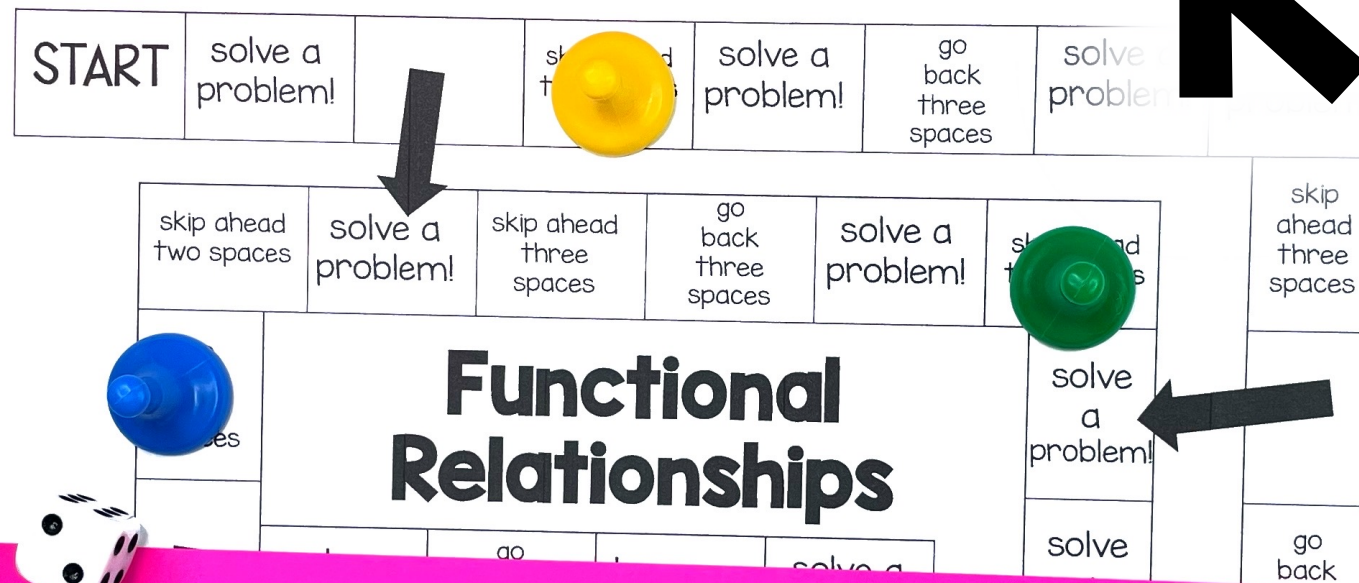


# Functional Relationships

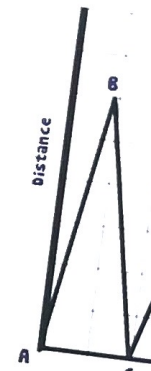
SCROLL  
to take a look inside!

Name: \_\_\_\_\_

Functional Relationships Recording Sheet			
1 increasing $(-\infty, 0)$ decreasing $(0, -\infty)$	2 increasing $(-3, -\infty)$ decreasing $(-\infty, -3)$	3 increasing $(-\infty, 3)$ decreasing $(3, -\infty)$	4 increasing $(-8, 0) \cup (3, \infty)$
5 increasing $(-5, \infty)$ decreasing $(-\infty, -5)$	6 increasing $(-1, 2)$ decreasing $(-\infty, -1) \cup (2, \infty)$	7 increasing: DNE decreasing: $(\infty, \infty)$	8 increasing $(-\infty, \infty)$ decreasing: DNE
9 AB - descending BC - waiting in air CD - landing	10 Mr. Smith's line starts further down x-axis	11 A. 1 B. 3 C. 2	12 A. 2 B. 3 C. 1
13	14	15	16



