Ninjas on the Run Grades K-2



The Big Idea

Today you're going to be secret agents training to track down ninjas. Learn how to tiptoe sneakily through the shapes made by a maze of laser beams. Then see how many secret handshakes you can share with your fellow agents!

Supplies

In your kit:

- ★ Masking tape
- ★ Ribbon: 1 spool

You provide:

- ★ Crayons: 1 per kid
- ★ Scissors: 1 pair
- ★ Scrap paper: 3 sheets
- ★ Sturdy chairs and/or tables: 8-10

Key Prep

★ You'll need 1 crayon per kid. Try to get multiple colors so each kid in a group of 4-6 kids has a different color crayon.

Room Set-up

 ★ Clear an 8-foot-by-10-foot space in the middle of the room. Place 8-10 chairs and tables in 2 parallel rows along the sides of the open space.

What's the Math?

- ★ Geometric shapes
- \star Math facts: addition
- ★ Patterns and series

Ninjas on the Run - Grades K-2

Kickoff

"Ninjas were agents for hire who lived hundreds of years ago in Japan. They would climb buildings, swing through trees, and sneak through small spaces, all in total silence. Let's train to be just as stealthy and agile so we can track these agents!"

Build the Laser Maze (IO-I5 minutes)

"Do you know how motion sensors work? One type shoots a laser beam that sets off an alarm when something moves across its path. We're going to build a maze of laser beams out of ribbon, then use geometry to sneak through it without setting off the alarm!"

- 1. Tie the ribbon around 1 chair leg <u>about 4 inches</u> above the floor.
- 2. Hand the spool to a volunteer, who walks it across the aisle to a chair in the other row and wraps it around a leg.
- 3. Kids pass the spool back and forth across the aisle, continuing to wrap the ribbon around new chair legs, staying 4 inches above the floor. Encourage them to run new lines that divide existing shapes.
- 4. Use masking tape to keep the ribbon from sliding down the chair legs. Once you're finished assembling the maze, snip the end of the ribbon so it doesn't get tangled.
- 5. Once you have about 10-12 lines stretching across, ask the kids:
 - ? "Which chair leg has the most lines coming to it?" **Discuss**.
 - ? "Which shape has the most sides?" Discuss.

Laser Maze Stealth Training (20-25 minutes)

"Now let's start the game! Each ninja must cross the maze without touching the ribbon laser beams."

- 1. Have everyone line up to take turns crossing the maze. With each turn, give ninjas a
 - challenge for crossing the maze. For example:
 - \star Step in as few shapes as possible.
 - \star Step only in shapes with 3 sides.
 - ? "What do we call 3-sided shapes?" Discuss. Triangle!
 - \star Step only in shapes with 4 sides.
 - ? "Quadrilaterals are four-sided shapes with
 - straight sides. Can you name a type of 4-sided shape?" **Discuss**. See if the kids name these shapes: square, rectangle, diamond (rhombus). You can also point out other quadrilaterals.
 - \star Step in shapes that don't touch any shape you've already stepped in.
 - ★ Make up your own challenges and see who makes it through!





Extra Challenge (optional)

? "When a triangle and square are side by side sharing 1 edge, how many little segments of ribbon do they use in total?" **Discuss**. See if the kids figure out that normally the triangle would use 3 and the quadrilateral would use 4, but since they're sharing a side, only 6 sections of ribbon are needed.

Secret Handshakes (15-20 minutes)

"Ninjas used secret handshakes to identify each other. That's a lot of handshakes for all of us. Let's see how many times we'll shake hands with each other only once!"

- 1. Divide the kids into 3 groups of 4, 5 or 6. It's okay to have different numbers in each group.
- 2. Give each group 1 sheet of paper.
- 3. Give each kid 1 crayon. Try to give a different color to each kid in the same group.
- 4. Each kid draws a large dot on the edge of the group's paper then writes his/her name or initials next to the dot.
- 5. Each group makes up its own "secret" handshake.
 - ★ "The goal is to shake hands only once with every other ninja in your group."
- 6. In each group, the first ninja shakes hands with all ninjas in the group. That ninja draws a line from his/her dot to all other dots on the paper.
- The second ninja shakes hands with any ninjas in the group with whom he/she <u>hasn't already shaken hands</u>. That ninja draws lines from his/her dot to the new ninjas.
- 8. The third ninja shakes hands with any other ninjas left in the group and connects those dots.
- 9. Continue until all ninjas in the group have shaken hands <u>only once</u>.
- 10. Groups count their total number of handshakes by counting the lines on their sheet.
 - **?** "How many handshakes did your group have?" **Discuss**. Groups of 4 have 6, groups of 5 have 10, and groups of 6 have 15.
 - ★ "You can find the number of handshakes without making a chart by adding all the numbers that are less that the number of ninjas. For example, 5 ninjas added 4+3+2+1 to get 10 handshakes and 6 ninjas added 5+4+3+2+1 to get 15."
 - ? "Using math, how many handshakes would 3 ninjas have?" Discuss. Answer: 2+1=3

Extra Challenge (optional)

? "How many handshakes would a group of 7 have?" **Discuss**. Answer: 6+5+4+3+2+1=21

Wrap Up

"When you learn about shapes in math class, it's called geometry. Shapes and patterns are everywhere; use your super secretive ninja skills to find them in your house, around town and in your classroom!"



