

# AGLOA

## PRACTICE Equations®

### Judges Certification Test

### Odd Year Variations

#### Special Instructions

1. You may use a **variation sheet** during the test but no other notes or printed materials.
2. You may write in this test booklet and/or use scratch paper.
3. You may take as much time as you need to complete this test.
4. Do not assume any variations are in play other than those listed in the question except for the Sideways and Upside-down variations in Junior and Senior Divisions.
5. If a question asks which Solution equals a given Goal, assume the use of cubes is not an issue unless the question explicitly deals with correct cube usage.
6. Throughout this test,  $\wedge$  means the same as  $*$  in older games.  $\sqrt{\quad}$  means root.

Depending on which division(s) you wish to qualify for, you will answer certain sections of the test as indicated in the following table. If qualifying for Middle only, skip questions 26-28. If qualifying for Junior or Senior Divisions, skip questions 26-30.

Divisions	No. of Questions	Which Questions
Elementary only	28	#1-28
Middle only	32	#1-25, 29-35
Elementary and Middle only	35	#1-35
Junior only	34	#1-25, 31-39
Junior and Senior only	38	#1-25, 31-43
All four divisions	43	#1-43

## All Divisions answer questions 1-25.

- Tom challenges Now against Jane. Tom presents an Equation that is proved incorrect. Pam, the Third Party, presents a correct Equation. How many points does Pam score?  
A. 6                      B. 5                      C. 4                      D. 2
- Which statement is *false*?  
A. All Equations must be presented before any is checked.  
B. A player checking an Equation should not make any marks on the Equation-writer's paper.  
C. In two-way matches, a player attempting to challenge does not need to pick up the challenge block.  
D. Once a player presents an Equation to the opponent(s), he may make no further corrections or additions even if the time for writing Equations has not expired.
- $4 \sqrt{(3 \wedge 12)} =$   
A. 81                      B. 27                      C. 18                      D. 9
- Which statement about Bonus moves is *true*?  
A. If you make a Bonus move when leading the match and an opponent charges illegal procedure, you must return the second cube to Resources.  
B. The Goal-setter may always make a Bonus move to Forbidden before setting the Goal.  
C. A Bonus move may be made to Required, Permitted, or Forbidden.  
D. After making a Bonus move, a player has an additional minute to make the regular move.
- An Impossible Challenge   ?  
A. may not be made against the Goal right after it has been set.  
B. may be made only after a cube has been moved to Forbidden.  
C. may not be made when less than two cubes remain in Resources.  
D. may be made within one minute after the last cube from Resources has been moved to Required or Permitted.
- Which Goal has no defined interpretation? (Assume 0 Wild is *not* in effect.)  
A.  $4\sqrt{0-3}$                       B.  $3\sqrt{1-9}$                       C.  $7-9 \wedge 0$                       D.  $2-5\sqrt{0}$
- If the Multiple operations variation is chosen, which statement is *true*?  
A. Each Solution-writer must indicate in writing that an operation sign is being used multiple times in his Equation.  
B. After an Impossible challenge, any operation sign in Resources may be used many times in any Solution.  
C. After a Now challenge, an Equation-writer may not use an operation sign from Resources multiple times in his Solution.  
D. If Factorial is also chosen, the factorial symbol (!) may be used at most twice in any Equation.
- With Sideways cube, what does this expression equal?  $\frac{3}{4} + \frac{5}{6} - \frac{1}{2}$   
A.  $4 \div 5$                       B.  $1 \div 30$                       C.  $31 \div 30$                       D.  $19 \div 30$
- A match ends in a three-way tie. What does each player score for the round?  
A. 3                      B. 4                      C. 5                      D. 6