15 Jen left her house and drove to school and parked in the parking lot. What part of the graph represents this?



6 Determine the intervals where the function is increasing and decreasing. Your solution should be in interval notation.

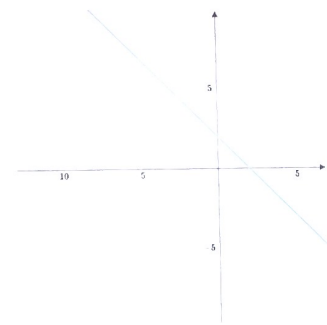


# Math Skills Included:

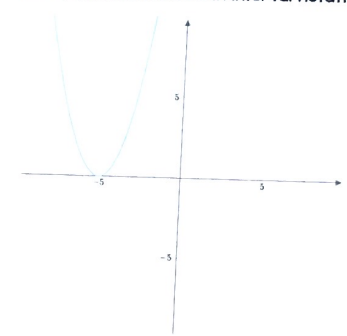
**Analyze a functional relationship and determine where it is increasing, decreasing, or constant**



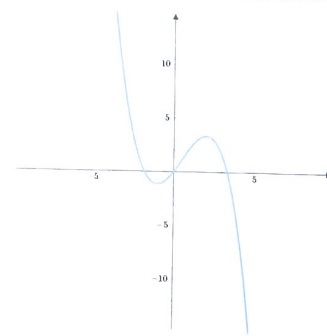
7 Determine the intervals where the function is increasing and decreasing. Your solution should be in interval notation.



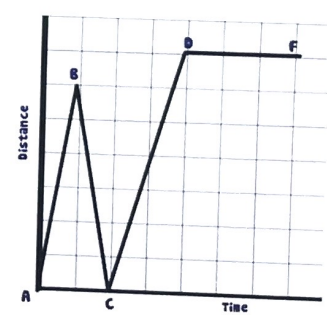
5 Determine the intervals where the function is increasing and decreasing. Your solution should be in interval notation.



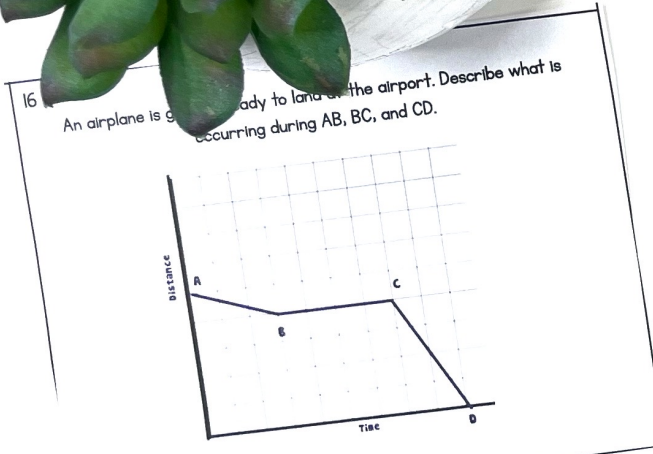
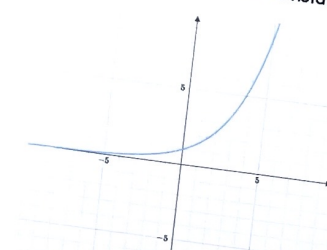
6 Determine the intervals where the function is increasing and decreasing. Your solution should be in interval notation.



