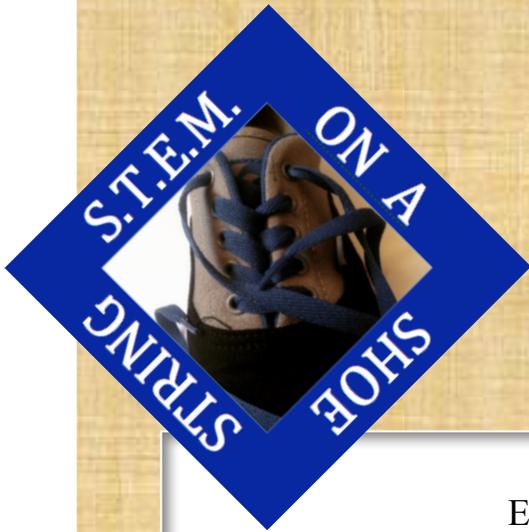
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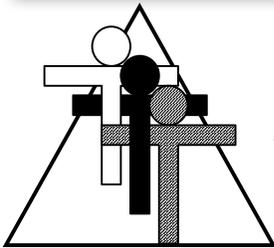
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Team-Building 101

*Four great activities to help
your students work together*



By Brad Fulton
Educator of the Year, 2005
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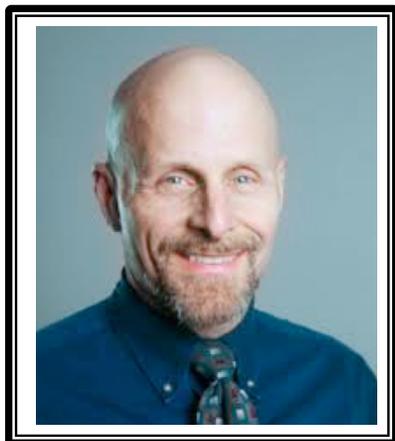


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Brad Fulton

Educator of the Year



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- ◆ Consultant
- ◆ Educator
- ◆ Author
- ◆ Keynote presenter
- ◆ Teacher trainer
- ◆ Conference speaker

Known throughout the country for motivating and engaging teachers and students, Brad has co-authored over a dozen books that provide easy-to-teach yet mathematically rich activities for busy teachers while teaching full time for over 30 years. In addition, he has co-authored over 40 teacher training manuals full of activities and ideas that help teachers who believe mathematics must be both meaningful and powerful.

Seminar leader and trainer of mathematics teachers

- ◆ 2005 California League of Middle Schools Educator of the Year
- ◆ 2016 Shasta County Middle School Educator of the Year
- ◆ California Math Council and NCTM national featured presenter
- ◆ Trainer/consultant for district, county, regional, and national workshops

Author and co-author of mathematics curricula

- ◆ Simply Great Math Activities series: six books covering all major strands
- ◆ Angle On Geometry Program: over 400 pages of research-based geometry instruction
- ◆ Math Discoveries series: bringing math alive for students in middle schools
- ◆ Teacher training seminar materials for elementary, middle, and secondary school

Available for workshops, keynote addresses, and conferences

All workshops provide participants with complete, ready-to-use activities that require minimal preparation and give clear and specific directions. Participants also receive journal prompts, homework suggestions, and ideas for extensions and assessment.

Brad's math activities are the best I've seen in 38 years of teaching!

Wayne Dequer, 7th grade math teacher, Arcadia, CA

"I can't begin to tell you how much you have inspired me!"

Sue Bonesteel, Math Dept. Chair, Phoenix, AZ

"Your entire audience was fully involved in math!! When they chatted, they chatted math. Real thinking!"

Brenda McGaffigan, principal, Santa Ana, CA

"Absolutely engaging. I can teach algebra to second graders!"

Lisa Fellers, teacher

References available upon request

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Four stars would be much appreciated and would help me sleep better at night.



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If we make copies for our friends, can we honestly tell our students not to copy or take things that don't belong to them? (Ouch!)



Half priced site licensed copies are available on the TPT website. Please encourage them to take advantage of this affordable option. Okay?

Thanks and happy teaching,

Brad 

I want...

- a) Effective staff development
- b) Affordable staff development
- c) Ongoing staff development
- d) **ALL OF THE ABOVE!**

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Great DVD presentations offer quality mathematics staff development at a fraction of the cost!

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Cup Stacking Challenge

A Cooperative Engineering Task

Objective: to help individuals see the importance of working as a team to engineer a task.

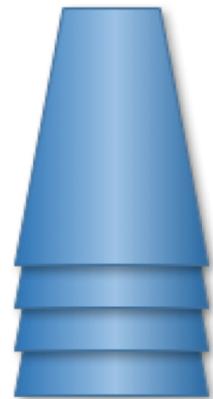
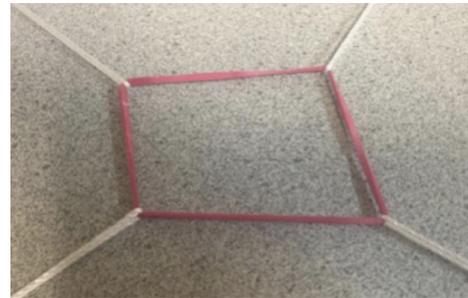
Summary: Teams of students work to construct a tower of cups without touching them. Using only rubber bands and strings, students construct a device that works like a remote control tool that can grab and manipulate the cups. Extensions allow for incorporating graphing and data into the task.

