Description: Students will determine their walking rate (feet per second) and estimate the number of steps and the time it will take them to walk one mile. Students will then walk their estimated number of steps to check their accuracy.

Learning Objectives: Students will review estimation, measurement and projections.

Activity Time: 45 minutes

Materials:
- Tape measures
- Chalk or cones
- Stopwatch
- Steps to a Healthier You handouts (page 3 of 3)
- Open space (gymnasium, field, auditorium, hallways or cafeteria)

Directions:
- Set up a walking area by using chalk or cones to mark off a starting line; measure and set the finish line at 75 feet.
- Distribute a Steps to a Healthier You handout to each student.
- From the start line, time the students as they walk the 75 feet, counting their steps. Tell them their time when they cross the finish line. Students should record the number of steps and their time on their Steps to a Healthier You handout.
- Have students repeat this two more times, listing their number of steps and times on the handout.
- Using their handout, have students determine their average number of steps and time for walking 75 feet. Then have them determine their rate of walking in feet per second.
- Have them complete the handout by determining how long it would take them to walk half a mile (2,640 feet).
- Using their average number of steps for walking 75 feet, have students estimate how many steps it will take them to walk one half mile and record it on the handout.
Extend the Activity:

Set Up:
- On your own time, determine a one-half mile “track” around your school. (This may require more than one lap.)

Activity:
- Have students walk the designated half-mile track, counting their steps and stopping when they complete their estimated number of steps. Did they make it the full mile? Did they go too far? Have them check the accuracy of their estimations.

Note: Could be team-taught with physical education teacher.

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Correlation to National Curriculum Standards:

Understand numbers, ways of representing numbers, relationships among numbers, and number systems.
- Understand and use ratios and proportions to represent quantitative relationships.
- Use factors, multiples, prime factorization and relatively prime numbers to solve problems.

Understand meanings of operations and how they relate to one another.
- Understand and use the inverse relationships of addition and subtraction, multiplication and division, and squaring and finding square roots to simplify computations and solve problems.

Compute fluently and make reasonable estimates.
- Select appropriate methods and tools for computing with fractions and decimals from among mental computation, estimation, calculators or computers, and paper and pencil, depending on the situation, and apply the selected methods.
- Develop and use strategies to estimate the results of rational-number computations and judge the reasonableness of the results.
- Develop, analyze and explain methods for solving problems involving proportions such as scaling and finding equivalent ratios.

From NCTM http://standards.nctm.org/document/chapter6/numb.htm
To determine your walking rate in feet/second (C), you will need to take your average number of steps (A) and divide it by your average time (B).

\[ \frac{A}{B} = C \]

Steps to walk 75 ft. (1)  Steps to walk 75 ft. (2)  Steps to walk 75 ft. (3)  = Average # of steps

(add the three numbers and divide by three)

Time to walk 75 ft. (1)  Time to walk 75 ft. (2)  Time to walk 75 ft. (3)  = Average time

(add the three times and divide by three)

Divide A (avg. # of steps) by B (avg. time) = Rate of walking in ft./sec.

How long would it take you to walk one-half mile (1/2 mile has 2,640 feet)?  
(Take 2,640, and divide it by C, your rate of walking in ft./sec.)

How many steps will it take you to walk one-half mile?