

# LESSON 10:

# COMMUNICATIONS EXPERT

Students will create their own spy scope, understanding how the angles of mirrors affects their view.

## SUPPLIES

### PENCIL BOX

- Scissors (12)
- Glue sticks (6)
- Pencils (15)

### FOLDER

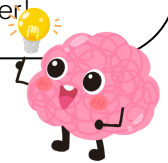
- 15 game pieces pages
- 30 game board pages

### GADGET BOX

- Masking tape (2)

### REMEMBER

Some supplies (like tape) may need to be replenished if it's late in the semester or you share your bin with another teacher!



## MEET SPECIAL AGENT




**Specialty:** Espionage and intelligence gathering

Agent Echo is a highly skilled communication expert within the spy team. With a deep understanding of various codes, ciphers, and encryption techniques, Echo is the go-to agent for secure and covert communication. Through their expertise in linguistic analysis and advanced communication systems, they can decode encrypted messages, intercept enemy communications, and establish secure lines of communication for the team.

## OBJECTIVES

- To create a spy scope using a template and mirrors.
- To understand how the angle of the mirrors allows for different images and views.

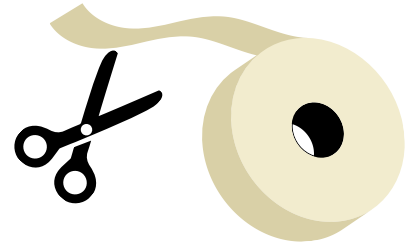
## HOOK

 3-5 min

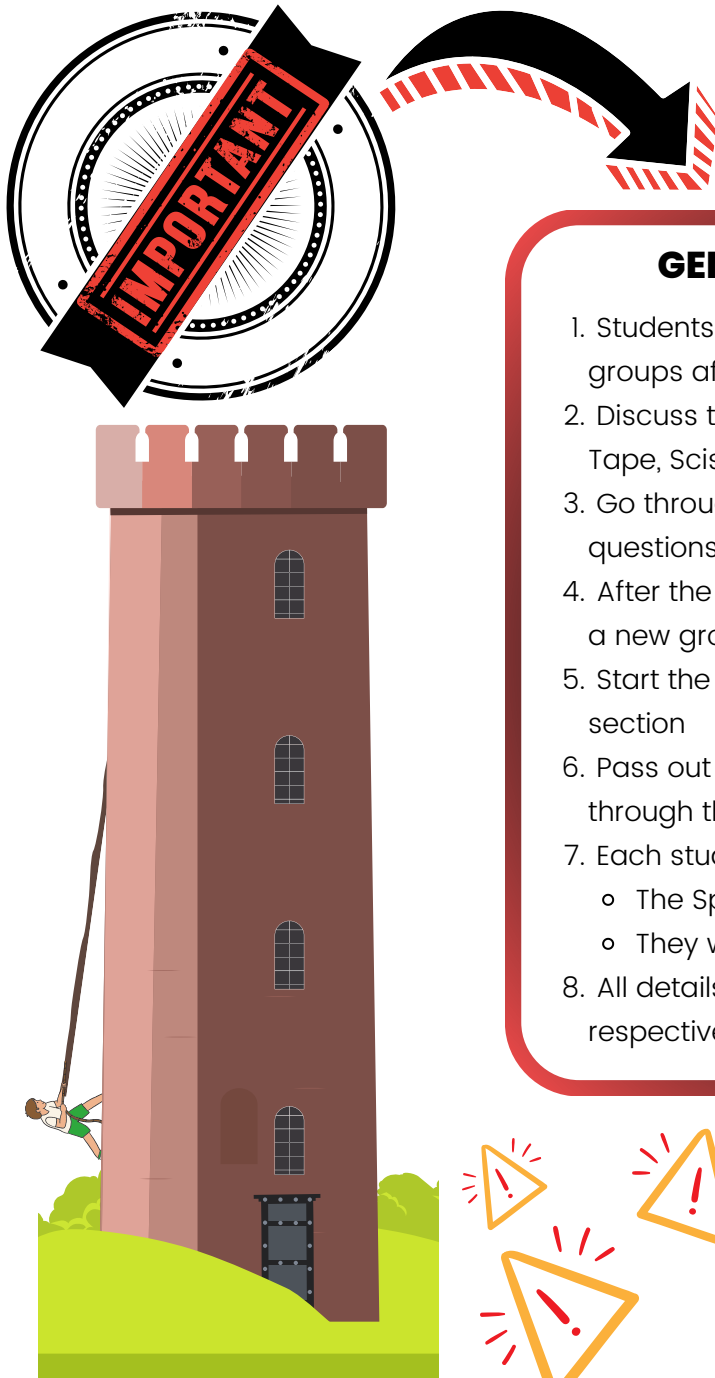
- Ask students to think of situations where they needed to communicate with another person to get something done.
- This could be sports, board games, even just telling their parents that they are hungry so that they can get food.
- Spies often need intel (Important pieces of information) that is crucial to them completing their missions.
- Normally they have a “handler” that assists them with this information.
- Today we will partner up to be the spy and their handlers!

