

# WFF 'N PROOF<sup>®</sup> Tournament Rules 2016-17

## I. Starting a Match (Round)

- A.** Two- or three-player matches will be played. A *match* is composed of one or more shakes. A *shake* consists of a roll of the cubes and the play of the game ending with at least one player attempting to write a solution. A solution is a set of WFFs (see section **II-B**) (premises) and rule names (see section **III**) (rules) such that the goal can be inferred from those WFFs as premises by the rules named. It must be accompanied by a proof which justifies it.
- B.** The following equipment is needed to play the game.
1. 28 cubes: there are fourteen uppercase letters (C, A, K, E, N, R) and fourteen lowercase letters (p, q, r, s, i, o).
  2. A playing mat: this contains four sections:
    - (a) **Goal**: cubes played here form the Goal.
    - (b) **Permitted**: any or all cubes played here *may* be used in any Solution.
    - (c) **Forbidden**: any or all cubes played here *cannot* be used in any Solution.
    - (d) **Required**: *all* cubes played here must be used in any Solution, in either the rules or premises portion of the solution, and must be an *essential* part of the solution (see Section **VII-B-4**)
  3. A one-minute sand timer: this is used to enforce time limits.
  4. A challenge block: This is a cube or similar object and not a flat object like a coin. It should not be so large that two players can grab it simultaneously.
- C.** Players may use only pencils or pens, and blank paper. No prepared notes, books, tables, calculators, cell phones, or other electronic devices may be used.
- D.** The Goal-setter for the first shake is determined by lot. On each subsequent shake, the Goal-setter is the player immediately to the *left* of the previous Goal-setter.
- To determine the first Goal-setter, each player rolls an uppercase letter. The player rolling the letter closest to the start of the alphabet sets the first Goal. Players tied roll again until the tie is broken.

## II. Symbols and Well Formed Formulas (WFFs)

- A.** There are four types of cubes used in the tournament version of Wff 'N Proof
1. *Sentence variables* consist of p, q, r, & s. They are the most basic WFFs and form the building blocks of more complicated WFFs
  2. *Connectives, (aka CAKE letters)* consist of C, A, K, & E. They are used to connect sentence variables to form WFFs and with rules cubes to form rules.
  3. *Negation, the N cube*, is used to make WFFs (see **II-B-3-b**) or with rules cubes to make rules.
  4. *Rules Cubes* consist of R, i, & o. They are used to form rules.
- B.** The sentence variables and the connectives letters are used to form *Well Formed Formulas, or WFFs*.
1. The Goal (the conclusion of the proof), any premises presented, and every line of any proof presented must be legal WFFs.
  2. The most basic WFFs are the sentence variables - p, q, r, s
  3. Longer WFFs are formed using the *connectives* along with the sentence variables
    - (a) C, A, K, & E are placed in front of two smaller WFFs to make a longer WFF

*Examples: Kpr (The K connects the p and the r to form a K WFF)*  
*Cqs (The C connects the q and the s to form a C WFF)*  
*Esp (The E connects the s and the p to form an E WFF)*  
*Aqq (The A connects the q and the q to form an A WFF)*

*CKprAsp (The C connects the Kpr WFF to the Asp WFF)*

*AEqsp (The A connects the Eqs WFF to the p WFF)*

*KAqKqsEpp (The A connects q with Kqs, and the outside K connects AqKqs with Epp)*

(b) N is placed in front of a smaller WFF to make a WFF

Examples: Nq

Ns

NNp

NKpr

KNpr

CNpNs

### III. Rules

A. In the Basic Game of WFF 'N Proof, the following rules are used: *Co, Ai, Ki, Ko, Ei, Eo, & Rp*

*Note: None of these rules require sub-proofs, and as a result sub-proofs are not allowed in the Basic Game.*

B. The Regular Game of WFF 'N Proof uses the following rules in addition to the rules used in the Basic Game: *Ci, Ao, Ni, No, & R*

*Note: As these rules require sub-proofs, sub-proofs are allowed in the Middle, Junior and Senior Divisions.*

C. Even if it is used multiple times in a proof, each rule must only appear once in a solution.

*Example:*

	<u>p, KsCpr</u>	<u>⇒</u>	<u>Ksr</u>
1	p		s
2	KsCpr		s
3	s		Ko, 2
4	Cpr		Ko, 2
5	r		Co, 1,4
6	Ksr		Ki, 3,5

solution: p, KsCpr / Ko, Co, Ki

*Note in the proof above, Ko is used twice in the proof, but is only allowed once in the solution*

D. In addition to being used to form the *Rp (Repeat)* rule, and as the *R (Reiterate)* rule in Regular WFF, the *R* cube may vary and stand for any rule.

