

Title: Chase the Target

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Target Group:

This Scratch project is for junior high/high school students who have completed Algebra 1. This project requires logical thinking and basic knowledge of angles and orientations.

Objectives:

- 1) Students will be able to use math concepts to control sprites.
- 2) Students will be able to create a program that has interacting sprites.
- 3) Students will be able to create a program with multiple variables.

Assignment:

In your project you will write a game that has a chaser sprite that tries to hit a target sprite. The concept is a loose relation to “Pong” meets “Pac Man.” The chaser is moved by the user, while the target moves (and bounces) randomly on the screen. Score is kept and the game is timed.

1. Pick at least one background for the game. (5 points)
2. You need one sprite for the “chaser” and one that acts as the “target.” You may choose anything you like. The sizes should be appropriate for the background and relative to each other. (10 points)
3. Your target must move in all directions. It must also disappear, move to a random location, and reappear when “caught” by the chaser. (20 points)
4. The target must bounce off the sides at random angles. (20 points)
5. The target should move at a speed that is challenging, but not too difficult. (10 points)
6. The chaser needs to start in the center of the screen, at the location (0,0). (5 points)
7. The chaser should be moved by using the arrow keys. (10 points)
8. The chaser sprite needs to have an appropriate size and have at least two costumes. It needs to change costumes based on the direction it is moving. (15 points)
9. The game should be started by clicking the green flag. (5 points)
10. The game needs to have at least two variables: a score and a timer. (10 points)
11. The initial timer should be set at 15 seconds. (10 points)
12. Time should be added when the target is caught. (10 points)
13. The game needs to stop all scripts when the timer reaches 0. (10 points)
14. Your program must be able to run multiple times with the code initializing all the sprites and resetting the variables. (10 points)

Total points possible: 150

Reflection Questions:

1. How could this game be modified to get more challenging as the game progresses?
2. What are other ways that you could have chosen to move your chaser?
3. Are there other ways you could have kept score in the game?
4. How could you have used sounds with this assignment?
5. What was the most challenging part of this assignment?

Example: "Fruit Bat Feast" by BaymaxMom on Scratch

Idaho Computer Science Standards:

6-8.AP.05 Create, analyze, and modify control structures to create programming solutions. (Grades 6-8)

ISTE Standard: Creativity and innovation ◦ Communication and collaboration ◦ Research and information fluency ◦ Critical thinking, problem solving, and decision making ◦ Technology operations and concepts

6-8.AP.06 Predict the outcome of an algorithm and then step through it to verify your predictions. (Grades 6-8)

ISTE Standard: Communication and collaboration ◦ Critical thinking, problem solving, and decision making

6-8.AP.09 Use debugging and testing to improve program quality. (Grades 6-8)

ISTE Standard: Critical thinking, problem solving, and decision making ◦ Technology operations and concepts