## PREPERATION FOR PROJECT

- The instructions for this project are long and require good execution for the step by step process. **READ ENTIRE LESSON BEFORE CLASS!**
- Prepare the masking tape for the upcoming project by either having different tables with the rolls laid out or precutting pieces to be rolled up by the students.

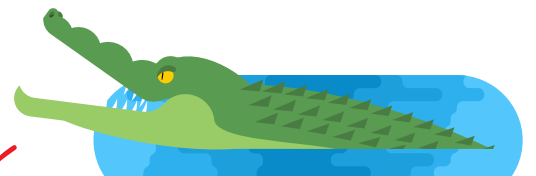
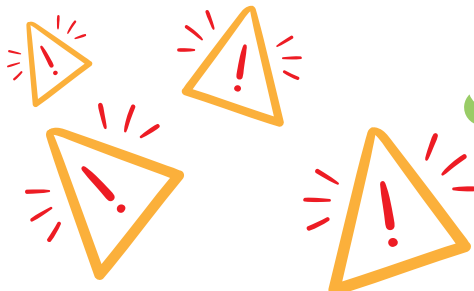


Tape cut and rolled into small pieces for attac



## GENERAL OVERVIEW FOR LESSON

1. Students will split into groups of 3. (They will change groups after activity Set up)
2. Discuss the topic while passing out supplies (Masking Tape, Scissors, Handouts)
3. Go through the "activity set-up" slowly, and answer any questions they have for each step
4. After the set-up is complete Students will swap groups to a new group of 3
5. Start the next phase by going over the "engaging story" section
6. Pass out the 2nd blank game board sheet, then move through the activity portion
7. Each student in the group will have a different role:
  - The Spy, the Field Assistant, and the Rules Keeper
  - They will swap roles and game boards each round
8. All details for the lesson are found in each section respectively.



## ACTIVITY SET-UP

🕒 10 min

- Split students into groups of 3
  - Pass out one copy of the "game board" and one copy of the "Boardgame Pieces" to each student
- Have students cut out their "Board game pieces"
  - Make sure to leave the box outlines!
- Once the pieces have been cut, 3 pieces are the start and finish for their maze
  - The Spy Piece (2 of these)
  - The "Confidential File" piece
- Have the students place the Confidential file some where on their game board, This will be the ending objective to the game.
- Then have them choose a spot where the spy starts from and place "Spy piece" (a) there
- They then place as many "obstacle" as they would like on the board
  - They must leave an open pathway at least one game Square wide to reach the Confidential file.
- Once their game board is completed have the students create new groups of 3
  - Make sure they do not to let their new partners see their maze design

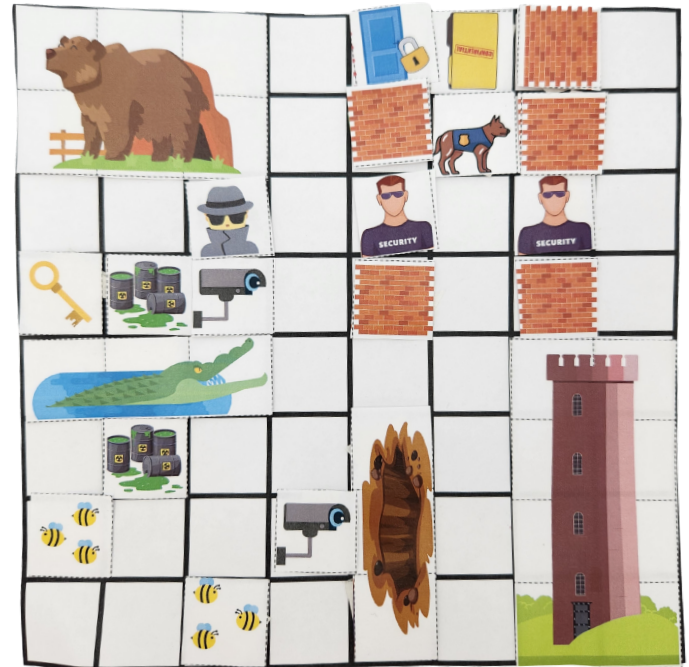
## EXAMPLES



SECRET CONFIDENTIAL FILE



ENDING POINT, OBJECTIVE OF GAME IS TO GET THIS



## SPECIAL GAME PIECE

The Locked door and Key game pieces are a combo! Student have to collect the Key first if they want to unlock the door.