1. The *R* cube takes the place of the entire rule (i.e. *Ci, Ko*).

2. If multiple *R* cubes are used, each *R* may stand for a different rule

3. The use of the *R* cube as a rule must be indicated in the solution. The most common way to do this is to write *R* and put the rule in parenthesis after the *R*: i.e. *R(Ci)*

### IV. Starting a Shake and Setting the Goal

A. To begin a shake, the Goal-setter rolls all 28 (14 uppercase, 14 lowercase) cubes. The symbols on the top faces of the rolled cubes form the *Resources* for the shake.

1. A shake begins as soon as the timing for rolling the cubes is started or the cubes are rolled.

2. During a shake, no player may turn over a cube or obstruct the other players' view of any cube. (See section IX-C)

B. The player who rolls the cubes must set a Goal by transferring the cube(s) of the Goal from Resources to the Goal section of the playing mat.

C. A Goal consists of at least one and at most seven cubes which form a WFF. Once a cube touches the Goal section of the mat, it must be used in the Goal.

1. The Goal-setter indicates the Goal has been set by saying "Goal."
  2. The Goal-setter may rearrange or regroup the cubes in the Goal section until he says "Goal."
  3. If the time runs out to set the Goal or the setter turns the timer, it has been set.
  4. The Goal may not be changed once it has been set.
- D.** Before moving the first cube to the Goal section of the mat, the Goal-setter may make a *bonus move*.
1. To make a bonus move, the Goal-setter must say "Bonus," then move one cube from Resources to a section which forbids that cube (See section **I-B-2**) prior to placing cubes on the Goal section.
  2. A Goal-setter who is leading in the match may not make a bonus move.  
If the Goal-setter makes a bonus move while leading in the match and an opponent points out the error before the next player moves or someone legally challenges, the cube that has been forbidden is returned to Resources. In the Junior and Senior Division, the mover also receives a one-point penalty.  
Note – it is legal to bonus while in the lead in Basic WFF.

## V. Moving Cubes

- A.** After the Goal has been set, play progresses in a clockwise direction (to the left).
- B.** On their turn, each player must either move a cube from Resources to one of the sections of the playing mat (Required, Permitted, Forbidden) or challenge the last Mover.  
The move of a cube is completed when it touches the mat. Once a cube is legally moved to the mat, it stays where it was played for the duration of the shake.
- C.** If you are not leading in the match, then "on your turn you may take a bonus move before making a regular move."
1. To make a bonus move, the Mover must say "Bonus," then move one cube from Resources to Forbidden (See section **I-B-2**).  
*Comments*
    - (a) If you do not say 'Bonus' before moving the forbidden cube, the move does not count as a bonus move but as a regular move. You are not entitled to play a second cube.
    - (b) When making a bonus move, the first cube *must be* forbidden. The second (bonus) cube may be moved to any section of the mat.
  2. If the player in the lead makes a bonus move and an opponent points out the error before another player makes a legal move or challenge, the Mover must return the second cube played on that turn to Resources. The mover also receives a one-point penalty.  
Note: If both cubes were forbidden, the Mover chooses which to return to Resources.

## VI. Challenging

- A.** Whether or not it is your turn, you may challenge another player who has just completed a move including setting the Goal. The only two legal challenges are Now and Impossible.
1. By challenging *Impossible*, a player claims that no correct Solution can be written regardless of how the cubes remaining in Resources may be played.  
*Comments*
    - (a) If the Goal is not a WFF an opponent should challenge Impossible. Examples of such Goals are pKr, CCCss, Apo, Epqrs.
    - (b) Occasionally it is obvious before the Goal-setter completes the Goal that no Solution is possible. However, opponents must still wait until the Goal-setter indicates the Goal is finished before challenging. You may not pick up the challenge block and "reserve" the right to challenge when the Goal is completed.
    - (c) A Player who challenges "Never" will be considered to have challenged "Impossible". There will be no penalty for saying "Never" instead of "Impossible".

2. By challenging *Now*, a player claims that a Solution can be written using the cubes on the mat and *one* cube (or no additional cubes) from Resources.

a. A player may challenge *Now* only if there are at least two cubes in Resources.

If a player challenges *Now* with fewer than two cubes in Resources, the challenge is invalid and is set aside. The player who called *Now* also receives a one point penalty.

