



**Orange County Math Council  
2011 Rubik's Challenge**

**RULES**

# GETTING STARTED

## Competition Dates:

**South County: Saturday, May 14, 2011**

**North County: Saturday, May 21, 2011**

The Challenge will consist of teams of eight, who will be competing for the fastest time to collectively solve 11 Rubik's Cubes.

## Mandatory Coaches' Meeting

Teachers and Coaches are required to attend the Coaches' Meeting on Monday, March 7, 2011, 4:00pm to 5:00pm at Orange County Department of Education, 200 Kalmus Drive, Costa Mesa, CA. 92626.

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**Tip:** To print Tournament Rules on letter size paper, select File - Print- Page Scaling = Fit to Printable Area, from Printer Options.

## Eligibility

1. Open to any Orange County Elementary School who has registered a team for the Orange County Math Field Day.
2. Each entity may enter one (1) team of eight (8) competitors
3. A competitor may only be a member of one team.
4. Any questions regarding eligibility should be directed to the **You CAN Do The Rubik's Cube** representative.

## Registration:

1. Registration is free. Each entity must complete and submit a registration form for each team by deadline to be eligible to participate in the competition.
2. Registrants must provide all required information.
3. To register an entity must designate a teacher/coach. The teacher/coach must be over 21 years of age and will be the team contact.
4. Failure to assemble a team by the deadline, or failure to attend the Tournament will result in automatic disqualification.
5. Registration is limited to the first 20 schools who register.

**Registration Deadline: March 21, 2011**  
**Team Names Due by April 14, 2011**

## Prizes:

1. Winning team receives "Did It" T-shirt and Medal.
2. All team members receive a Certificate.

## Organization Team:

1. You CAN Do The Rubik's Cube representatives will be responsible for making arrangements before and during the tournament and ensuring that all participants have access to either electronic or printed versions of these regulations.
2. You CAN Do The Rubik's Cube representatives will be responsible for ensuring that any changes in the rules are made available to all registered competitors.
3. You CAN Do The Rubik's Cube representatives will be responsible for appointing all Officials for the tournament.
4. Teachers, Coaches and Competitors will be required to assist with Judging, Scrambling and Scoring. Competitors will not judge or scramble their own cubes nor record their own scores.

## Officials:

### Main Judge:

- Responsible for overseeing the entire tournament; making sure the rules are followed, making decisions on penalties and disqualification, and starting the tournament.

### Team Judge(s):

- Responsible for executing the tournament procedures. These officials will be a Teacher/Coach from another team.

### Scramblers:

- Responsible for applying the scrambling sequence. These officials will be Competitors from another team.  
(Scrambling = mixing up the cubes)

### Score Takers:

- Responsible for registering the results. Team Judges will act as Score Takers.

## Teacher/Coaches:

- Responsible for teaching the team to compete and making sure the competitors are aware of the rules.

**GENERAL RULES:**

1. Competitors must obey venue regulations and conduct themselves in a manner considerate of others at all times during the competition.
2. Competitors must remain quiet when inside the designated competition area. Teams are permitted to talk amongst each other but any talking must be kept at a reasonable level and must not disturb other competitors. Teacher/coaches are not permitted to assist team, either through instruction or by physically solving the cubes.
3. Competitors must be fully dressed. Clothes must not display vulgar language or have inappropriate pictures.
4. No items whatsoever are allowed on the competition table(s) including cell phones, pagers, or any other electronic equipment.
5. Use of notes or any form of reference material is not permitted.
6. Competitors may sit or stand during the competition round(s).
7. Disqualification: The main judge may disqualify a team and/or a single competitor or issue a warning for any of the following reasons:
  - Competitor is suspected of cheating or defrauding any officials of the competition.
  - Competitor behaves in a way that is unlawful, violent or indecent, or intentionally damages venue facilities or anyone's personal property within the venue.
  - Competitor interferes or becomes a blatant distraction to others during the competition.
  - Competitor refuses to abide by any of the rules as set forth for the competition.
  - Disqualification occurs immediately or after warning based on the nature of the infraction.
  - Any warning will result in a 2 second Competition penalty per incident.
  - In the event of any dispute, competitors must accept the final ruling of the Main Judge.