15 Jen left her house and drove to school and parked in the parking lot. What part of the graph represents this?



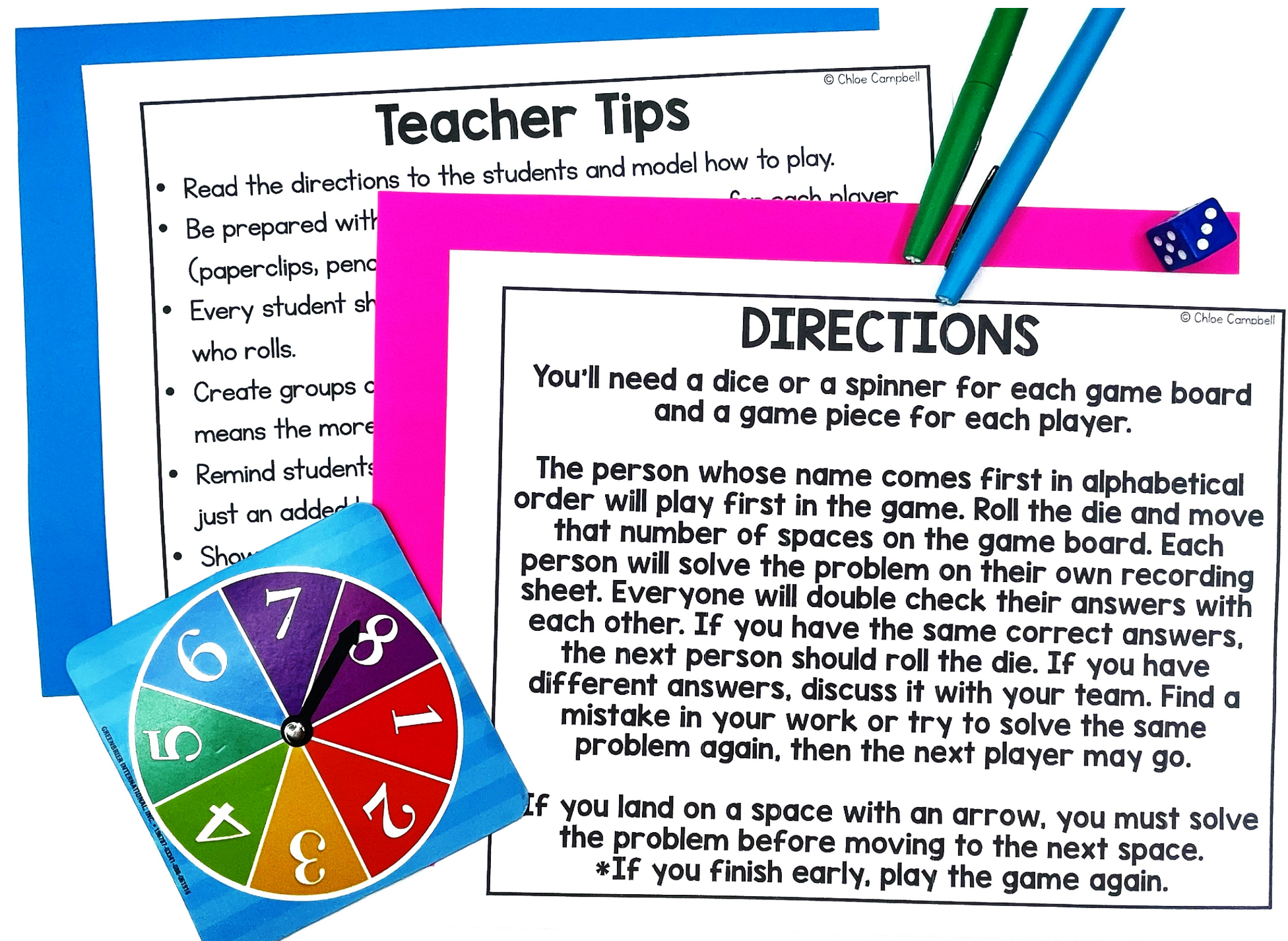
8 Determine the intervals where the function is increasing and decreasing. Your solution should be in interval notation.





# You'll Receive

- ★ Teacher Tips
- ★ Student Directions
- ★ Printable Math Board Game
- ★ Recording Sheet
- ★ Answer Key