Materials:

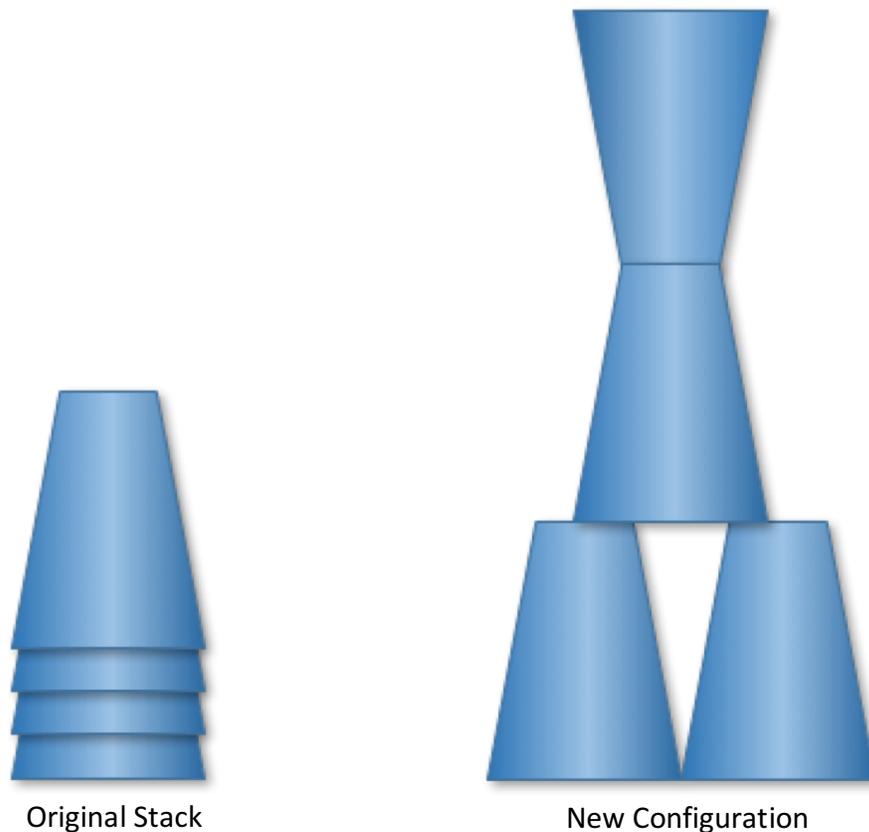
- Stacking cups
- Rubber bands
- String

Grade level: Second grade through high school.

- Procedure:**
1. Arrange students into teams. These can be teams of two, three, or four students each.
 2. Give each team one rubber band and four stacking cups. They will also need about 12 feet of string. This should be cut into four three-foot-long pieces.
 3. Students thread their four strings through the rubber bands as shown.
 4. They may hold the ends of the strings, but they may not touch the rubber band or cups once the activity starts.
 5. Next stack the cups in the starting position as shown here.
 6. The team must grab each cup and move it to the positions shown on the next page.
 7. If a cup falls over onto its side, there are two options. The more difficult of the two is to require that the team put it back up using the rubber band and strings. This can be very discouraging and may take an inordinate amount of time. My preference is to allow them to pick it up by hand and return it to the original stack.

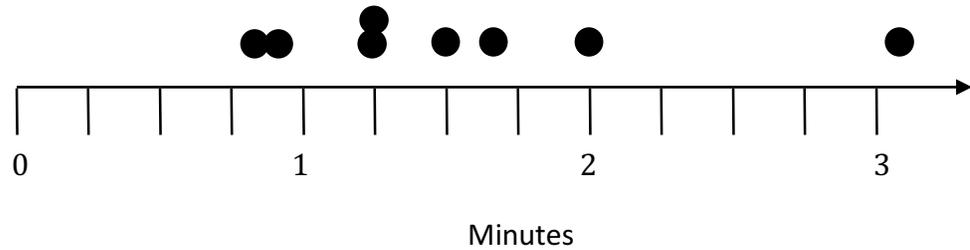


8. The first team to successfully restack their cups in the new configuration wins.
9. Obviously, the most difficult maneuver is the to invert the final cup. This is where students will often drop the cup. I have found that teams of two have an advantage. It is much easier for one person to invert their hands than for two people to synchronize that movement. Sometimes a student is tempted to pass the strings to a partner to make this easier. I discourage this. I tell them that they can only touch their own set of strings.



10. You can design other configurations that are less challenging or more challenging depending on the skill level and age of your students. For example, you can place the cups randomly on the table and ask them to stack them in the configuration on the left. This is a fairly simple task. On the other hand, you could have them build a tower four-cups tall to increase the difficulty.
11. For comparison sake, the current record in my class for this task is 32.5 seconds and is held by a two-person team. None of my four-person teams came close to that time.

12. If you want to incorporate data collection, have the students record their times on a line plot. If you have about 30 students, you can get 8 to 10 teams and data points.



13. You can also have the students make more than one attempt at the task. This will allow them to develop skill, overcome errors, and provide even more data points.

- Rules:
- Stack the cups in the starting position.
 - Thread the four strings through the rubber band.
 - Each person holds one end of one set of strings.
 - If your team has three players, one person may hold two sets of strings.
 - If your team has only two players, each one holds two sets of strings.