*Comment* If only one cube remains in Resources and no one challenges *Impossible*, then a Solution is possible using that one cube. Since the latest Mover had no choice but to play the second-to-last Resource cube to the mat, it is not fair that he be subject to a *Now* challenge. (However, an *Impossible* challenge could be made.) See Section VIII for the procedure to be followed when one cube remains in Resources.

b. Since a correct Solution must contain at least two cubes, it is illegal to challenge *Now* after the Goal has been set but before a cube has been played to Required or Permitted. If a player challenges *Now* before any cubes have been played to Required or Permitted, the challenge is invalid and is set aside. The player who called *Now* also receives a one point penalty.

B. A challenge block is placed equidistant from all players. To challenge, a player must pick up the block and say “*Now*” or “*Impossible*.”

A player who picks up the block and makes an invalid challenge is penalized one point, and the challenge is set aside. Examples of invalid challenges are (a) challenging yourself in Regular WFF (you were the last Mover) – in Basic WFFR w, the challenge is set aside and there is no -1 penalty, (b) challenging *Now* before any cubes have been played to the mat.

If a player picks up the block, then decides not to challenge (without saying “*Now*” or “*Impossible*”), the player accepts a one-point penalty and play continues.

*Comments*

(a) The purpose of the block is to determine who is the Challenger in a shake. This includes situations such as when two players wish to challenge at the same time in a three-player match.

(b) Touching the challenge block has no significance. However, players may not keep a hand, finger, or pencil on, over, or near the block for an extended period of time. (See section IX-C)

(c) A player must not pick up the challenge block for any reason except to challenge.

## VII. Writing and Checking Solutions and Proofs

A. After a valid challenge, at least one player must write a Solution and a Proof.

1. After a *Now* challenge, the Challenger must write a Solution and a Proof. (The Mover may not present a Proof or Solution.)

2. After an *Impossible* challenge, the Mover must write a Solution and a Proof. (The Challenger may not present a Proof or Solution.)

3. After any challenge in a three-player match, the Third Party must decide whether to agree with the Challenger or the Mover. If the player with whom the Third Party agrees must write a Solution and a Proof, then the Third Party must also write a Solution and a Proof.

B. To be *correct*, a Solution must include premises that are WFFs (see section II-B), and legal rules (see section III) and must be accompanied by a *Proof*.

1. The Solution must be separate from the Proof in such a way that it is clear that it is not part of the Proof.

2. The Proof must follow the following guidelines:

(a) The top line of the proof must list the premises and the conclusion, separated by an arrow.

i.e.  $p, r \longrightarrow Kpr$

(b) All premises in the solution must be listed first in the proof. Each premise must be listed on a separate line.

(c) Premises, which are sometimes called suppositions, are often indicated in proofs with an “S”. However, no player shall be penalized for failure to indicate their suppositions.

(d) Sub proofs must be indented. The lines that delimit proofs must be written.

(e) Each sub proof must have one and only one premise.

- (f) Each WFF below the suppositions must be justified by writing one of the legal rules (see section III). The only exception to this is that the R (Reiterate) rule may be combined with exactly one other rule in forming a reason for a WFF.
- (g) When using the R rule, it is necessary to indicate in writing the number of times that the WFF has been reiterated (i.e. if a WFF has been reiterated from an exterior proof through two levels of sub proofs, R,R would be used).
- (h) It is common to number lines of a proof and to refer to these step numbers when writing rules in proof. However, *no player shall be penalized for failure to number steps or to refer to steps by number when writing the rule for each step.*
- (i) Examples of acceptable proofs:  
*Basic proof:*

	$p, Ksq \implies KAspq$	
1	$p$	$s$
2	$Ksq$	$s$
3	$q$	$Ko, 2$
4	$Asp$	$Ai, 1$
5	$KAspq$	$Ki, 3,4$

solution:  $p, Ksq / Ko, Ai, Ki$

*Regular proof with sub-proofs:*

	$Epq \implies CNpNq$	
1	$Epq$	$s$
2	a   $Np$	$s$
	b	1   $q$   $s$
		2   $Epq$   $R, R, 1$
		3   $Cqp$   $Eo, 2$
		4   $p$   $Co, 1,3$
		5   $Np$   $R, a$
	c   $Nq$	$Ni, b$
3	$CNpNq$	$Ci, 2$

solution:  $Epq / R, Eo, Co, Ni, Ci$

*Proof showing standard way to indicate wild cubes and cubes in Required:*

	$Eqr \implies KCqrCrq$	
1	$Eqr$	$s$
2	$Cqr$	$Eo, 1$
3	$Crq$	$Eo, 1$
4	$KCqrCrq$	$Ki, 2,3$

solution:  $Eqr / Eo, R(Ki)$



**3. The Solution must use the cubes correctly.**

- (a) The Solution contains at least *two* cubes.
- (b) The Solution uses *all* the cubes in Required (see section VII-B-4).
- (c) The Solution uses *no* cubes in Forbidden.

