

# Parts of the Whole: Developing a Sense of Team Skills

## Student Version

### Why should your team do this activity?

Working as a team and being aware of the different roles that individuals play on a team is one of the most important parts of solving a problem as a group. Sometimes it seems much easier to take control and to work out the problem without the help of others, but working as a team can be very rewarding. There are many ideas that team members have that you may not be able to discover on your own. As people work together as a team, they begin to discover that some of the team members are good at more than one role (what that person is supposed to do for the team), while others seem much stronger at one role over another. Discovering which role each member of the team will be best at is an important step in helping the team to work well together.

### The Necessities:

- ★ 12 wooden matches or sticks the length of wooden matches
- ★ A pair of scissors
- ★ 6 pencils (not sharpened)
- ★ 8 pennies
- ★ Pen/pencil for writing, scratch paper
- ★ Role Question Sheet
- ★ Idaho TECH Lab Notebook

**Directions:** As a team, try the brainteasers on the next three pages. For each puzzle, have individual team members select a different role each time until everyone has had a chance to participate in every role at least once. Your team can decide how to change roles each time, as long as you do it in a fair fashion. After you complete each puzzle, each team member should answer the questions (located before the puzzles) for their role. Use a separate question sheet for each team member. After each team member has had a chance to be in each role at least once, discuss your answers as a group. **Write overall comments of the group in your Idaho TECH Lab Notebook.**

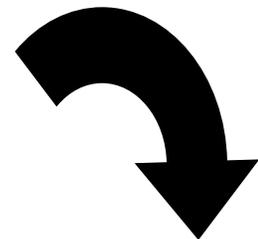
**Remember....**it can feel frustrating to be in a role that does not fit with your skills or personality, but it is important that you try each role in order to discover what each member of your team, including yourself, will be good at.



**Go to the next page**

**to find out**

**about your roles!**



## Role Descriptions

### Guide

The guide leads the group in solving the problem.

- ★ Read the problem to the whole group
- ★ Listen to all the members of the group
- ★ Ask questions about their suggestions
- ★ Make the decision about what needs to be done to solve the problem, using the team's input (*the guide can have a group vote to decide on the solution or can make the final call of what solution will be attempted first*)

### Organizer

The organizer is responsible for organizing all of the ideas and solutions that come about in the problem solving process.

- ★ Keep notes of ideas or suggestions in the Lab Notebook
- ★ Keep notes of the process in the Lab Notebook: What did the group try first? Second? What is working? What isn't working?

### Brainstormers (1-2 people)

The brainstormers are the idea people.

- ★ Think of suggestions for solving the problem
- ★ Ask others in the group to contribute their ideas when the "brainstormers" have run out of ideas

Don't worry if you are stumped. Remember that you have a whole group of minds.  
Do not be afraid to ask the other group members what they think.  
Usually all people in a group are responsible for giving ideas.

### Builder (1-2 people)

The designers / builders will be the hands-on people.

- ★ Listen carefully to team members and try to recreate what they are communicating to you
- ★ Move the parts of the puzzle to solve it

The individuals who are in the designer / builder role should be the only people who are touching the puzzle pieces.

# Role Question Sheet

Name: \_\_\_\_\_

Answer the questions about each role immediately after you have completed that role. After everyone has completed all of the roles, discuss your answers as a group.

## **Guide**

1. Can you name some important qualities of the person responsible for leading the group?
  
2. Did you like being the guide?

## **Organizer**

1. Why do you think it is important to have someone writing down the ideas that were discussed?
  
2. What are some important qualities of a recorder / organizer?

## **Brainstormer**

1. Did you find it easy to come up with ideas?
  
2. What was the most difficult thing about being the brainstormer?

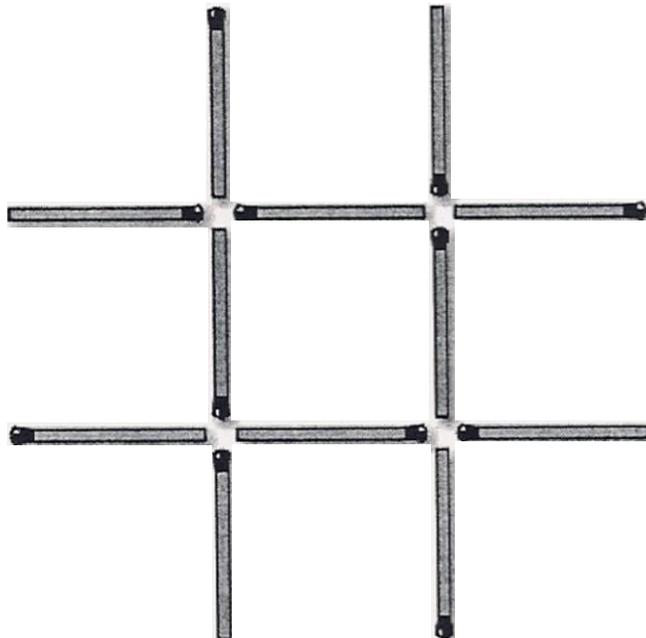
## **Builder**

1. Was it easy to follow the other team members' instructions?
  
2. Did you like being the builder? Why or why not?

## PUZZLE # 1: THREE SQUARES

Set up instructions: Take twelve matches and arrange them into a grid shown below.

The Challenge: Move only three matches so that you get exactly three perfect squares. You can pick matches up off the table.



## PUZZLE # 2: CORRECT EQUATION

Set up instructions: Arrange the matches into the equation that is shown below.

The Challenge: Move three matches to new positions to get a correct equation.

This puzzle can be solved in two different ways.