## ENGAGING STORY SET-UP

Try and set the stage for the class: Students will have a chance to be a spy that has been dropped into enemy territory at night. They have a mission to gather the secret file which holds the key to maintaining world peace! Since it is night time, the spy will have a hard time reaching their objective. This means other students will get to act as the spy's field assistant to help them reach their goal! Try and encourage the students to play into the mazes they create, examples:

- "Nice! You narrowly avoided those 2 guards."
- "Whew... that was close you almost fell into that bottomless pit!"
- "Be careful, there are guard dog patrols surrounding you."



## ACTIVITY

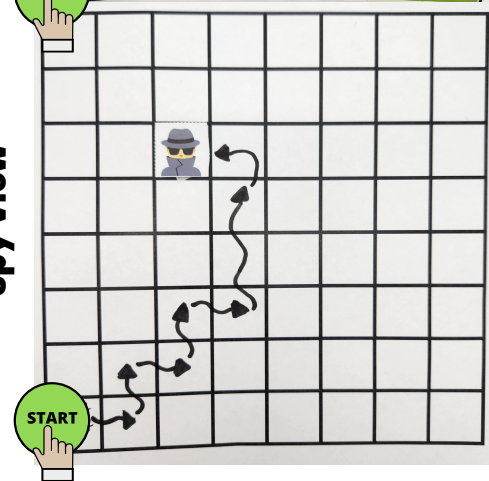
 10 min

1. Now pass out another copy of the game board to each student. (Make sure it stays cleared)
2. Instruct the new student groups to place their extra "Spy piece" (b) onto the new sheet in the same starting place as their game board
3. The students will then swap empty game boards.
  - One student will now be the spy trying to reach the confidential file, but they don't know where it is or what obstacles are in the way
  - Another student will be the Spy's Field assistant and help guide them to the objective!
    - a. The assistant guides the spy by telling them how many blocks to move up, down, left, or right only. (No diagonals)
  - The 3rd student is responsible for seeing if the Spy messes up and hits a trap or obstacle.
    - If the Spy messes up or gets caught, the 3rd students can declare the mistake and the spy must restart.
  - Each student gets a turn with their challenge.
4. once everyone has their turn, they can find new partners, or just rearrange their mazes for more of a challenge!
  - They can redo their board as many times as they like to make it easier or harder

Field Assistant View



Spy View



## TRACKING MOVEMENT

The students can either move their Spy Piece to keep track or draw an arrow with a pencil to mark their movements on the game board.






## MAKING THINGS HARDER



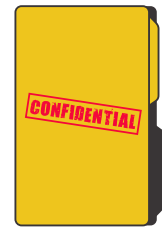
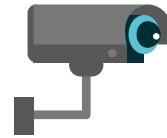
- For Student groups who are older or more advanced, really challenge them by having them attempt to memorize a board.
  - Set them up for 1-3 minutes to memorize the course another student created and attempt to complete it themselves, or for more fun, have them try and lead someone through it
- IF this seems overly hard for them, you can use the 3 strikes and they're out method. This way they have a few chances to make errors
- Another option is to limit the amount of instructions a "Field assistant" can give.
- Examples of this include:
  - Set number of times they can give directions (3,4,or 5 times)
  - Only allowed to describe the obstacles around the spy but not tell them exact directions or amount of spaces away from them
  - utilize morse code from a past lesson!

## CONCLUSION AND OBSERVATION

 5-7 min

Ask students to discuss:

- How did you create an algorithm?
- What was difficult about creating the algorithm?
- What was easy?



Discuss that students laid out a series of arrows to follow to navigate their spy to the clue, avoiding the obstacles. Students will share their own ideas about difficulties and easy parts. A few key ideas include:

- It is difficult to work with multiple steps at a time. It is difficult if you have more obstacles. It is difficult if your spy and clue are far apart.
- It is easier with less obstacles. It is easier when the spy and clue are close together. It is easier when you move one step at a time and put out the corresponding arrow.
- Remember to clean up the classroom and leave it same way you found it.



## ALGORITHM GAME BOARD


Left side

Right side

## ALGORITHM GAME PIECES