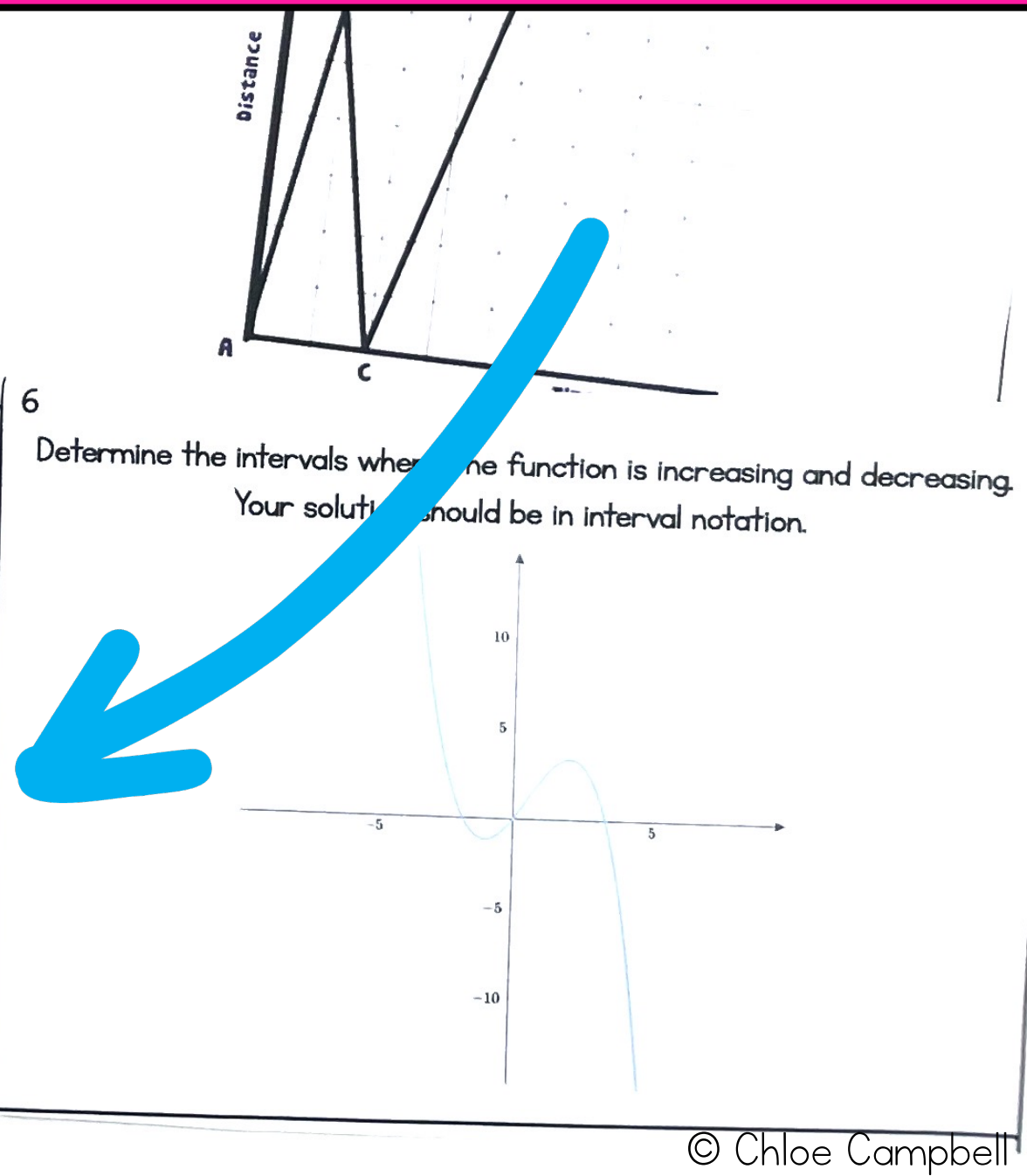


# Student Recording Sheet

## Functional Relationships

### Functional Relationships Recording Sheet

1 increasing $(-\infty, 0)$ decreasing: $(0, -\infty)$	2 increasing $(-3, -\infty)$ decreasing $(-\infty, -3)$	3 increasing $(-\infty, 3)$ decreasing $(3, -\infty)$	4 increasing $(-8, 0) \cup (3, \infty)$
5 increasing $(-5, -\infty)$ decreasing $(-\infty, -5)$	6 increasing $(-1, 2)$ decreasing $(-\infty, -1) \cup (2, \infty)$	7 increasing: DNE decreasing: $(\infty, \infty)$	8 increasing $(-\infty, \infty)$ decreasing: DNE
9 AB - descending BC - waiting in air CD - landing	10 Mr. Smith's line starts farther down x-axis	11 A. 1 B. 3 C. 2	12 A. 2 B. 3 C. 1
13	14	15	16





