Instructions for students

To be read to the students prior to the start of the contest:

This is the second round of the 2022–2023 ARML Power Contest and should take place between Saturday, February 19 and Sunday, March 6.

You will have 45 minutes to complete this set of problems. During this time you are encouraged to work together, communicating and sharing ideas. It is important that everyone understands the problem before splitting up into smaller groups. Make sure each person understands how the various notations, procedures, and computations work and the meanings of the vocabulary terms introduced in that material before beginning the actual contest.

For teams working face-to-face, language translators may be used on this contest, but no other electronic devices are allowed. This includes, but is not limited to, calculators, computers, tablets, and smartphones. Teams that are working together online are, obviously, going to use electronic communication; these teams are on the honor system to only use their electronic communication equipment to work together and not try to find information about the problem online.

The topic of the spring contest this year is inspired by an article in the *American Mathematical Monthly* by three of the most creative mathematical minds of the last half-century. It involves condensing numbers by splitting their written form into pieces, and adding the pieces together.

Please pay careful attention to the directions in each contest question, as that may save you quite a bit of writing! Remember that this is a contest of mathematical writing, and many problems require mathematical justification or proof. Be clear and concise. You may refer to the result of an earlier problem in your work—even if you didn't solve that problem. You may also refer to your work from an earlier problem. You may not refer to later problems, however, even if it does not create circular arguments. Please keep in mind that the problems are *not* ordered in increasing order of difficulty. You may be able to solve some later problems even if you cannot solve some of the earlier ones.

Use dark pencil or ink and please be legible. *Write on only one side of each answer sheet.* You may submit several answers on the same answer sheet, but be sure to submit only one solution for each problem! Answers on the backs of sheets that are not seen by the graders will receive no credit. If multiple answers to a single problem are found, all will be graded and the team will earn the *lowest* score for any of their solutions. At the conclusion of the contest, submit your solutions *in order* to your coach. Problems that are out of order (except when multiple solutions are written on the same page) have sometimes been overlooked by graders, and there is unfortunately no way to give credit retroactively if this happens.

The contest has a total of 40 points possible. You will be given a copy of the scoring sheet; the point value of each problem is also listed on the problem sheets. You are also encouraged to include any comments or concerns about the problem on the comment sheet.

Contests will be mailed in or submitted electronically, and scores will be posted online as soon as possible. The solutions will also be posted for coaches to download.

Good luck, and enjoy!

2022–2023 ARML Power Contest
Round 2
Grading Sheet

Team Name: _____

1. ____ [3]
2. ____ [4]
3. ____ [3]
4. ____ [2]
5. ____ [2]
6. ____ [2]
7. ____ [2]
8. ____ [2]
9. ____ [3]
10. ____ [3]
11. ____ [2]
12. ____ [2]
13. ____ [3]
14. ____ [4]
15. ____ [3]

Total score: _____

We have complied with the rules of this contest. _____
(Coach's signature)

_____
(Date)

2022–2023 ARML Power Contest
Round 2
Comment Sheet

2022–2023 ARML Power Contest
Round 2
Answer Sheet

Page ____ of ____. Problem(s) _____.

Team ID _____

2022–2023 ARML Power Contest
Round 2
Answer Sheet

Page ____ of ____. Problem(s) _____.

Team ID _____

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Answer Sheet

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Team ID _____

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