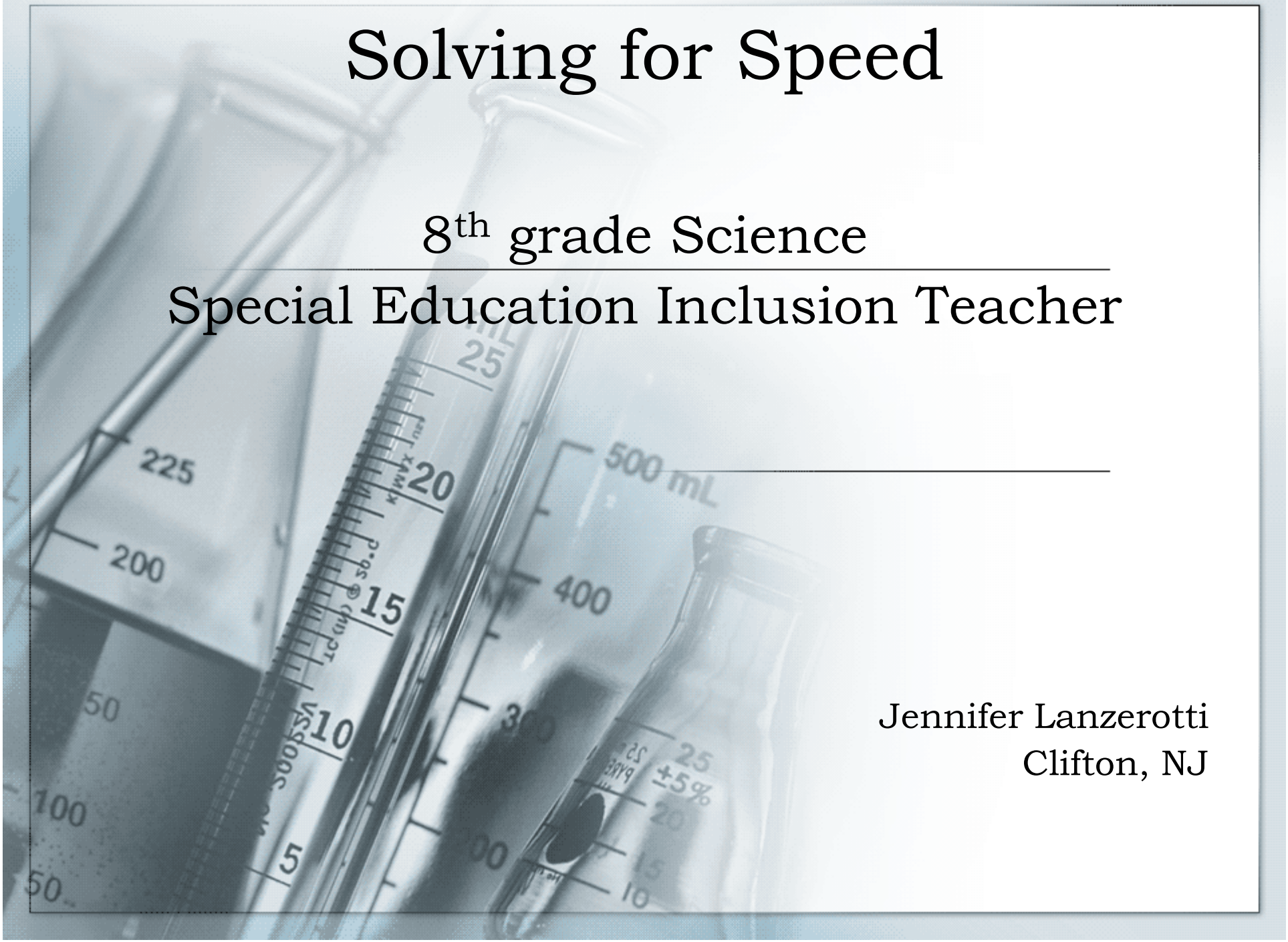
Solving for Speed

8th grade Science

Special Education Inclusion Teacher



Jennifer Lanzerotti
Clifton, NJ

Goal of the lesson:

- Students will be able to calculate the average speed of moving objects after they have conducted a series of trials
- Create excel spread sheet with collected data
- Generate line graphs from the excel sheet data

Length of Lesson:

- 2 day lesson (45 minutes class period) for gathering and recording data
- 2 days for complete lab report
  - Written summary, excel sheet and graphs

Core Curriculum Standards

5.2 Physical Science

5.2.4.E.1:

Demonstrate through modeling that motion is a change in position over a period of time.

