



Minor Challenge Set #1

STEM Field: Mathematics

Level: Intermediate

Challenge Name: Got It!

Project cost: 0-20 USD

Materials required:

- Pen and paper
- Tablet/laptop and internet access

Duration:

- This challenge takes approximately an afternoon to finish, however, the time guideline is an estimation only, and students and mentors can complete the tasks around their schedules.

Introduction

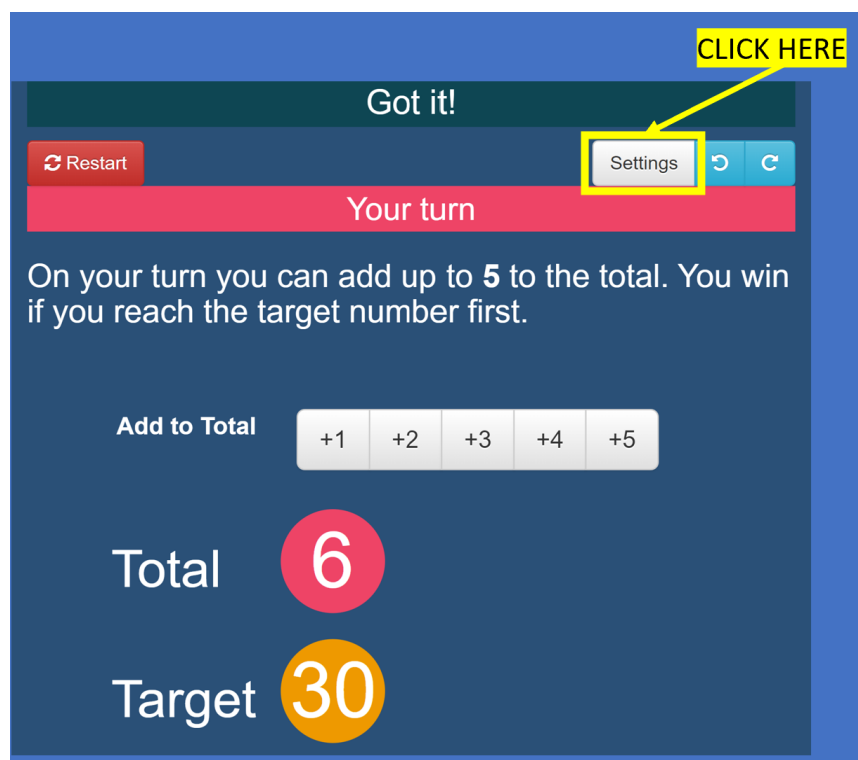
In this problem, you are playing an addition game called “Have You Got It?” It is a game for two players – you can play with a friend, or against the computer. In this challenge, you will play the game on your tablet or computer, against the computer first. Your goal is to find a winning strategy for the game!

Instruction

1. Navigate to this website on your tablet or computer. If you are on a computer, we recommend using Chrome browser. In this game, you will be taking your turn first.

<https://nrich.maths.org/gotit/#/number/30/5/1/0>

2. The target number of this game is 30. Each player will take turns to choose a number between 1 and 5. This number will be added to the running total, with the player who reaches the target number 30 first, is the winner.
3. Play this game against the computer a few times. Can you find a winning strategy? Test your strategy!
4. Navigate to this website on your tablet and computer.
<https://nrich.maths.org/gotit/#/number/30/5/1/1>
5. In this case, the computer is the first player. Play the game a few times. Use your previous strategy for this game – can you still win? If not, can you come up with another winning strategy?
6. You can test your winning strategy further by clicking on the “Settings” box.



You can choose different settings for a new game and test your strategy.

Settings

×

Choose game

Classic Got it ▾

Game mode

Play the computer ▾

First player:

You ▾

Target number

+

-

30

Each turn, add no more than

+

-

5

Does your strategy need adapting? Can you come up with a general winning strategy?

Extension

- A similar game called “Escape the Vortex” can be played with similar strategy. You can test your strategy for this game and evaluate its effectiveness.
<https://nrich.maths.org/gotit/#/island/30/5/1/0>
- Another similar game called “Down to Nothing” is a subtraction game where players take turns to subtract a target number from a number of their choice. The winner is the one who reaches 0 first.
<https://nrich.maths.org/1241>

Reflection Questions

- Are there any improvements you would make to this challenge?
- What real world application can you apply this challenge to?
- Is this puzzle easier or harder than you expected?
- Can you work out a winning strategy for any target number, or any number of turns?
- Is it best to always start the game first?

Submission Guidelines

- Submit your winning strategy and your answers to the Reflection questions.

Note: Remember, if you want to upload pictures of your Minor Challenge that also include you, please check if it is OK with your mentor first.

- The submission form is on the Minor Challenges page:
<https://sciencechallenge.org.au/index.php/minor-challenges/>
Fill out the details and make sure you upload your submission.

Learn More! Resources

- If you enjoyed the game presented in this challenge, or the Extension tasks, you may like to look more into other games presented by NRICH here.
<https://nrich.maths.org/9413/page/0>

Bibliography

- Have You Got It. NRICH. Available at: <https://nrich.maths.org/397>. [Accessed January 24, 2022].