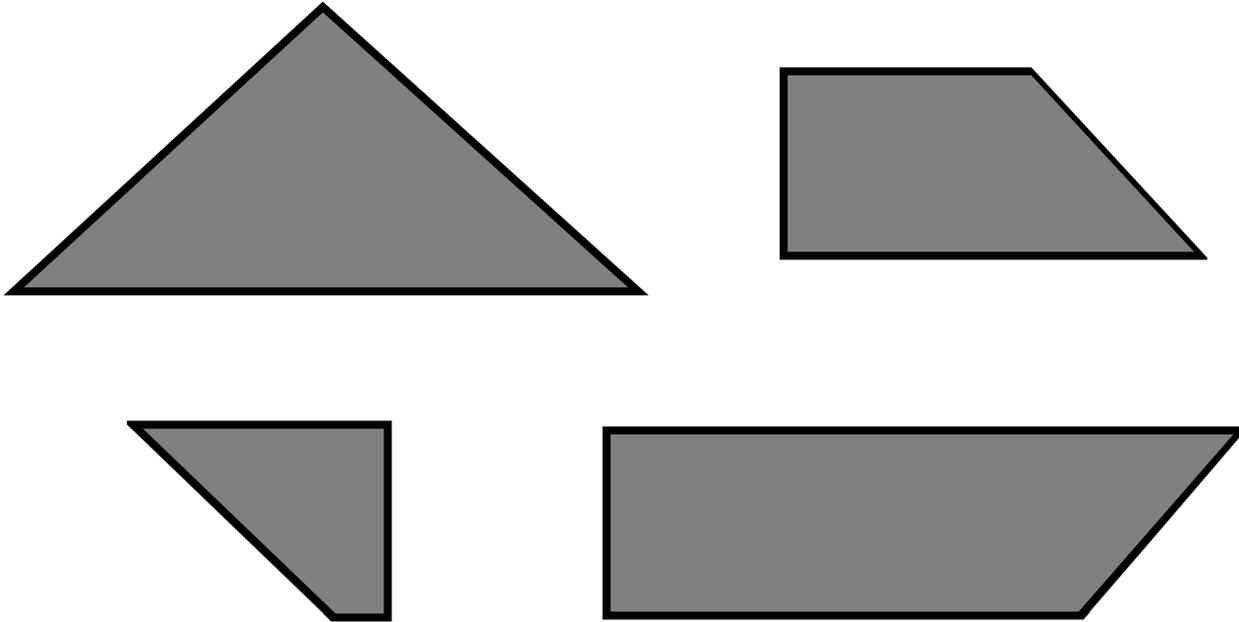
*(Note: In Roman Numerals this says 7=1. However, one of the answers to this equation will be in all numbers, while the other answer will be in Roman Numerals.)*



### PUZZLE # 3: THE “M” PUZZLE

Set up instructions: Cut out the pieces below in order to complete this puzzle.

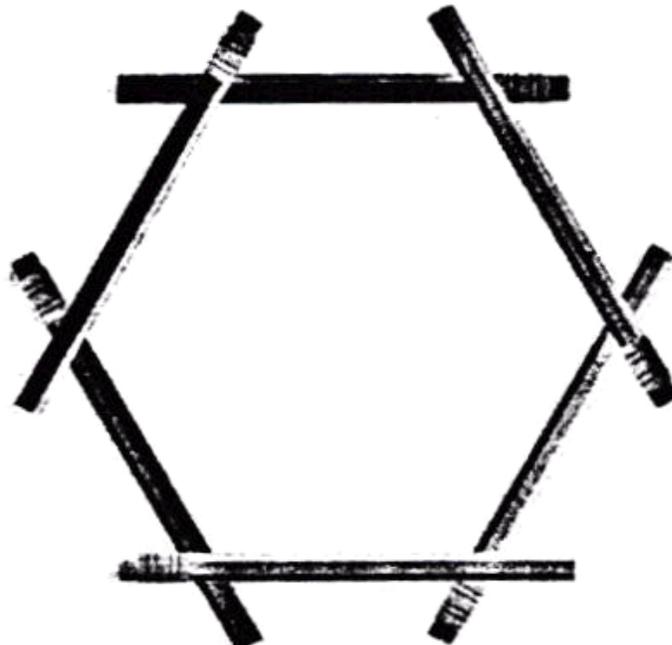
The Challenge: The objective is to make the shapes into a symmetric letter “M” for Mars. You are allowed to rotate the pieces as you wish and even turn them over, but they must not overlap each other in the final configuration.



### PUZZLE # 4: THE SIX PENCILS

Set up instructions: Gather 6 pencils. It is as easy as that.

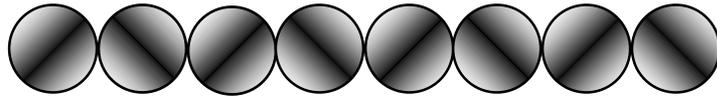
The Challenge: It is possible to place six pencils on the table in such a way that every pencil touches two other pencils, as shown below. Your challenge is to figure out a way to place the pencils so that each pencil touches all five of the other pencils.



## PUZZLE # 5: FOUR STACKS

Set up instructions: Place eight pennies in a row as shown below.

The Challenge: The objective is to make four stacks of 2 coins each with only four moves. Every move consists of jumping a coin over two coins (*either coins in a stack or over a single coin*) in one direction and ending up on a coin after the jump (*note that spaces don't count as a coin*).



## PUZZLE # 6: ADD IT UP

Set up instructions: Cut out the numbers below.

The Challenge: Place the numbers in the same formation grid that they were arranged in before you cut them out. Then, rearrange the numbers so that all the rows in every direction (vertical, horizontal and diagonal) add up to 15.

1	2	3
4	5	6
7	8	9