Active Learning

Concepts:

Measurement, algebraic thinking, bar graphs

Sunshine State Standards:

MA.B.1.2.2
MA.B.2.2.1
MA.B.2.2.3
MA.D.2.2.2

Materials:

- 1 recording sheet for each student on a clip board
- 1 crawling insect (no flyers) in glass jar with a lid
- race track (a race track can be made by placing textbooks on the floor with a space between them where the bug can run. Be sure to put a book at the beginning and end of the track too.)
- meter sticks (at least 4 per group)
- 1 measuring tape per group
- 1 stop watch,
- outside running area
- math journals
- chart paper
- calculators (if necessary)
- pencils clip
- post-it notes

Student Arrangement:

Students should work in groups of 3 to 5.

Procedure:

1. Outline of the lesson is read to the class.
2. Class brainstorms jobs that are needed to successfully complete the lesson.
   Ex. group captain, materials manager, measurers, timekeeper, runner, etc.
3. Jobs are assigned by group captains.
4. Students gather round bug track (see video clip).
5. Students observe the bug and make verbal estimates of how long they think the bug is in millimeters.
6. The bug is measured by a student or teacher and the students record the actual measurement on their recording sheets.
7. The students verbally estimate how many centimeters the bug can travel in 10 seconds.
8. The bug is released onto the track for its 10-second run (tapping along the bug's path usually keeps the bug moving).
9. The bug is returned to the jar if another attempt is needed.
10. Each student records the distance the bug traveled on their recording sheet.
11. Next, students are dismissed to their math groups, where the assigned runner will have his/her height measured in centimeters using the measuring tape.
12. The activity now moves outside. The runner from each group runs for 10 seconds and the group measures the distance using the meter sticks and records the results on the recording sheets.
13. Students return to the classroom and in their cooperative groups complete the following:
    a. students check their recording sheets to make sure everyone in the group has the same numbers recorded,
    b. using the formula on the recording sheet the students determine who ran further in 10 seconds the student or the bug
14. Next, each group's results are recorded on a whole class chart and then discussed.
15. Math journals are now necessary for the students to reflect on the math tasks they were given, the results of the task, and the process they used to complete the task.
16. Finally, each student evaluates the learning potential of the lesson and likes/dislikes.

Assessment:

Likes and dislikes, student recording sheets, journals, class discussions, teacher observation.

Extension:

The students each run for 10 seconds, measure the distance, and record the results. In cooperative groups the students find the mode, median, mean, and range for the groups distance ran in 10 seconds.

The distances run by each student are collected and recorded on a whole class chart. Cooperative groups develop a graph using the data. The graph must include title, correctly labeled information, and at least two statements.

Recording Sheet

Name _____

A = Bug Size
B = Distance traveled by the bug in 10 seconds
C= Bug body lengths traveled

D= Student Height
E= Distance traveled by student in 10 seconds
F= Student body lengths traveled

G= Distance bug would travel if it were the same size as the student.

Record your data below:

A= _____

B= _____

B÷A = C _____

D= _____

E= _____

E÷D = F_____

D= _____ X C_____ = G _____