*Comment* Since several Resource cubes may show the same symbol, it is possible to have a q in Forbidden which must *not* be used in the Solution at the same time that there is a q in Required which *must* be used."

- (d) The Solution may use one or more cubes in Permitted.

- (e) After a Now challenge, the Solution must contain *at most one* cube from Resources.
  - (f) After an Impossible challenge, any cubes in Resources may be used in the Solution.
4. Any cubes in Required must be used in the Solution in such a way that removal of those cubes from the solution would cause it to be incorrect.
- (a) To prove that a cube is non-essential, the solution checker must write a correct proof that uses all of the solution, except for the premises(WFF) or rule(s) that the non-essential cube is a part of.
  - (b) No cubes may be added to a solution when writing a proof of non-essentiality.
  - (c) Multiple premises and / or rules may be proven to be non-essential with the same proof
  - (d) The proof of non-essentiality cannot split the premises or rules of the original proof, or rearrange the cubes to make new premises or rules.
  - (e) Cubes in Required should be indicated in a solution. The most common way to do this is to put an arrow below the cubes that are in Required  
*If the cubes in Required are not indicated, the solution may be ambiguous if the solution contains two of the same cube where one cube is in Required and the other is in Permitted. In that case the solution checker may chose to prove either cube non-essential.*  
*Example: A solution of Kpr / Ko, Ki is presented, where one of the K cubes is in Required, and two are in Permitted. If the K in Required is not pointed out in the solution, the solution checker may choose to prove any of the K cubes non-essential.*
- (e) Example of non-essential proof  
*If the following proof was presented:*

	<u>r, p, s</u> $\longrightarrow$ Krs	
1	r	s
2	p	s
3	s	s
4	Krs	Ki, 1, 3
solution: r,p,s / Ki		
<div style="display: flex; justify-content: center; gap: 20px;"> <span style="font-size: 2em;">↑</span> <span style="font-size: 2em;">↑</span> </div>		

*The solution checker could prove that the p cube was non-essential and the solution was incorrect by presenting the following proof:*

	<u>r, s</u> $\longrightarrow$ Krs	
1	r	s
2	s	s
3	Krs	Ki, 1,2
solution: r,s / Ki		
<div style="display: flex; justify-content: center; gap: 20px;"> <span style="font-size: 2em;">↑</span> </div>		

- C. After the time for writing Solutions has expired (or when all Solution-writers are ready), each Solution and Proof that is presented must be checked for correctness.
1. After a challenge in a three-player match (and before any Solution is presented), the Third Party must indicate by the end of the three minutes for writing Solutions whether she is presenting an Solution. The Third Party may not retract her decision once she has indicated whether or not she will present an Solution.
- Comment - To indicate his intention on the challenge, the Third Party may:*
- (a) state whether or not he will present an Solution;
  - (b) indicate which party, Mover or Challenger, the Third Party is "joining" (agreeing with) on the challenge. This can be done verbally or by pointing to the party.
  - (c) present or not present an Solution when the time limit for writing Solutions expires.

2. All Solutions with Proofs must be presented before any is checked.
  - (a) Once a player presents a Solution to the opponent(s), she may make no further corrections or additions even if the time for writing Solutions has not expired.
  - (b) Each Solution-writer must circle the Solution to be checked, *including the proof that accompanies the Solution*. A writer who forgets to circle the Solution must do so immediately when asked by an opponent.
3. Opponents have three minutes to check each Solution and Proof. When more than one Solution must be checked, they may be checked in any order. In a three-player match, *both* opponents must check a player's Solution during the *same* three minutes. No other Solution should be checked during this time. Any proofs of non-essentiality must be written within the same three minutes.
4. Within the time for checking a Solution, opponents must accept or reject the Solution. If the Solution is rejected, an opponent must show that it violates at least one of the criteria in section **VII-B**. A Solution is correct if no opponent shows that it is incorrect.