- Debrief:
- What challenges did you face as you worked on the task?*
It was hard to coordinate our actions. The strings and rubber band aren't nearly as effective as using your hands.
 - What helped you be more effective?*
Communication was necessary to coordinate our movements.
 - Were you able to become more skilled as you repeated the task?*
On subsequent attempts, we overcame some of our initial errors and ineffectiveness.
 - What challenges might NASA have in controlling a robotic craft on another planet?*
They would also find it challenging to operate a vehicle without actually controlling it by hand. They would need to communicate clear directions and observe the results of those commands.
 - You may wish to have students research our Mars Rovers using the internet. A good place to start is at www.nasa.gov.*

Four Squares

A Silent Team-building Activity

Objective: to help individuals see the importance of teamwork and communication.

Summary: Teams of four students try to assemble puzzle pieces to form four identical squares. There are many ways to form two or three squares successfully but only one way to assemble all four squares. Because the team members are not allowed to talk, they must observe each other and be willing to work together as a team.

If you have students who seem to work only for their own interests, this activity will demonstrate the importance and power of cooperative work.

Grade level: Third grade through high school.

Procedure:

1. Prior to the activity, you will need to make copies of the activity pages. Cut them apart and put them in envelopes so that each team has their own envelope with a full set of the 13 puzzle pieces. If you wish, these can be copied onto cardstock for reuse.
2. Divide the class into teams of four students. Each team will also need a judge. If you have extra students, use them as judges.
3. Each judge is to observe a team or teams and take notes any time that a rule is broken. That means that they are watching to see if anyone is talking or trying to communicate in any other way. They are also watching whether anyone tries to *take* a piece from a team member.
4. Distribute the 13 puzzle pieces among the four people on your team. Each person will need at least 3 pieces, and one person will have four.
5. Explain the rules given below. Make sure everyone understands them completely.
6. When a team has four squares built, they are to raise their hands or stand up.
7. Signal the teams to start.
8. Wander around to observe students just as the judges do and ensure that they are following the rules. If you see a rule violation, note it, but do not correct it.

Materials:

- Copies of puzzle cut into pieces
- Envelopes

Rules: There is no communication allowed during the activity. That means team members cannot talk or even “give a look” to try to communicate with one another in any way.

You may give or share pieces, but you may not take any pieces from any other team member unless they have offered it to you.

Debrief: After a team has completed the task allow the others to finish also. Lead them in the discussion points that follow.

1. *What problems did you encounter in trying to build the four squares?*

I needed pieces that someone else had. We couldn’t talk. I couldn’t take the pieces I needed from my teammates.

2. *What did team members do when they made a square?*

They stopped working. They had finished their task and didn’t realize that others needed the pieces that they had. They were seeing this as an individual task instead of a team task.

3. *Did any teams break either of the rules?*

Ask this of the judges and discuss their responses.

4. *Were you reluctant to take apart a completed square and give pieces to teammates?*

Yes, because then they might make a square and we couldn’t.

5. *How would you have reacted if someone had taken part of your square to complete theirs?*

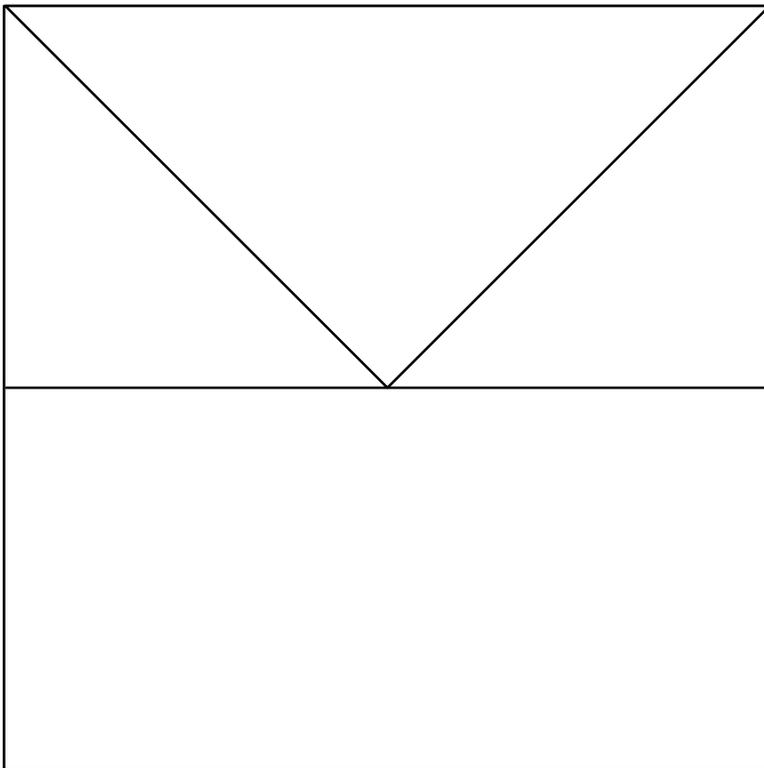
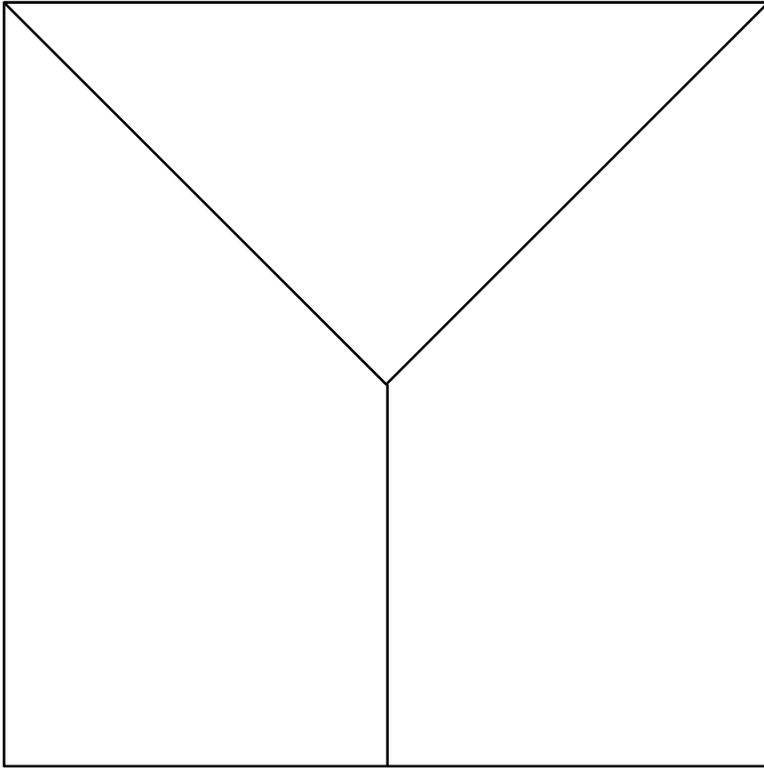
That would be frustrating.

