Who Is Faster?

WILDLIFE That Move Us
NATIONAL WILDLIFE WEEK
MARCH 14-20, 2011

Goals:
Students will learn how to use formulas to calculate speed and convert to MPH to compare their rate of speed to that of different wildlife.

Objectives:
- Students will demonstrate how to calculate speed
- Students will investigate survival skills of wildlife of two different species
- Students will compare wildlife that run and walk to themselves (speed conversions)

Grade Level: 4-6

Subject Areas:
math, science, technology

Materials Needed:
- internet
- stopwatch
- masking tape or cones
- pencil
- speed conversion formula
- calculator

Time to Complete:
45-55 minutes

Background

The speed with which wildlife can move can be surprising to many students. Understanding how to calculate speed from distance traveled over time is an important math application skill for students. Using wildlife to discover how fast they can run, walk or move provides students with an understanding of why wildlife may move at different rates.

Wildlife move at different rates based on multiple factors, from defensive mechanisms (escape factor) or predator instincts to the factor of population. Wildlife have evolved over time to adapt to these factors and as a result each species moves at different speeds. The duration of the speed (how long can they maintain a top speed) also is influenced by their position on the food chain.

Reviewing field guides or descriptions about animals introduces students to understanding where the wildlife may fall on a food chain, what defensive mechanisms they have evolved and how they have adapted to survive. The speed at which they travel is one defense mechanism for survival. See the Resources section for online information about animal speeds and a speed calculator.

Procedure

1. Divide the students into pairs or groups of four. Students will work together to calculate the average speed of a student.

   a. Using a measuring tape, measure a straight runway length of 40 feet.

   b. Allow two students, using stop watches, to record the time it takes student volunteers to run/jog/walk the 40'.

   c. Convert the 40' foot runway length into meters (1 foot = 0.3048m). Note: There are many useful conversion calculators on the internet. Find them and use them, they are very helpful.

   d. Record the data in the table below. Use this data and the formula given to calculate the rate or speed of each student.

Student Name	Time	Distance (20 m)	Distance (40 m)

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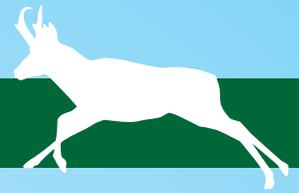
From this activity you can find the average velocity a student can run/jog/walk. Using basic algebraic techniques, you can manipulate the formula in order to solve for any of the three variables: Time, Distance, Rate.

Example: Solve for Distance or Time

Rate = Distance/Time

Rate * Time = (Distance/Time)*Time (Multiply by Time)

Rate * Time = Distance (Formula solving for Distance)

Distance = Rate x Time

Rate = Distance/Time

Rate * Time = (Distance/Time)*Time (Multiply by Time)

(Rate * Time)/Rate = Distance/Rate (Divide by Rate)

Time = Distance/Rate (Formula solving for Time)

Time = Distance/Rate

2. Students divide into pairs or 4-person teams. Each team will select 2 wildlife to investigate and to learn the following:

a. What adaptations has the wildlife developed to survive?

b. Why has the wildlife adapted – what are the threats to the wildlife?

c. What are some of characteristics about the wildlife that assist in survival?

　　What type of habitat are they found in (more than one?)?

　　What factor does coloration play in their survival?

　　Where are they located in a food chain (who are the predators?)?

3. Students will create a chart to compare the two animals. A final column on the comparison chart should be left for calculating the speed of the animal – which wildlife is faster and how do they compare to the student.

There are many resources available on the internet for comparing wildlife top speed including http://www.speedofanimals.com/?g=t.

4. Student groups will share their charts with the class by giving a 5 minute oral presentation about their wildlife, the wildlife's survival skills, how fast the wildlife moves and whether they could outrun the wildlife.

Assessment

1. Were the time and distance measures correct?

2. Was data recorded accurately?

3. Were students able to correctly calculate speed by dividing distance by time?

Resources

- **Speed of Animals:**
  http://www.speedofanimals.com/

- **Speed Calculator:**
  http://www.csgnetwork.com/csgtsd.html