

# X Marks the Spot

## LESSON PLAN

# X MARKS the spot



**GRADE  
LEVEL:**  
K-2, 3-5,  
6-8

### OBJECTIVE:

Kids will learn how to properly read a compass and the importance of direction and measurement unit of 'pacing.' Pacing is the process of walking a set distance and counting the number of steps or paces to cover the distance (i.e., 5 steps equal 10 feet).

### INTRODUCTION:

Before you can start the lesson, you must first mark out the pacing guide and choose a starting point and end point for the activity. This activity is great in large open spaces, outdoor events, and STEM outreach events that take place in gymnasiums. It's harder to do in classrooms but may work for younger kids (k-2).

With a tape measure, mark out 10 feet. Run a strip of masking tape from 0 feet to 10 feet. Depending on the size of the class or event, you can run two or more strips of 10-foot tape. These will be your pacing markers.

Next, choose your starting point. Choose a starting point close to where you will be giving your lesson and your pacing markers. You may place a strip of tape on the ground to indicate the starting point.

### CHALLENGE:

Follow the compass and directions to find the hidden X.

### MATERIALS NEEDED PER GROUP OR STUDENT:

- Compass
- Pencil/pen
- Sheet of paper or activity card

### ADDITIONAL MATERIAL:

- Tape measure
- Masking tape (for pacing and the X)
- Marker



# X Marks the Spot

## LESSON PLAN



**GRADE LEVEL:**  
K-2, 3-5,  
6-8

### INTRODUCTION CONTINUED:

From there, use a compass and pacing (or tape measure) to place the hidden X. Try to use all four cardinal directions (North, East, South, West). You can use round numbers to make it easier.

#### Example Directions:

- EAST:** 70 feet
- NORTH:** 100 feet
- WEST:** 40 feet
- SOUTH:** 20 feet

Once you find your desired location, use the masking tape to place an “X” on the ground.

### INSTRUCTIONS:

Start by asking participants if they know what a surveyor does. Have they ever seen them working on the side of the road, etc. If no one knows:

Surveying is a branch of applied mathematics that is concerned with analyzing and recording the characteristics of a land span to help design, map, or construct. Surveyors use a compass to determine the direction of a line. They also use high-tech computers and even lasers to measure and map the earth including the ocean floor. Buildings and bridges all rely on surveyors’ measurements and maps.

**MARKS the spot**

Walk in the steps of a surveyor to find the spot.

DIRECTION	DISTANCE	NO. OF STEPS
N	100FT	
E	70FT	
S	20FT	
W	40FT	

**Can you find your way using a compass?**

Surveyors use a compass to determine the direction of a line.

They also use high-tech computers and even lasers to measure and map the earth, including the ocean floor. Buildings and bridges all rely on surveyors’ measurements and maps.

Surveyors like you could help build the cities of the future.



# X Marks the Spot

## LESSON PLAN



**GRADE  
LEVEL:**  
K-2, 3-5,  
6-8

### **INSTRUCTIONS CONTINUED:**

Get participants to think about measurements, distance, and directions:

**Have your parents ever used GPS (Google Maps) to get to a location they've never been? Did it say how many miles it was away? Did you ever notice a little compass down in the corner of the map? How do you know how far away something is located?**

Show the participants the pacing guide taped to the floor. You can tell them about pacing (Pacing is the process of walking a set distance and counting the number of steps or paces to cover the distance). Demonstrate by walking along the pacing guide and counting your footsteps until you reach the 10-foot marker.

Invite the participants to walk along the pacing guide to see how many steps it takes them to reach 10 feet. Have them write down their pace steps on a sheet of paper or the activity handout. Talk about the ratio between their steps and distance (5 steps = 10'; 10 steps = 20'; 15 steps = 30', etc.).

Distribute compasses to the participants. Explain how to use a compass. Review the cardinal directions with them. (N, E, S, W = Never Eat Soggy Waffles)

Once the students understand how to use the compass, reveal the directions to the hidden X. Explain to them that they need to calculate their number of steps for each distance. They can write down the directions and calculate the number of steps on their paper or activity card.

Once all the calculations are made. Participants can filter one by one to the starting point and follow the compass until they find the hidden X.

