

Perimeter Kick

4th - 6th Grade

OBJECTIVE

To kick a soccer ball to create a quadrilateral (four-sided figure) and calculate the perimeter of the shape.

MATERIALS

- One soccer ball - minimum
- Masking tape - four 2-inch pieces per team (Optional: four cones or area markers can be used in place of tape)
- Rulers - one per group
- Scratch paper and pencils - enough for each group
- Calculators for teams (optional)
- Recording Sheet - one per team

BEFORE YOU START

- Note: A quadrilateral is a two-dimensional geometric figure with four sides (e.g.: rectangle, square, oblong, diamond, etc.).
- This activity is best played outside in an open area.
- Depending on the physical skill levels of students, the facilitator may choose to have groups toss the ball instead of drop-kicking it.
- With more soccer balls and adult supervision, two teams can play at the same time.

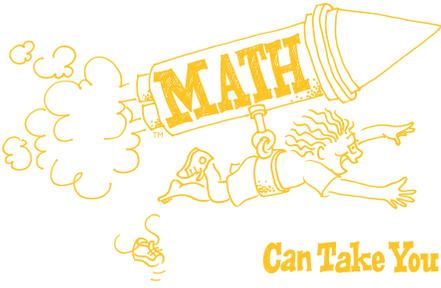
HOW TO START

Tell kids, "Today we're going to use a kick/soccer ball to create a quadrilateral. Then we're going to use our feet to measure the perimeter." (They will probably look puzzled.)

STEPS

Step 1

Form four groups with five members each. Give each group a ruler, pencil, and a Recording Sheet.



Can Take You Places

FOCUS AREA

Measurement

ACTIVITY TYPE

Active/Team Building

MATH GOAL

To measure perimeter
converting steps to inches

RECOMMENDED

NUMBER OF STUDENTS

Groups of five; maximum four
groups totaling 20 students
(each group must have five
members)

TIME NEEDED

30 minutes

Step 2

Assign four members to be kickers/catchers and the last member to be the measurer. The measurer will need to measure the length of his or her foot (shoe on) with a ruler and record the information on paper.

Step 3

Give each group four pieces of masking tape (each piece approximately two inches long).

Step 4

- Before going outside, explain the rules: The four kickers/catchers will choose a letter: A, B, C, or D.
- Kicker A will first mark his or her starting place with a piece of tape or a cone. Then Kicker A will drop-kick the ball to Kicker B. (Note: The kicker is not allowed to kick from the ground.)
- Kicker B must catch the ball for the kick to count. If Kicker B drops the ball, it must be kicked again. Kicker B will then mark the spot where he or she caught the ball with a piece of tape. Kicker B drop-kicks the ball to Kicker C.
- Kicker C must catch the ball, mark the spot where he or she caught the ball, and then drop-kick the ball to Kicker D.
- Kicker D must catch the ball, mark the spot, and then drop-kick the ball to Kicker A.

Kicking Rules:

Ball must be drop-kicked and caught in the air.
(See Web Resources for more on drop-kicking a ball).

The ball cannot touch the ground.

Each kicker has three chances to catch the ball.

If a player “strikes out,” the team must go to the end of the line to try again
(if time permits).

Modification: Teams can choose to toss the ball.

Step 5

There should be four pieces of tape (or cones) on the ground. Next, the measurer will “foot-measure,” walking heel to toe, the distance between each two pieces of tape and record the measurement of each side on the Recording Sheet. For example:

A to B = 10 steps
B to C = 17 steps
C to D = 25 steps
D to A = 8 steps

Step 6

Once the first group is done “kicking out” their quadrilateral, the rest of the groups will “kick out” their perimeters with steps 4 and 5 and record their foot measurements on their Recording Sheets. The measurers will need to step heel to toe for the entire distance to get an accurate measurement

Step 7

Bring groups in to calculate their measurements in inches based on the length of the measurer's foot. Add up all of the sides to get the perimeter. For example:

Measurer's Foot = 9 inches Point A to B = 10 steps Point A to B = $9 \times 10 = 90$ inches

The group with the largest perimeter wins.

WRAP UP

Ask students how measuring perimeter can be used in the real world. Some examples: when building a fence, putting up a border, running track (distance per lap), etc.

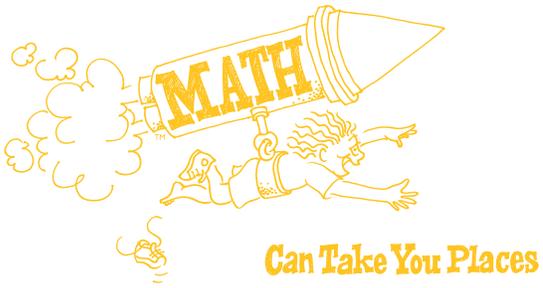
OPTIONAL ACTIVITIES

- Have students research the game of soccer - its history and origins, how the game is played, the different positions, etc. Then go outside and play the game, using the information that the students acquired.
- Encourage each Perimeter Kick team to create jerseys and mascots for their team.
- Have other members measure their feet, “step-off” the perimeter, add up the perimeter, and compare the amounts to the ones from the original measurer.
- Measure the perimeter of other areas around the school, building, or house by “stepping it off” and use math to transfer the amount of steps to inches, feet, even yards.
- Play a game of soccer or kick-ball in the area created by the teams.

SUGGESTED *MATH CAN TAKE YOU PLACES* CONNECTIONS

From *Math Can Take You Places* After-School Kit, activity “Picture This” (Patterns)

From *Math Can Take You Places* Classroom Materials, lesson plan “Cover Up” (Measurement)



Activity Cue Card

- Divide students into four groups of five.
- Each group will have four kickers (A, B, C, D) and one student to measure.
- Before each student kicks, he/she will mark his/her spot with tape. Kicking order: A to B, B to C, C to D, D to A.
- The measuring student will “foot measure” (count steps heel to toe) the distance between each piece of tape then record their measurement on their Recording Sheet.
- Teams will find the perimeter by adding all of the sides.
- The team with the largest perimeter wins.

Perimeter Kick Recording Sheet

Student Measurer's Foot = _____ inches

Foot in Inches **Side in Inches**

Measurement from A to B = _____ x _____ = _____

Measurement from B to C = _____ x _____ = _____

Measurement from C to D = _____ x _____ = _____

Measurement from D to A = _____ x _____ = _____

Total Perimeter = _____