**CUBES:**

1. The tournament requires the use of 3x3x3 Rubik's Cube.
2. **Competitors should bring and use their own cubes.** Competitors may borrow cubes from other teams although both must be ready to compete when called to do so.
3. Cubes must be in reasonable working order, so that normal scrambling is possible.
4. Cubes may be made smoother internally by sanding or using lubricant.
5. No modifications are allowed that enhance the basic concept of the cube.
6. Any modification to a cube that causes poor performance or results by a competitor are not grounds for additional attempts in the event. Poor performance = pieces popping apart, stickers falling off, cube rotation sticking, etc.
7. Cubes must be clean and must not have any textures, markings, elevated pieces, damages, or other differences that distinguish one cube from a similar cube.
8. Cubes must have only one logo and the logo must be on one of the center-pieces. The cube must show one clearly distinct color per face in the solved state.
9. Competitors are not allowed to bring any cubes into the competition area. Teacher/Coach maintains custody of cubes.



**COMPETITION PROCEDURE:**

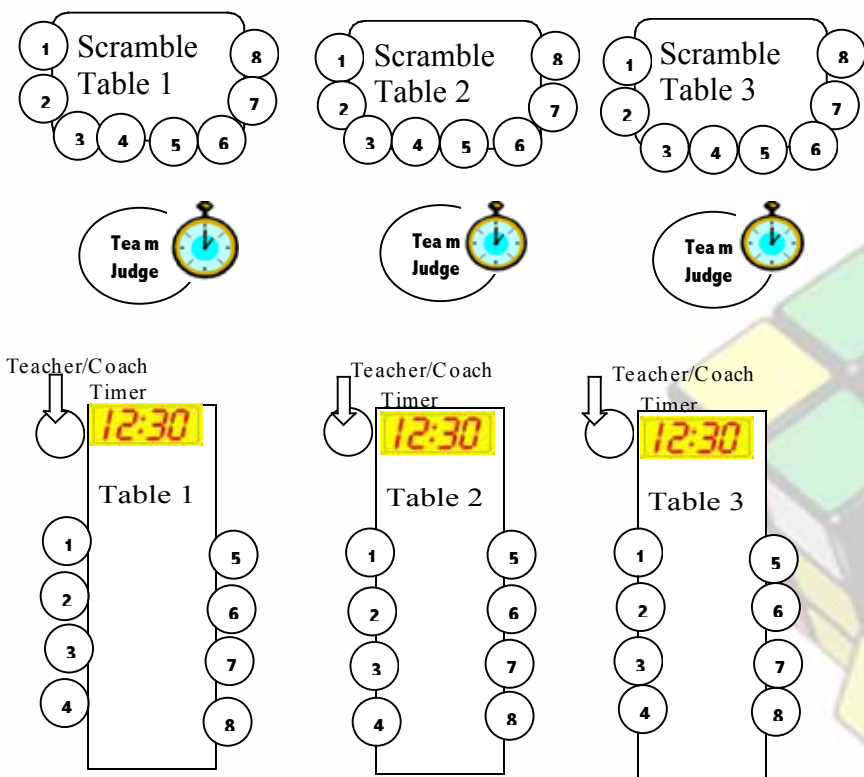
1. Team Judges make sure the procedures of the competition are followed. A Judge must call "PENALTY" at the time of the infraction and such penalty should be noted.
2. Scramblers scramble the cube(s) according to Scrambling procedure on Page 7.
3. Competitors must place their hands flat on the table and must not have any physical contact with the cubes before the solving begins. **Penalty for infraction: 2 seconds.**
4. Team Judges do a quick general inspection to ensure thorough scrambling. If in doubt, scrambler must re-scramble.
5. Team Judges cover the cubes (use a sheet of paper or a cloth) and places the covered scrambled cubes on competition table.
6. Score sheet is completed by Teacher/Coach and timers are tested.
7. Main Judge gives 1-minute warning before the start of the round by calling "READY" followed "GO" when the warning minute has elapsed.
8. As soon as the Main Judge calls "GO" the timers are activated simultaneously; the Teacher/Coach starts timer, the Team Judge starts stopwatch and the competitors remove the cover and the competitors begin the solve. **Penalty for infraction: 2 seconds.**
9. When a team has solved all cubes and each team member has released all the cube(s) and placed their hands flat on the table, the Teacher/Coach and Team Judge stop their respective timer.
10. Once the time is stopped, competitors must not touch or move the cubes or timer until the Team Judge has inspected all the cubes and the time is recorded together with any penalty on the score sheet. **Penalty for Infraction: Disqualification.**
11. The score time is taken from the Teacher/Coach timer. However, if the Teacher/Coach timer has run out (Teacher/Coach Timers run for a total of 10 minutes), then the Team Judge time is used. Teacher/Coach is responsible for telling Team Judge to stop timer.
12. The Teacher/Coach initials the score and the Team Judge takes the score sheet to the Main Judge for recording.
13. If there is a dispute, no moves or alignments must be applied to the cube until the dispute has been settled, involving the main judge if needed. **Penalty for Infraction: Disqualification.**