10. With Upside-down,  $L - (\epsilon - 6) =$   
 A. -16                      B. -10                      C. -4                      D. 2
11. Joe challenges Now. Before the Third Party decides what to do and before the time expires for presenting Equations, Joe presents his Equation. What happens?  
 A. The Third Party may not present an Equation, and Joe is penalized a point.  
 B. Joe is penalized a point and must wait for the Third Party to decide whether to present an Equation.  
 C. The Third Party may not present an Equation, and Joe is not penalized a point.  
 D. Joe is not penalized any points, but the Third Party must still be allowed to present an Equation.
12. Which Equation is ambiguous?  
 A.  $0+5-7=1-3$       B.  $(6-4)\times 2-1=3$       C.  $3\times 5\div 1+0=15$       D.  $9-6^1=3$
13. What happens when a player's time runs out for making a move? (Assume a ten-second warning was given.)  
 A. The player loses one point and forfeits her turn.  
 B. The player forfeits her turn but does not lose a point.  
 C. The player loses one point and receives one more minute to move.  
 D. The player receives one more minute to move but does not lose a point.
14. Which expression equals 0?  
 A.  $9\sqrt{0}$                       B.  $0^0$                       C.  $7^0$                       D.  $0\sqrt{6}$
15. With Factorial, which Equation is *not* correct for this Goal?      30  
 A.  $4! + 3! = 30$       B.  $6! \div 4! = 30$       C.  $3!! + 4! = 30$       D.  $3!! \div (6 \times 4) = 30$
16. A shake ends in a forceout. All three players – Corey, Jane, and Phyllis – present Solutions. Which is one correct way for them to begin checking Solutions?  
 A. Corey checks Jane's Solution while Phyllis checks Corey's and Jane checks Phyllis'.  
 B. Corey and Jane check Phyllis' Solution while Phyllis checks Corey's.  
 C. Phyllis and Jane check Corey's Solution while Corey times them.  
 D. Jane checks Phyllis' Solution while Corey checks Jane's and Phyllis times them.
17. Which statement is *true* about challenges?  
 A. A player who makes a Now challenge with one cube left in Resources is penalized one point.  
 B. In a three-player match, you may challenge only on your turn.  
 C. No challenges may be made after the last cube in Resources has been moved to Permitted or Required.  
 D. If a player makes a move, then challenges before the next move, the challenge is set aside and play continues with no penalty.
18. Isaac moves the last cube in Resources to Required. All players submit solutions. Isaac's is accepted as correct. How many points does Isaac score for the shake?  
 A. 6                      B. 4                      C. 3                      D. 2
19. What is the maximum number of cubes allowed in a legal Goal?  
 A. 4                      B. 5                      C. 6                      D. 7

20. John selects an illegal variation (such as 0 wild when no 0's are in Resources). Debra sets the Goal before someone notices John's mistake. Which is the correct procedure?
- John is penalized one point and must choose another variation.
  - John's variation is ignored, and he suffers no penalty.
  - An Impossible challenge should be made against the Goal.
  - Both John and Debra are penalized one point; the Goal is returned to Resources and John must pick another variation.
21. With Number of Factors and Multiple Operations, which Equation is correct? Assume the cubes are used correctly in each Equation.
- $xxx[(8+5)x4] = x9$
  - $xxx[8+(5x4)] = x9$
- I only
  - II only
  - Both I and II
  - Neither I nor II
22.  $4 \div (3 \div 6) =$
- 1/2
  - 2
  - 8
  - 12
23. With 0 Wild and Upside-down, which is *not* a correct value for this Goal?  $12 \div 0$
- 8
  - 6
  - 3
  - 6
24. After a Challenge in a three-player match, the Third Party   ?
- must declare whether she is presenting an Equation within the first minute of the two-minute time limit.
  - may still present an Equation after stating that she will not present an Equation.
  - may still not present an Equation after stating that she will present.
  - may take an extra minute to decide whether she will present an Equation.
25. With Number of Factors, the Goal  $x36xx9$  has which of these values?
- 12
  - 18
  - 27
- I only
  - II only
  - I and II only
  - I and III only