After a Challenge in a three-player match, a player who does not present a Solution for a shake scores 2 if he accepts another player's Solution as correct even if that Solution is subsequently proven wrong by the other checker.

*Comment* - Players must not physically move the cubes in Required, Permitted, and Resources to form the Solution being checked. This causes arguments over where each cube was played.

5. A player who claims an opponent's Solution is not correct must give at least one of the following reasons (or cite one of the reasons in section VII-B).
  - (a) The Goal is not a WFF.
  - (b) The Solution contains a premise that is not a WFF.
  - (c) The Solution writer has used a rule incorrectly in their proof
  - (d) A cube in Required is non-essential in the solution writer's proof. (see section **VII-B-4**)
  - (e) The Solution uses a rule, or rules that are not allowed in that division
  - (f) The solution writer does not have the necessary cubes to complete their solution
  - (g) The Solution is not accompanied by a correct proof.

**Proofs may be incorrect for any of the following reasons:**

1. A WFF other than a premise does not have a Rule listed to justify it
2. The proof does not conclude with the goal
3. Two or more WFFs are written on the same line.
4. One line has an incorrectly written WFF
5. A Rule is written incorrectly
6. In Regular WFF 'N Proof, a sub-proof is not indented
7. There are two or more Rules use to justify a WFF. The lone exception to this is the R (reiteration) rule may be used in Regular WFF in combination with other rules.

- D. A Player may **not** ask the judge if a Solution equals the Goal. If asked, a Judge should simply state that he can not answer that question. A player should be more specific about why they think a Solution is incorrect, asking, for example, procedural questions or questions about the proof, such as, "Was the Co rule used correctly," or "In line 3 of the proof is that a Wff?".

## VIII. Last Cube Procedure

- A. If one cube remains in Resources, the next Mover must either play that cube to Required or Permitted or challenge Impossible. When the cube has been moved, each player has two minutes to write a Solution.

The last cube in Resources may *not* be moved to Forbidden. If a player does so, any challenge that is made is set aside and the cube is returned to Resources. There is no penalty unless the player's time to move expires. (See Section XI.)

- B. An opponent may challenge Impossible against the player who moved the last cube from Resources to Required or Permitted, provided the challenge is made by the end of the first minute for writing

Solutions. If the challenge is made, the Mover (and the Third Party, if siding with the Mover) has the rest of the original two minutes to write a Solution.

*Comment* Any Now challenge against the player moving the last cube is invalid as is any Impossible challenge made after the first minute for writing Solutions. In both cases, the challenge is set aside. A player challenging Now in this case receives a one point penalty.

## IX. Illegal Procedures

A. Any action which violates a procedural rule is *illegal procedure*. A player charging illegal procedure must specify (within 15 seconds) the exact nature of the illegal procedure.

1. If a move *is* an illegal procedure, the Mover must return any illegally moved cube(s) to their previous position (usually Resources) and, if necessary, make another move.

The Mover must be given at least 10 seconds to make this correction, unless the original move was made after the ten-second countdown (see section **XI-A-3** below), in which case the time limit rule (section **XI-A**) is enforced. In general, there is no direct penalty except that the Mover may lose a point if he does not legally complete his turn during the time limit.

*Examples of illegal procedures*

Moving out of turn, moving two cubes without calling "Bonus" before the first cube touches the mat in a forbidden section. (see section **I-B-2**)

2. If the move is *not* illegal procedure, the cube stands as played.

*Comment* There is no penalty for erroneously charging illegal procedure. However, see section **IX-C** if a player does so frequently.

B. An illegal procedure is *insulated* by a legal action (for example, a move or challenge) by another player so that, if the illegal procedure is not corrected before another player takes a legitimate action, it stands as completed.

*Example* Suppose the player in the lead makes a bonus move. Before anyone notices the illegal procedure, the next mover moves (or a valid challenge is issued). In this case, the illegal bonus move stays without penalty.

C. Certain forms of behavior interfere with play and annoy or intimidate opponents. If a player is guilty of such conduct, a judge will warn the player to discontinue the offensive behavior. Thereafter during that round or subsequent rounds, if the player again behaves in an offensive manner, the head judge may penalize the player one point for each violation after the warning. Flagrant misconduct or continued misbehavior may cause the player's disqualification for that round or all subsequent rounds. The head judge may even decide to have the other two opponents replay one or more shakes or the entire round because play was so disrupted by the third party. In some cases, the head judge may order the shake replayed by all three players.