## SCRAMBLING:

1. A Scrambler must apply the scramble sequences.
2. Standard metric for scrambling and solving is Quarter Turn Metric (QTM).
3. The number of moves to scramble a cube (a scramble sequence) from the solved state to scrambled state must be at least 25 moves. A move is one  $90^\circ$  turn.
4. Cubes must be scrambled with the white face on top and green on the front.
5. Cubes must be scrambled before each round of a competition.

**Definition:** Quarter Turn Metric = Where any turn of any face (i.e. any outer side of cube) by  $90^\circ$ , clockwise or counterclockwise, counts as 1 move. A slice (i.e. inner or middle) turn counts as 2 moves for each  $90^\circ$  turn.

## COMPETITION LAYOUT



## SOLVED STATE:

1. Only the resting state of the cube is considered when the timer has stopped.
2. Cubes may be in any orientation at the end of the solve.
3. All pieces must be fully attached to the cube and in their required positions.
4. A cube is solved when all the face colors are reconstructed and all the parts are aligned within certain limits. A cube is considered solved if less than a  $45^\circ$  move is required. If one move is required of more than  $45^\circ$  there is a 2 second penalty. If more than one move is required the cube is considered not solved.
5. Examples:



Solved - No Penalty  
Misalignment requires 1 face  
move  $\leq 45^\circ$



Solved with 2 second penalty  
Misaligned requires 1 face move  
 $> 45^\circ$



Not Solved  
Misalignment requires 1 face and  
1 slice move  $> 45^\circ$



Not Solved  
Misalignment requires 2 face  
moves  $> 45^\circ$



Solved = no penalty  
All Misalignments  $\leq 45^\circ$

# TEACHING TIPS FOR SUCCESS

- At least one person should learn or know how to solve the cube before introducing it to the group.
- Sessions work best if solving the cube is the only activity occurring during that time.
- Session times work best when conducted for at least 90-120 minutes per session.
- Dividing large groups into smaller groups of 5-10 work best.
- Instruct children to mix-up their cubes to feel how the parts move.
- Encourage following the Solution Guide Step-by-Step for best results.
- Identify importance of center piece representing color of each side.
- When white cross is solved, mix-up the cube and do it again - practice makes perfect!
- Once solving the white cross is mastered move on the next stage.
- Encourage perseverance and patience throughout the process.
- Encourage successful cube solvers to help others in the group.
- Every member of your team does not need to be able to solve the cube. You may have team members only doing a certain stage. Or, you may have a team member responsible for ensuring all cubes are solved correctly.
- You should make sure all your team members know and understand the rules and the consequences of any violations.
- At first your team may struggle solving the cube. This is normal. However, with practice they will soon be solving fast and having fun.
- Memorizing the 6 stages will improve solving time. We think a very competitive speed is under 2 minutes.
- Rubik's cubes included in the You CAN Do The Rubik's Cube Math Education Kit are identified by this logo:





# MATH EDUCATION KIT

The You CAN Do The Rubik's Cube provides a Math Education Kit available at [www.YouCanDoTheCube.com](http://www.YouCanDoTheCube.com) at a special discounted price (1 kit - \$49.99, 2 - \$79.99 and 3 - \$99.99) for Registrants of the Tournament. The kit includes 12 Rubik's Cubes, Solution Guides, and an instructional CD with math lessons and activities that have been designed and piloted by teachers and educational consultants for classroom use at varying grade levels. These lessons are aligned with national standards, curriculum frameworks in 50 States and 21st Century Skills. Kit materials can be downloaded (without cubes) for free. Kits can be ordered online at [www.YouCanDoTheCube.com](http://www.YouCanDoTheCube.com) using promo code **OCMC2011** to receive special pricing!



[www.YouCanDoTheCube.com](http://www.YouCanDoTheCube.com)

You Can Do The Rubik's Cube

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