**Questions 26-28 are for Elementary Division only.**

26. With LCM and GCF, which is NOT a value of this Goal?  $3\sqrt{8^40}$
- 1
  - 2
  - 24
  - $2^{40}$
27. With Remainder, what are the correct values of this Goal?  $21x5\cdot 8$
- 1, 168
  - 1, 105
  - 7, 105
  - 7, 168
28. With Factorial and Three-operation Solution, which Equation is correct for this Goal?
- $$7 \div 5$$
- $5! + (6 \times 4) = 7! \div 5$
  - $(8-1) \div (3+2)! = 7 \div 5!$
  - $(8 \times 5) + 2 = 7! \div 5!$
  - $3! \times (6+1) = 7! \div 5!$

**Elementary Division candidates stop here.**

**Questions 29-30 are for Middle Division only.**

29. With Multiple of 7 and Base Eight, which Goal has no legal value?
- $62 \times 24$
  - $\sqrt{44} \times 34$
  - $2^{12}$
  - $\sqrt{11}^6$

30. With Number of Factors and Blue Exponent, which is *not* a value of this Goal in Middle Division?  $x^{12} \times 4^3 \leftarrow \text{blue } 3$
- A. 12                      B. 52                      C. 384                      D.  $24^3$

**Questions 31-35 are for Middle, Junior, and Senior Divisions only.**

31. With Powers of the Base, Base Nine, and Upside-down, which is *not* a possible Base Ten value of the 1 cube?
- A.  $-9^{10}$                       B.  $-1/9$                       C.  $1/81$                       D. 9000
32.  $16 \wedge (3 \div 4) =$
- A. 4                      B.  $16 \div 3$                       C. 8                      D. 64
33. With Upside Down,  $(1 \div \text{E}) \vee 4 =$
- A.  $4 \wedge (1 \div \text{E})$                       B.  $-1/64$                       C.  $-1/16$                       D.  $1/64$
34. With Sideways, what is the value of this Goal?  $\curvearrowright \vee 9$
- A. 81                      B. 3                      C.  $1/3$                       D. -3
35.  $(\infty + \infty) \vee 32 =$
- A. 2                      B. 64                      C.  $16 \times (6\sqrt{2})$                       D.  $32^5$

**Middle Division candidates stop here.**

**The remaining questions are for Junior/Senior Division candidates only.**

36. With Number of Factors, what is a correct value of this Goal?  $x8^{99}$
- A.  $3^{99}$                       B.  $2^{99}$                       C. 298                      D. 100
37. With Base Eleven and Powers of the Base, what is a base ten value of this Goal?
- $1x^{10}$
- A. 1                      B. 1.1                      C. 10                      D. 1100
38. With Multiple of 7 ( $k = 7$ ), what is the smallest positive integer that equals this Goal?
- $25 \wedge 53$
- A. 1                      B. 2                      C. 4                      D. 6
39. With Multiple of 11 ( $k = 11$ ) and Base Twelve, which is a correct Solution for this Goal?
- $21^{74}$
- I.  $4^2$                       II.  $25 \div 5$
- A. I only                      B. II only                      C. Both I and II                      D. Neither I nor II

**Junior Division candidates stop here.**

**The remaining questions are for Senior Division only.**

40. Which is an incorrect variation selection?
- A. Choosing Base Eight after an opponent has selected Base Nine
- B. Choosing Multiple of 8 after an opponent has selected Base Eight
- C. Choosing Log with no  $\div$  signs in Resources after 0 Wild has been selected
- D. Picking both Number of Factors and x Wild

41. With Log, what is the value of this Goal?  $9^{(4 \div 3)}$   
**A.** 2                      **B.** 8                      **C.** 16                      **D.** 64
42. With Decimal in Goal and Base Eight, which is *not* a base ten value of this Goal?  
 $34 + 2$   
**A.**  $11 \div 16$               **B.**  $11 \div 4$               **C.**  $11 \div 2$               **D.**  $39 \div 16$
43. With Imaginary,  $(| - 1) ^ 8 =$   
**A.** -16                      **B.** 2                      **C.** 4                      **D.** 16