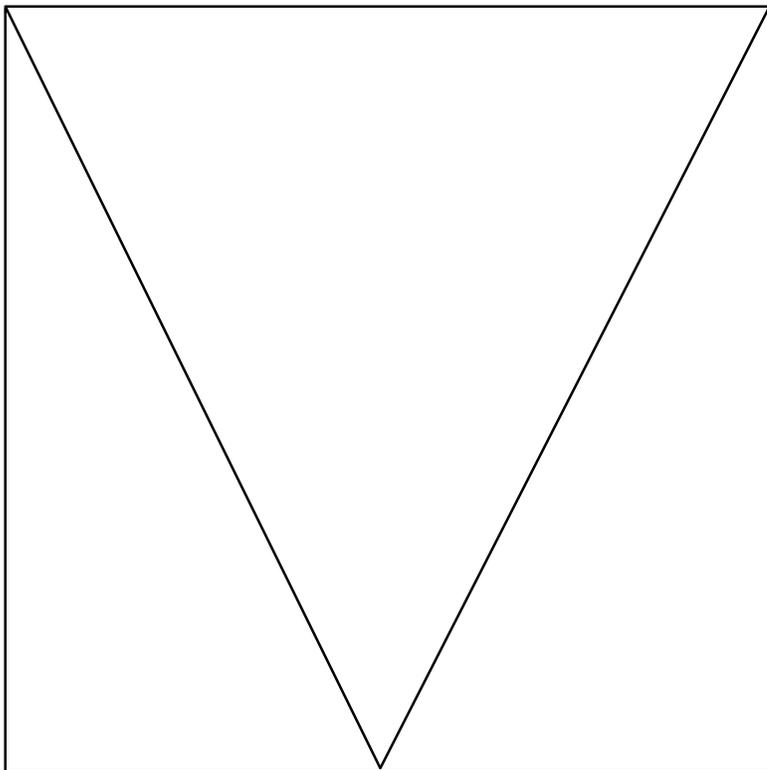
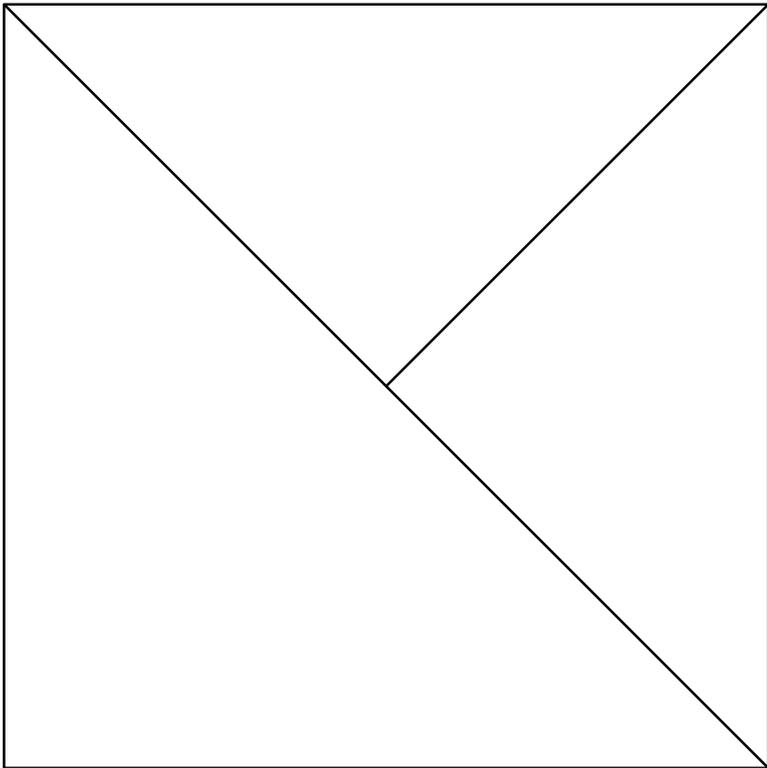
6. *What would make this task easier?*

If we could talk to one another and plan together it would have been easier. Also if we had viewed this as a team project instead of four individual tasks we wouldn’t have lost so much time waiting for people to share.