# HAPPY TEACHERS SAID...

“ This was a hit during centers. All students were engaged, and better yet – learning! Love this! ”

“ My students love playing games and a simple, easy prep game like this is a great addition to math centers, early finisher activities, and review days. ”

“ These are great for small group stations! What a fun task card adaptation. Students get to play a fun and competitive board game, but they also get to practice learning. Plus, the recording sheet makes it easy to grade and monitor student progress; they aren't just playing they are actively learning and participating with evidence of ability. Great resource! ”



# What's the Best Way to Use this Game?

- ✓ Math Centers or Stations
  - ✓ Whole Group Practice
    - ✓ Morning Work
    - ✓ Partner Activity
    - ✓ Early Finisher Tasks
      - ✓ Substitutes



# Tips for Playing Math Games:

- ★ Read the directions to the students and model how to play.
- ★ Be prepared with dice/spinner and game pieces for each player (paperclips, pencil top erasers, pieces from another game, etc.)
- ★ Every student should solve every problem – not just the person who rolls.
- ★ Create groups of 2-4 students. The lower number of students means the more focused students are while playing.



# Tips for Playing Math Games:

- ★ Remind students that the focus is not playing the game...that's just an added bonus! The focus should be on practicing the math skills.
- ★ Show students how to compare and discuss answers. Did you both get the same answer? If students get different answers, ask them to solve the problem using a different strategy or help coach each other through the problem.

# Why Board Games?

Research shows that  
challenge-based gamification in  
the classroom lead to an increase  
of 34.755% in student performance

(ScienceDirect, 2020).



# Students won't even realize they are learning!

The image displays a collection of educational materials designed to teach functional relationships in a game-like format. At the top, a blue banner contains the text "Students won't even realize they are learning!". Below this, a game board titled "Functional Relationships" is shown. The board features a path of squares with instructions such as "solve a problem!", "skip ahead two spaces", and "go back three spaces". A yellow pushpin is placed on the board. To the left of the board is a small potted plant, and to the right is a blue storage bin containing dice. In the foreground, a pink "Functional Relationships Recording Sheet" is visible, containing a grid for recording answers to 16 problems. A red pen is resting on the sheet. To the right of the recording sheet, two math problems are shown. Problem 5 asks to determine the intervals where a function is increasing and decreasing, with a graph of a parabola. Problem 15 describes a distance-time graph for a trip to school and asks what part of the graph represents the parking lot. Problem 6 asks to determine the intervals where a function is increasing and decreasing, with a graph of a cubic function.

**Functional Relationships**

**Functional Relationships Recording Sheet**

1 increasing $(-\infty, 0)$ decreasing $(0, \infty)$	2 increasing $(-3, -\infty)$ decreasing $(-\infty, -3)$	3 increasing $(-\infty, 3)$ decreasing $(3, \infty)$	4 increasing $(-8, 0) \cup (3, \infty)$
5 increasing $(-5, \infty)$ decreasing $(-\infty, -5)$	6 increasing $(-1, 2)$ decreasing $(-\infty, -1) \cup (2, \infty)$	7 increasing: DNE decreasing: $(\infty, \infty)$	8 increasing $(-\infty, \infty)$ decreasing: DNE
9 AB - descending BC - waiting in air CD - landing	10 Mr. Smith's line starts farther down x-axis	11 A. 1 B. 3 C. 2	12 A. 2 B. 3 C. 1
13	14	15	16

**Problem 5:** Determine the intervals where the function is increasing and decreasing. Your solution should be in interval notation.

**Problem 15:** Jen left her house and drove to school and parked in the parking lot. What part of the graph represents this?