5.2.4.E.2:

Identify the force that starts something moving or changes its speed or direction of motion.

Activities

- Divide class into pairs
- Review directions for the lab report
- Model two trials on how to measure distance and time with given materials
- Review how to solve for time:
  (time = distance /speed)
- Provide two example of line graphs that students' need to create with the data they collect from the trails
- Provide fill in excel sheet

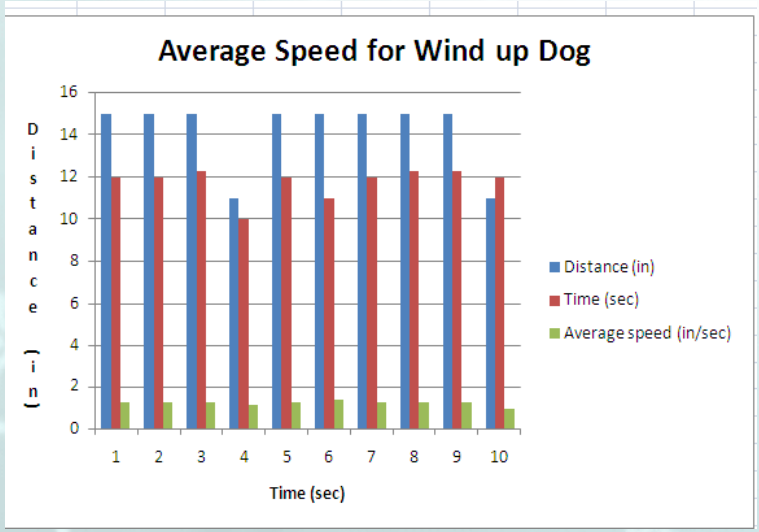
Sample of student data sheet

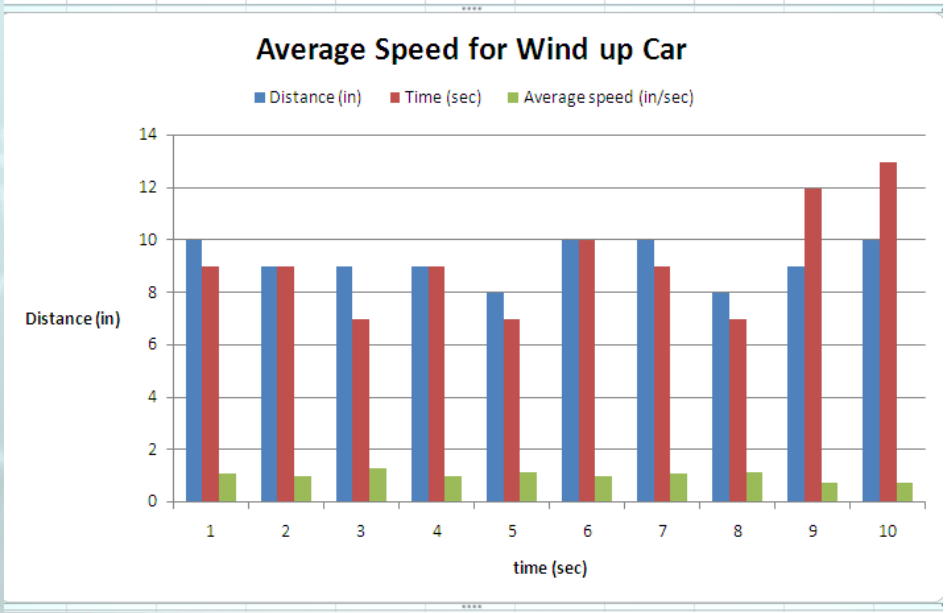
	A	B	C	D	E	F	G	H	I	J
1		Wind Up Dog		Average Speed For Wind up Dog	Wind up Car		Average Speed for Wind up Car	Wind up Frog		Average Speed for Wind up Frog
2		Distance (in)	Time (sec)	in/ sec	Distance (in)	Time (sec)	in/ sec	Distance (in)	Time (sec)	in/ sec
3	Student 1									
4	Trial 1	7	12	0.58	10	9	1.11	6	8	0.75
5	Trial 2	7	12	0.58	10	9	1.11	5	7	0.71
6	Trial 3	7.5	12.3	0.61	9	7	1.29	6	8	0.75
7	Trial 4	6	10	0.60	10	9	1.11	5	7	0.71
8	Trial 5	7	12	0.58	11	10	1.10	5	7	0.71
9	Trial 6	6.5	11	0.59	10	9	1.11	5	7	0.71
10	Trial 7	7	12	0.58	11	10	1.10	6	8	0.75
11	Trial 8	7.5	12.3	0.61	10	9	1.11	6	8	0.75
12	Trial 9	7.5	12.3	0.61	9	7	1.29	5	7	0.71
13	Trial 10	7	12	0.58	10	9	1.11	6	8	0.75
14	Sum	70	117.9		100	88		55	75	
15	Minimum	6	10		9	7		5	7	
16	Maximum	7.5	12.3		11	10		6	8	