*Examples* This rule applies to constant talking, tapping on the table, humming or singing, loud or rude language, keeping a hand or finger over or next to the challenge block, making numerous false accusations of illegal procedure, and so on. It also includes not playing to win but rather trying only to ruin the perfect scores of one or both opponents (for example, by erroneously challenging Now or Impossible at or near the beginning of each shake so that both opponents will score 5 for the round), saying one variation but circling another, constantly charging illegal procedure erroneously, counting down the 10-second warning in an obnoxious manner, etc.

## X. Scoring a Shake

A. After a challenge, a player is *correct* according to the following criteria.

1. That player had to write a Solution and did so correctly.

If the Third Party agrees with the person who must write a Solution, the Third Party must write a correct Solution also.

2. That player did not have to write a Solution (someone else did), and no opponent wrote a correct Solution.



Exception: After a Challenge in a three-player match, a player who does not present a Solution for a shake scores 2 if he accepts another player's Solution as correct even if that Solution is subsequently proved wrong by the other checker.

- B. After a challenge, points are awarded as follows.
  - 1. Any player who is not correct scores 2.
  - 2. Any player who is correct scores 6, unless that player is the Third Party agreeing with the Challenger, in which case the score is 4.
- C. After the last cube from Resources is moved to the playing mat and no one challenges Impossible, points are awarded as follows:
  - 1. Any player who writes a correct Solution scores 4.
  - 2. Any player who does not write a correct Solution scores 2.
- D. A player who is absent for a shake scores 0 for that shake.

## XI. Time Limits

- A. Each task a player must complete has a specific time limit (listed below). The one, two, and three-minute time limits are enforced with the timer. If a player fails to meet a deadline, he loses one point and has one more minute to complete the task. If he is not finished at the end of this additional minute, another one-point penalty is imposed and he loses his turn or is not allowed to complete the task.

Note: In Elementary and Middle Divisions, each one-point penalty must be approved by a judge initialing the score sheet.

- 1. The time limits are as follows.

(a) rolling the cubes and setting the Goal	2 minutes
(b) first turn of the player to the left of the Goal-setter	2 minutes
(c) all other regular turns (including any bonus moves)	1 minute
(d) stating a valid challenge after picking up the challenge block	15 seconds
(e) writing a Solution	3 minutes

*During this time, the Third Party (if there is one) must decide whether to present a Solution after a Now or an Impossible challenge.*

- (f) deciding whether an opponent's Solution is correct
- 3 minutes
- 2. Often a player completes a task before the time limit expires. When sand remains in the timer from the previous time limit, the next player will receive additional time. An opponent timing the next player may either flip or not flip the timer so as to give the opponent the *lesser* amount of time before the remaining sand runs out and the next time limit can be started.
- 3. A player who does not complete a task before sand runs out for the time limit must be warned that time is up. An opponent must then count down 10 seconds loud enough for the opponent to hear. The one-point penalty for exceeding a time limit may be imposed only if the player does not complete the required task by the end of the countdown.

The countdown must be done at a reasonable pace; for example, "1010, 1009, ..., zero."

**An exception to this rule occurs when a player picks up the Challenge Block but does not state a valid challenge within the 15-second time limit. If the player does not wish to challenge, he loses one point and play continues.**

- B. A round lasts a specified amount of time (usually 35 minutes). After 30 minutes, players are told not to start any more shakes.

Players have five minutes to finish the last shake. After these five minutes, players still involved in a shake in which no challenge has been made and one or more cubes remain in Resources will be told: "Stop, don't move another cube – this is the end of the round. Each player has three minutes to write a correct Solution and Proof that may use any of the cubes remaining in Resources." Any player who presents a correct Solution scores 4 points for that shake; an incorrect Solution scores 2.

## XII. Scoring a Match

- A. Each player is awarded points for the match based on the sum of his scores for the shakes played during that match according to the following tables.

Three-Player Matches	Points
First place	6
Two-way tie for first	5
Three-way tie for first	4
Second place	4
Tie for second	3
Third place	2

Two-Player Matches	Points
First place	6
Tie for first	5
Second place	4

- B. When a round ends, each player must sign (or initial) the scoresheet and the winner (or one of those tied for first) turns it in. If a player signs or initials a scoresheet on which his score is listed incorrectly and the error was a simple oversight, then, with the agreement of all players, correct the scores.

However, if there is evidence of intent to deceive and the error was not a simple oversight, then do the following.

1. If the error gives the player a lower score, she receives the lower score.
2. If the error gives the player a higher score, she receives 0 for that round.