KCS @ home

Summer Edition

Fifth Grade Science

Activity 2

knoxschools.org/kcsathome

5th Grade Science: Activity 2
Can we look at patterns of motion to predict future motion?

Directions: This handout goes with a KCS Teacher Video. If you have access to the video, watch the video before doing this activity. Read below with your child.

Activity 1: Observe and Describe Patterns

Look at the picture. Think about what you would see in a photo taken seconds later. Add arrows to show motion and direction. Are forces balanced or unbalanced?

Is there a pattern to this motion? A pattern of motion is a motion that occurs over and over. Describe the pattern below.

Can you think of any other activities that have a pattern of motion? Fill in the table below.

Motion	Describe Motion
jump rope	

Why would it be important to predict patterns in motion?

Activity 2: Measure Data of Patterns

Let's build a pendulum. Here's what you will need:

string (about 50 cm)	1 paper clip
masking tape	1 Pencil
ruler cm.	1 penny

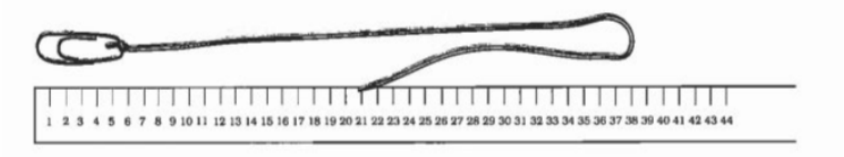
1. Tie one end of the string securely to the paper clip.

2. Measure exactly 38 cm from the tip of the paper clip along the string. Fold the string back at exactly the 38 cm mark.

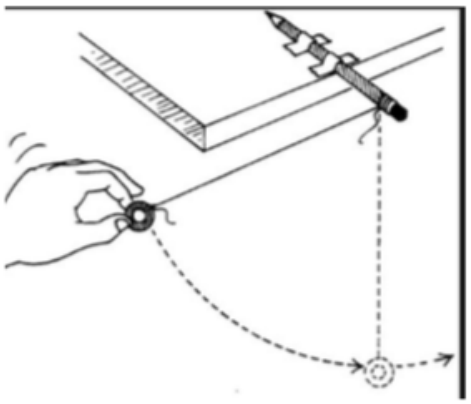
3. Put a tiny piece of masking tape around the string to make a loop. The loop should be large enough to hang over a pencil. Remeasure to make sure the pendulum measures 38 cm from the tip of the paper clip to the top of the loop.

4. Clip a penny in the paperclip.

5. Tape an unsharpened pencil onto a flat desk. Make sure the pencil extends



about halfway out over the edge. Hang the loop of string onto the pencil. You have made a pendulum!



Investigation:

1. Pendulum Investigation: How many times do you think your pendulum will swing in 20 seconds? How can we find out?

Trial	Length of String	Time period	Number of pennies	Release Angle	Number of swings
1	38 cm.	20 seconds	1		
2	38cm.	20 seconds	1		
3	38 cm.	20 seconds	1		

Mean Number of Swings: _____

The results in the table above will be the starting point for our investigations. We'll use it as a standard of comparison for our results.

Change Mass

Now let's see how the number of swings is affected when we change the mass (number of pennies).

(what are we changing) Independent Variable: _____

(What are we counting) Dependent Variable: _____

Length of String	Time period	Number of pennies	Release angle	Number of swings
38 cm	20 seconds	1	0	
38 cm	20 seconds	2	0	
38 cm	20 seconds	3	0	

Based on the evidence that you have collected, how does the mass affect the number of swings of the pendulum?

Using the pattern in your data, predict the number of swings that will result from a mass of **four** pennies. Explain how you used the data to make your prediction.

How close was your predicted value to the actual value?

What are some other variables that we could test to see if it affects the number of swings?

Conclusions:

Claim: Patterns in motion can predict future motion

Evidence: Be sure to use evidence from pendulum investigation