Sheet1 Sheet2 Sheet3

Ready

Samples of student graphs' generated form excel sheet



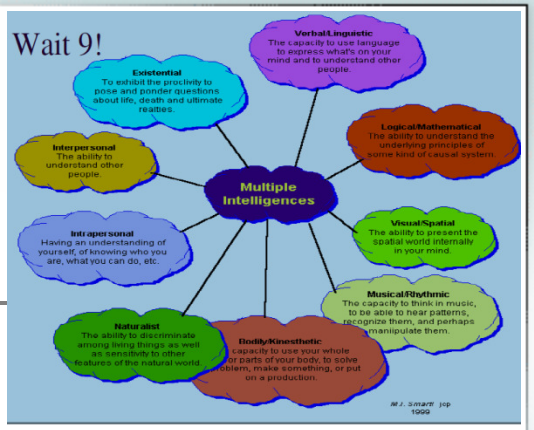


Solving for Speed Final Grading Rubric

Student Name: _____

CATEGORY	4	3	2	1	Points earned
Experimental Hypothesis	Hypothesized relationship between the variables and the predicted results	Hypothesized relationship between the variables and the predicted results	Hypothesized relationship between the variables and the predicted results	No hypothesis has been stated.	
Materials	All materials and setup used in the experiment are clearly and accurately	Almost all materials and the setupu used in the experiment are clearly and	Most of the materials and the setup used in the experiment are accurately	Many materials are described inaccurately OR are not described at all.	
Calculations	All calculations are shown and the results are correct and labeled	Some calculations are shown and the results are correct and labeled	Some calculations are shown and the results labeled appropriately.	No calculations are shown OR results are inaccurate or mislabeled.	
Drawings/Diagrams	Clear, accurate diagrams are included and make the experiment	Diagrams are included and are labeled neatly and accurately.	Diagrams are included and are labeled.	Needed diagrams are missing OR are missing important labels.	
Participation points	on task and working to fullest potiential	on task with 2-3 cues to stay on task and prioducing work	on task with 4-5 cues to ramin on task but producing mimimum work	on task with more than 5 cues to ramin on task but producing almost no work	
					Total
					Final Grade

“Brainy Bits”
Multiple Intelligences



The Logic / Mathematical student will use this intelligence by: (logic and reasoning)

- Measuring
- Graphing skills
- Using the timer
- Using excel to create the spread sheet and graphs

The Interpersonal student will use this intelligence by:

- Working in as a partner
- Speaking to others about their results
  (comparing and contrasting the findings)
- Participating in class discussions
- To recognize moods and feelings of others through the lesson

Learning Styles

Learner Type	Learning Channel	Learning Preferences	Dislikes
Concrete Sequential	Physical senses	Computers, demonstration, guided practice	Long lectures
Concrete Random	Intuition and trial-and-error	Simulations, games, independent study	Structured lessons
Abstract Sequential	Intellect	Lectures, reading, slide shows	Hands-on projects
Abstract Random	Emotions	Short lectures, media, the arts	Structured assignments, drills

Citations

Gardner's Multiple Intelligences Ramapo College
Linking the Brain, Mind and Teaching & Learning
Nick Bernice, Ed. D.

Sousa, David A. *How the Brain Learns*. Fourth. California: Corwin , 2011. 1-160. Print.

Images: Google