7. *What lessons can we learn from this activity to help us with team projects in the future?*

Using communication among team members is critical. Also, we have to look at the big picture and view our results as a whole. Sharing is important too, and sometimes you have to be willing to give a little as an individual in order to achieve success as a team.





Untangling the Troops

An Active and Cooperative Task

Objective: to help students work together in a large cooperative group.

Summary: Each team joins hands to form a massive human knot. The team leader must figure out how to have the students move to untangle and form a circle.

Grade level: Upper elementary through adult

- Procedure:
1. Divide the class into two teams as equally as possible. Designate one person from each group to be the team director.
 2. All other team members form a tight circle. Each team member puts his or her right hand into the center of the circle and joins hands (or wrists) with another random team member.
 3. Without releasing their right hands, each team member puts his or her left hand into the circle and joins hands with a *different* member of the team.
 4. The team is now a tangled knot. At the teacher's command, each director gives verbal directions to his or her team explaining how they can move to untangle.
 5. No one can undo their hands to make it easier. However, it may be necessary to relax the grip to avoid twisting and injuring someone's wrist.
 6. The first team to successfully untangle and form a circle is the winner. In some cases, the team may have formed multiple smaller circles instead of one large one depending upon the connections. In this case, each circle must be untangled.
 7. An option is to simply divide the class into two teams and *not* assign team directors. In this case, it is up to the team members to cooperate and follow the leadership of one another.
 8. **Use caution and discretion if you implement this activity. Because there is physical contact, it is important that students act appropriately. You may wish to have a boys team and a girls team to avoid mixing genders.**

Rules: The team director will give verbal directions to his or her team.
The director cannot touch any team member.

Optional Materials:

- ☒ A timer

The team members cannot perform any untangling except what is commanded by the team director.

Debrief: After a team has completed the task allow the others to finish also. Lead them in the discussion points that follow.

1. *What problems did you encounter in trying to untangle?*

Sometimes the directions weren't clear. We couldn't show them by guiding them with our hands. Some of the required movements were very challenging.

2. *How did the timing of the activity affect your performance?*

Some teams may find that being timed made them more anxious and prone to errors, while others found that it enhanced the competition.

3. *How cooperative was your team?*

Answers will vary.

4. *What did you learn about cooperation that you can apply to other areas of your life?*

Answers will vary.

A Puzzling Puzzle

A Lesson in Diplomacy and Problem-solving

Objective: to help students work together to solve a problem through diplomacy and cooperative skills.

Summary: Each team must assemble a simple puzzle of about a dozen pieces. However, they do not have all the necessary pieces. They must apply mutually beneficial strategies to solve their task and help others do the same.

Grade level: Upper elementary through adult

- Procedure:**
1. Prior to the activity, make a copy of one puzzles for each team. (Each team will need a different puzzle.) If you wish, these can be printed or glued onto card stock to make them more durable. It is best if these are printed in color. If printed in black and white, it will make the task much more challenging. Cut out the puzzles along the blue lines. Put the puzzle pieces into envelopes. Take three pieces from each puzzle and randomly distribute them to the wrong boxes. Thus each team has nine correct pieces and three that belong to three other teams.
 2. Divide the class into teams of four. Give a puzzle to each team. The puzzles should be in their envelopes.
 3. Have each team appoint an ambassador.
 4. At the teacher's command, all teams open their envelopes and begin assembling their puzzle. They will soon realize that they are missing pieces. At that point, the ambassador can go search for the missing pieces.
 5. When the ambassador finds a missing piece, he or she must propose a deal that will encourage the other ambassador to want to make a trade. Sometimes, this will not be easy. Quite often this will involve a three-way trade or something even more complex. If the team doesn't wish to make the trade, the ambassador must propose a mutually beneficial arrangement.
 6. The first team to complete their puzzle is the winner. However, this will often allow other teams to complete their puzzles at nearly the same time. This shows that cooperative work often results in a *win-win* situation.

Materials:

- ☒ A copy of the puzzle for each team.
- ☒ An envelope for each puzzle.

Rules: The ambassador is the *only* person who can get out of their seat to visit with or communicate with other teams.

Ambassadors can make requests or make deals with other ambassadors, but he or she cannot take anything without permission.

Prior to a trade, an ambassador should consult with his or her team to get their approval.

Diplomacy is the rule.

Debrief: After a team has completed the task allow the others to finish also. Lead them in the discussion points that follow.

1. *What emotions did you feel initially when you tried to assemble your puzzle?*

At first it seemed very easy.

2. *How did you feel when you realized that you didn't have the necessary pieces?*

That confused us, then we felt frustrated.

3. *How did you resolve that?*

We realized that every team had extra pieces and we needed to trade.

4. *How did your ambassador go about helping you with this task?*

Answers will vary.