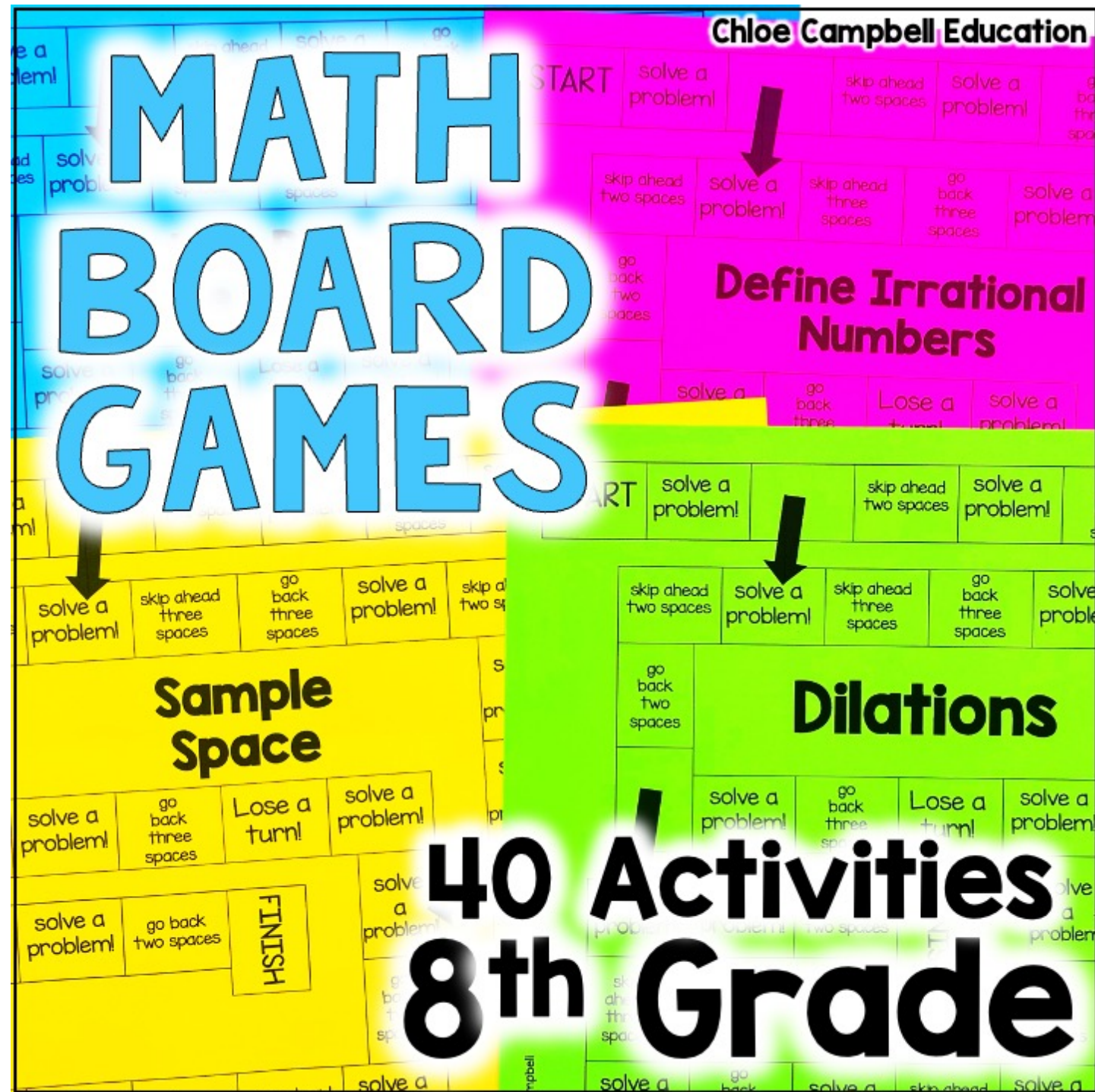
**Problem 6:** Determine the intervals where the function is increasing and decreasing. Your solution should be in interval notation.

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