

Lesson Plan

Subject: Grade 3 Science

Lesson: Knock Out!

Standard Addressed:

- Understand motion and forces that affect motion. (NC.3.P.1)

Objectives:

- Predict changes in speed or direction resulting from forces acting on the object.
- Compare the relative speed of objects traveling the same distance in different amounts of time.

Materials Needed:

- Device for showing “Knock Out!” video
- “May the Force Be with You” Activity
- Marbles

Outline:

- Prior to this lesson, students will understand the concept of *force*. Students will have experience explaining how force acts upon objects.
- Show the video.
- Discuss the directions for the three parts of “May the Force Be with You” Activity.
- Guide students in making predictions for Part 1.
- Provide students with marbles.
- Students complete Part 2 independently, with a partner, or in a small group.
- Guide students in writing their results for Part 3.

Take It Further: Try the activity again, using Ping Pong balls instead of marbles. Compare the results.

Cross-Curriculum Connection: Have students listen to *The Marble Champ* by Gary Soto being read aloud by Mister Corbitt at the link below:

<https://www.youtube.com/watch?v=gFGqmE3iSgA>





May the Force Be with You

Grade 3 Science

Name: _____

Date: _____

In the *Knock Out!* video, you learned about the game of marbles. In this activity, you will investigate the science behind this game.

PART 1: MAKING PREDICTIONS

You are going to use the eraser end of your pencil to apply force to the marble to make it move in certain ways. Write your predictions here:

The marble will move...	I will make the marble move this way by...	I think this will work because...
very slowly		
very quickly		
in a straight line		
in a diagonal line		

PART 2: TESTING YOUR PREDICTIONS

Place the "Try It Out" paper on a smooth, flat surface like your desk, a table, or on the floor (as long as it is not carpeted). Stack up some books along the edges of the paper to keep the marble from getting away. Put your marble in one of the circles. Use the eraser end of your pencil to apply force to the marble to make it move like the description in the circle. Try this for all the circles. Record your results.



OLD SALEM EXPLORATORIUM

May the Force Be with You

TRY IT OUT

VERY SLOWLY

VERY
QUICKLY

IN A
STRAIGHT
LINE

IN A
DIAGONAL
LINE



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May the Force Be with You

Name: _____

Date: _____

PART 3: RESULTS

Here is where you record what happened when you tested your predictions.

When I tried to make the marble move...	...this is what happened:	If I were to try again, I would...
very slowly		
very quickly		
in a straight line		
in a diagonal line		





May the Force Be with You

Grade 3 Science

ANSWER KEY

In the *Knock Out!* video, you learned about the game of marbles. In this activity, you will investigate the science behind this game.

PART 1: MAKING PREDICTIONS

You are going to use the eraser end of your pencil to apply force to the marble to make it move in certain ways. Write your predictions here:

The marble will move...	I will make the marble move this way by...	I think this will work because...
very slowly	Responses may be similar to: "applying very little force to the marble with my pencil"	Responses may be similar to: "objects move slowly when they aren't hit with much force"
very quickly	Responses may be similar to: "applying a lot of force to the marble with my pencil"	Responses may be similar to: "objects move quickly when they are hit with a lot of force"
in a straight line	Responses may be similar to: "applying direct force to the marble with my pencil"	Responses may be similar to: "objects will move in the direction of the force applied to them"
in a diagonal line	Responses may be similar to: "applying force to the marble at an angle with my pencil"	Responses may be similar to: "objects will move in the direction of the force applied to them"

PART 2: TESTING YOUR PREDICTIONS

Place the "Try It Out" paper on a smooth, flat surface like your desk, a table, or on the floor (as long as it is not carpeted). Stack up some books along the edges of the paper to keep the marble from getting away. Put your marble in one of the circles. Use the eraser end of your pencil to apply force to the marble to make it move like the description in the circle. Try this for all the circles. Record your results.



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May the Force Be with You

ANSWER KEY

PART 3: RESULTS

Here is where you record what happened when you tested your predictions.

When I tried to make the marble move...	...this is what happened:	If I were to try again, I would...
very slowly	Answers will vary.	Responses may be similar to: "use very little force when hitting the marble with my pencil"
very quickly	Answers will vary.	Responses may be similar to: "use a lot of force when hitting the marble with my pencil"
in a straight line	Answers will vary.	Responses may be similar to: "use a direct force when hitting the marble with my pencil"
in a diagonal line	Answers will vary.	Responses may be similar to: "hit the marble with my pencil at an angle"