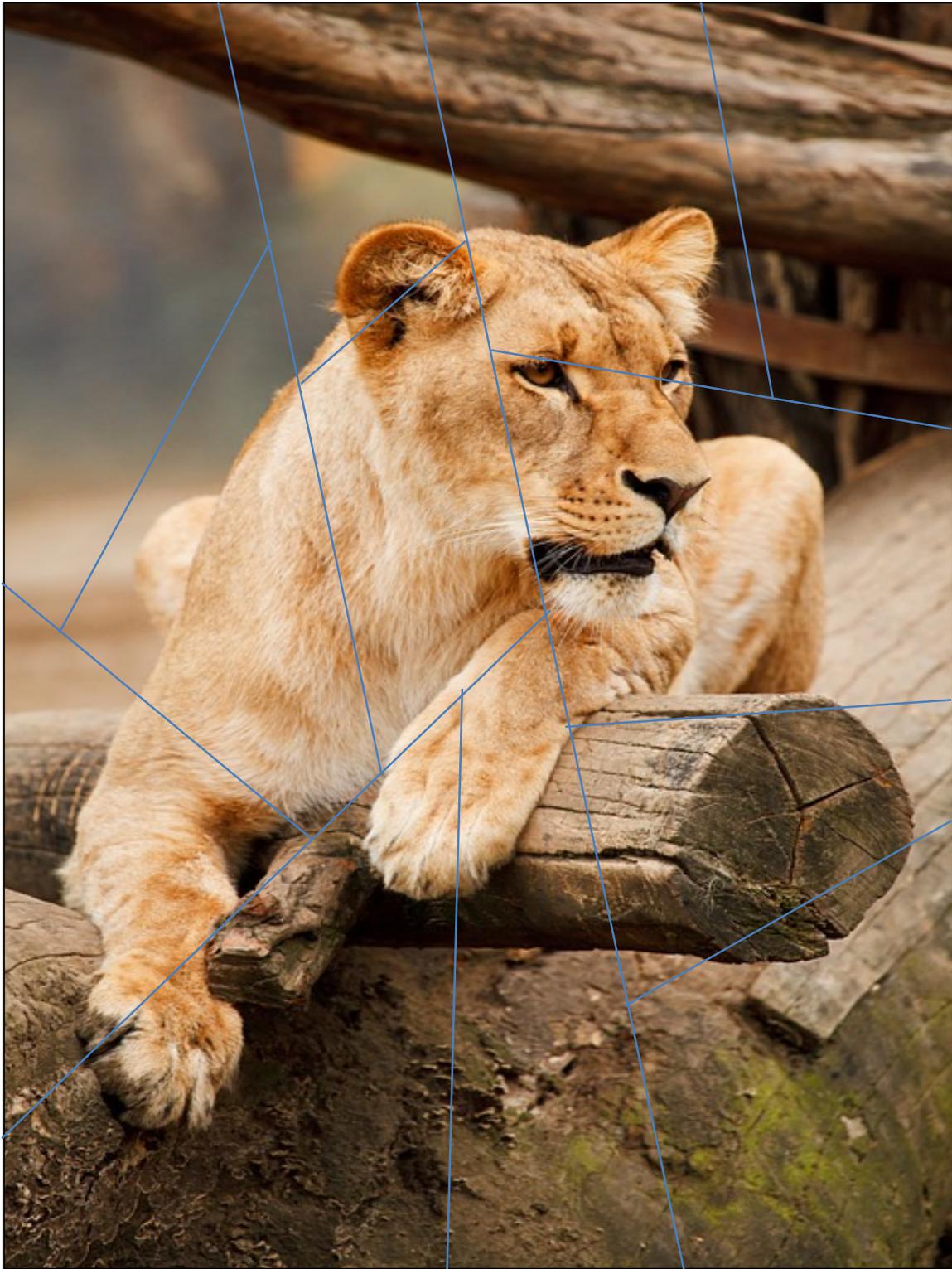
5. *Were there any problems or challenges making the necessary trades?*

Sometimes a team wouldn't trade with us if we didn't have the piece they needed. That made us arrange for three-way or four-way trades.

