

WFF 'N PROOF[®] Tournament Rules 2018-19

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:** 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 premises or rules 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 ball: This is a ball of paper or similar object and not a flat object like a coin. It should not be too 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 rolling an uppercase letter. 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. *One letter WFF's* consist of p, q, r, or s. They are the most basic WFFs and form the building blocks of more complicated WFFs
 2. *CAKE letters* consist of C, A, K, & E. They are used to connect p, q, r, & s which are used to form longer WFFs. They are also used as 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 only* consist of R, i, & o. They are used to form rules. CAKE letters are also used with i and o to make rules.
- B.** The one letter WFF's and the CAKE letters are used to form *WFFs of 3 or more letters*.
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 *p, q, r, or s*
 3. Longer WFFs are formed using the *CAKE letters* along with single letter WFF's
 - (a) C, A, K, or 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 to form a C WFF)
AEqsp (The A connects the Eqs WFF to the p WFF to form an A WFF)
KAqKqsEpp (The K connects AqKqs with Epp to form a K WFF)

(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 Elementary Game of WFF 'N Proof and the Middle Game of WFF 'N Proof, the following rules are used: *Ko, Ki, Rp, Ai, Co, Eo, Ei*

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

B. The Regular Game of WFF 'N Proof uses the following rules in addition to the rules mentioned before: *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:

	<i>p, KsCpr</i>	\implies	<i>Ksr</i>
1	<i>p</i>		<i>s</i>
2	<i>KsCpr</i>		<i>s</i>
3	<i>s</i>		<i>Ko, 2</i>
4	<i>Cpr</i>		<i>Ko, 2</i>
5	<i>r</i>		<i>Co, 1, 4</i>
6	<i>Ksr</i>		<i>Ki, 3, 5</i>

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* (*Repetition*) rule, and as the *R* (*Reiterate*) rule in Regular WFF, each *R* cube may be wild 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 Set.”
 - 2. The Goal-setter may rearrange or regroup the cubes in the Goal section until he says “Goal Set.”
 - 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 the Forbidden section (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 was moved second is returned to Resources. The mover also receives a one-point penalty.

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 make a bonus move.”
 - 1. To make a bonus move, the Mover must say “Bonus,” then move one cube from Resources to Forbidden and move a second cube to Forbidden, Permitted, or Required.

Comments

 - (a)** If you do not say ‘Bonus’ before moving cube to Forbidden, 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 placed in* Forbidden. The second cube may be moved to Forbidden, Permitted, or Required or Goal if you are the goal setter.
 - 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 placed in forbidden at the same time, 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 and Proof 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 ball 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 with a Proof 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 ball is placed equidistant from all players. To challenge, a player must pick up the challenge ball and say “*Now*” or “*Impossible*.”
- A player who picks up the challenge ball 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 Elementary Wff ‘N Proof and Middle Wff ‘N Proof, 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 challenge ball, 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 challenge ball 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 ball has no significance. However, players may not keep a hand, finger, or pencil on, over, or near the challenge ball for an extended period of time. (See section IX-C)
 - (c) A player must not pick up the challenge ball for any reason except to make a 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 and Solution.)
 - 2. After an Impossible challenge, the Mover must write a Solution and a Proof. (The Challenger may not present a Proof and 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. Solutions can be written above, below, left, or right of the Proof.
2. The Proof must follow the following guidelines:
 - (a) The top line of the proof should list the premises and the goal, 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 in the proof.
 - (c) Premises are followed in proofs with an "s" which stands for suppose or supposition. However, no *player shall be penalized for failure to indicate supposition*.
 - (d) Each proof must include at least one rule in addition to the Premise.
 - (e) Sub-proofs must be indented. The lines that make-up the sub-proofs must be written.
 - (f) Each sub-proof must have one and only one premise written above the top line.
 - (g) Each WFF below the premise(s) 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 in a sub-proof.
 - (h) 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).
 - (i) It is proper 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*. The following three Proofs with Solutions show how to number steps.
 - (j) Examples of acceptable proofs:
Proof without a sub-proof:

	$p, Ksq \longrightarrow KAspq$	
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

Proof with sub-proofs:

	$Epq \longrightarrow CNpNq$	
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	→	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. That means they are absolutely necessary to the solution and proof.

- (a) To prove Non-Essential, the solution checker must write a new solution minus one or more Premises and/or Rules that contained a cube that was put in Required along with a Proof to support this new solution.
- (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. Not writing arrows does not make the solution incorrect. *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 which cube in the solution is marked as from Required section and prove it non-essential.

- (e) Example of non-essential proof and solution
If the following proof and solution was presented:

	r, p, s	→	Krs
1	r		s
2	p		s
3	s		s
4	Krs		Ki, 1, 3

solution: r,p,s / Ki

 ↑ ↑

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

	r, s	→ Krs
1	r	s
2	s	s
3	Krs	Ki, 1,2

solution: r,s / Ki

↑

- 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 and Proof are presented), the Third Party must indicate by the end of the three minutes for writing Solutions whether she is presenting a Solution and Proof or not. The Third Party may not retract her decision once she has indicated whether or not she will present a Solution and Proof.

Comment - To indicate her intention on the challenge, the Third Party may:

 - (a) state whether or not she 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 a Solution and Proof when the time limit for writing expires.
 2. All Solutions with Proofs must be presented before any are checked.
 - (a) Once a player presents a Solution and Proof to the opponent(s), she may make no further corrections or additions even if the time for writing 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 and Proof should 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 and Proof during the *same* three minutes. No other Solution should be checked during this time. Any proofs and solutions of non-essentiality must be written within the same three minutes.
 4. Within the time for checking a Solution and Proof, opponents must accept or reject the Solution and Proof. If it is rejected, an opponent must show that it violates at least one of the criteria in section **VII-B**. A Solution and Proof is correct if no opponent shows that it is incorrect.

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 cannot 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 last cube has been moved, each player has three minutes to write a Solution and Proof.

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. The mover must move the last cube to permitted or Required. 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 of the three minutes for writing Solutions and Proofs. If the challenge is made, the Mover (and the Third Party, if siding with the Mover) has the rest of the original three minutes to write a Solution and Proofs.

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 and Proofs. 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 ball, 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), 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 Proof and did so correctly.

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

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

- 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 and Proof scores 4.
2. Any player who does not write a correct Solution and Proof 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. When rolling cubes or moving a cube, 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, his time has ended. When checking a solution and proof, the solution writer or solution checker may ask for an extra minute and receive a one point penalty. Only one extra minute is allowed.

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 ball 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 and Proof 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 when the 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 Ball 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 (35 minutes). After 30 minutes, players are told this is a five minute warning. You are not to start any new 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 and Proof scores 4 points for that shake; an incorrect Solution and Proof 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.