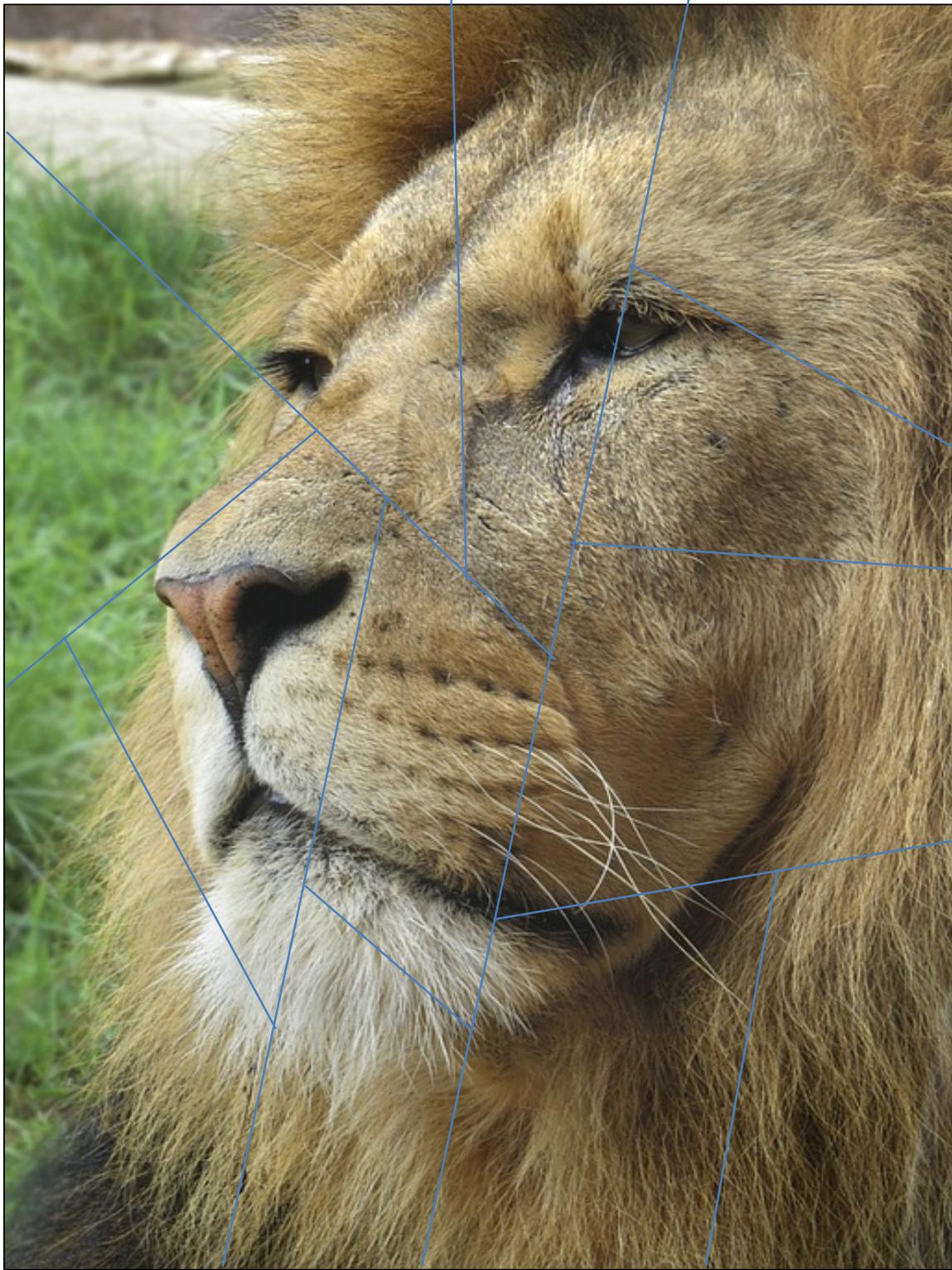


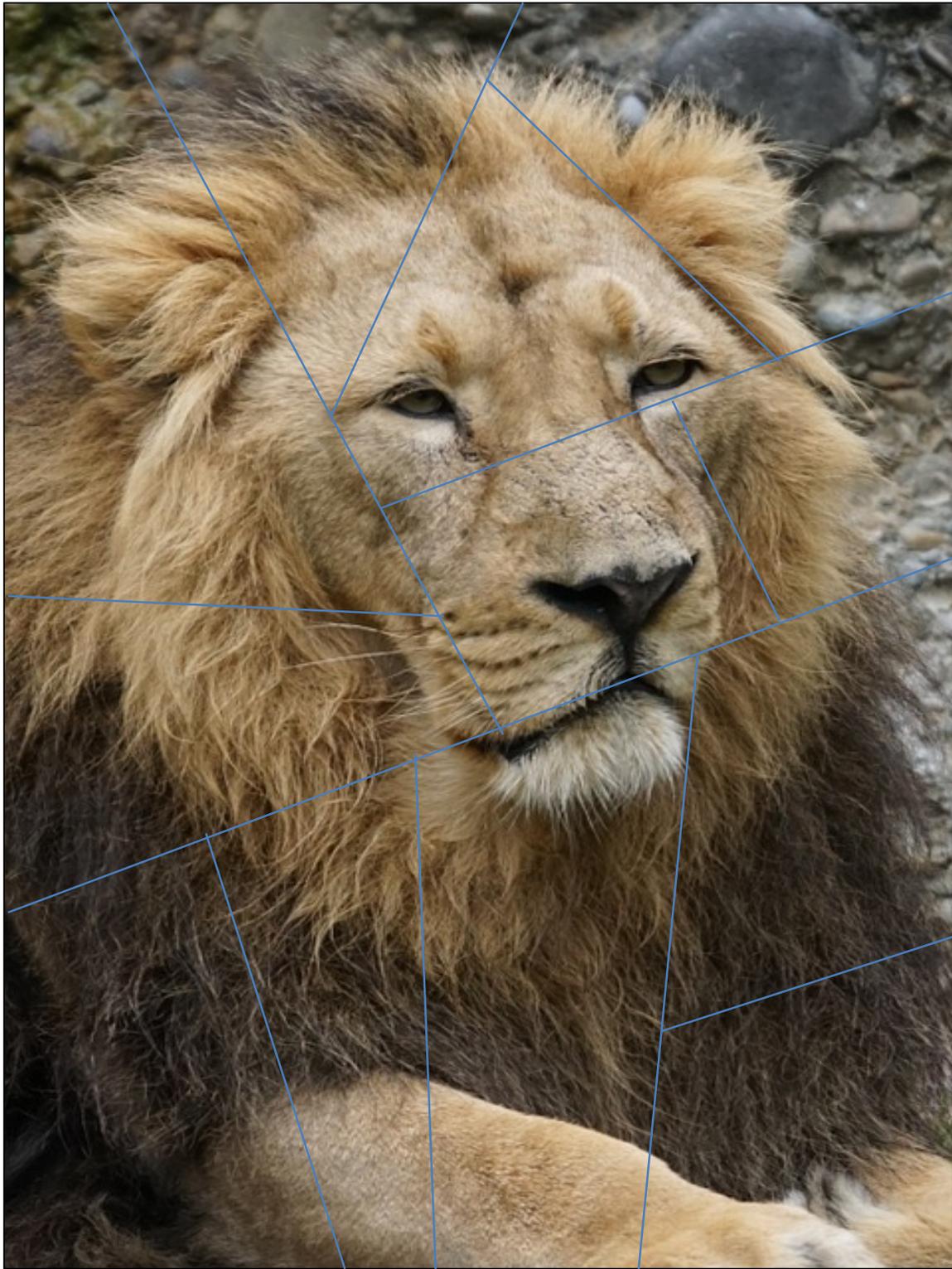


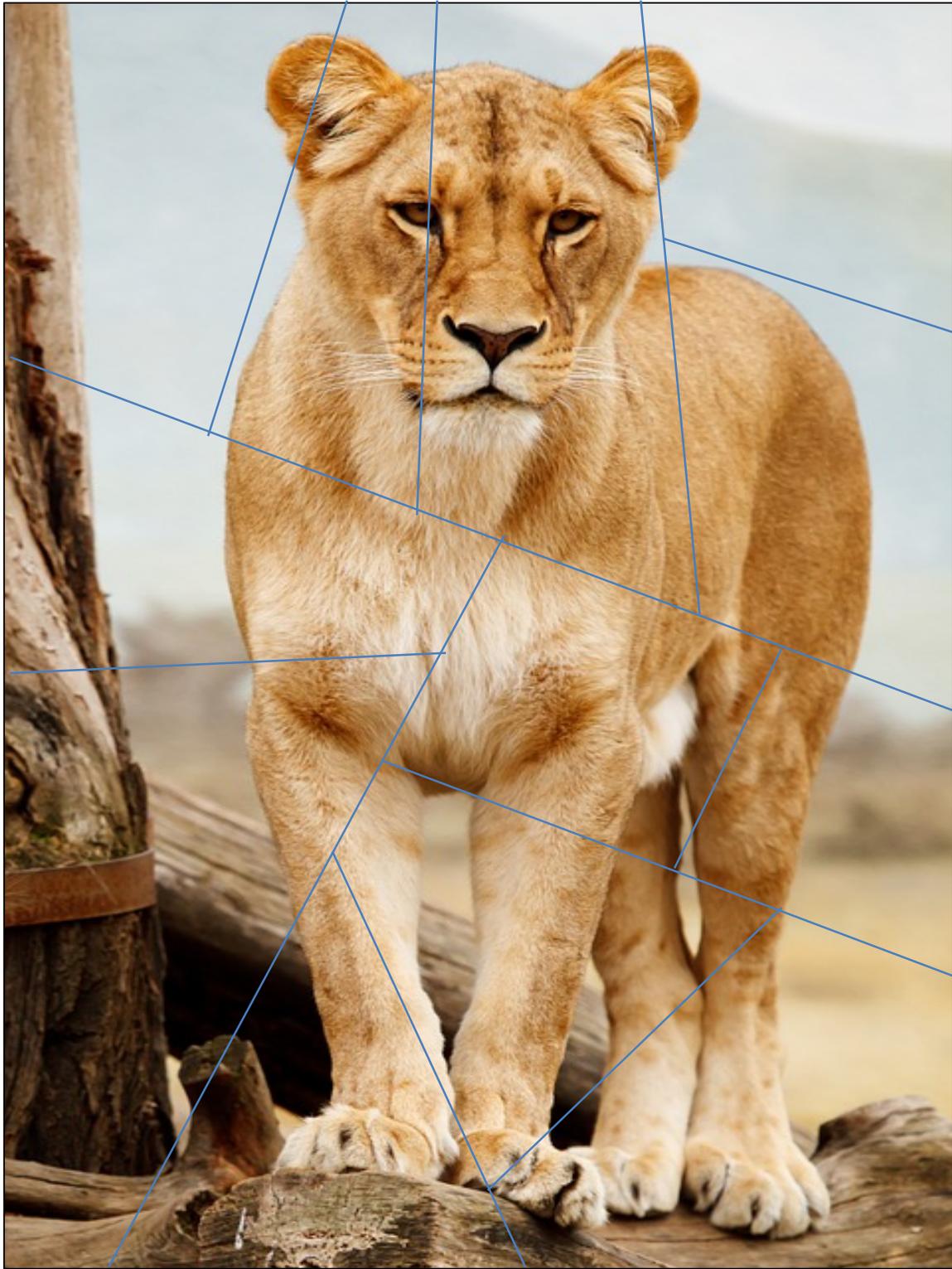
















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Feel free to contact me if you have questions or comments or would like to discuss a staff development training or keynote address at your site.

Happy teaching,

Brad