

Curriculum-Embedded Performance Task
Middle School Science
Content Standard 7.2



Feel The Beat

Student Work

Connecticut State Department of Education
2011 Edition

NAME: _____

Feel The Beat

A Guided Exploration of Factors That Affect Pulse Rate

You have probably noticed that when you walk or run up the stairs at school to get to class you get “out of breath” and your heart beats faster. Why does this happen? Are there other conditions that cause your heart to beat faster or slower?

Explore the sound of a heart beating using the stethoscope. See if you can detect heartbeats by holding the stethoscope to the neck, back, wrist and ankle. Do the heartbeats sound the same at different places?

Record your observations and thoughts in a chart below:

I NOTICED	I WONDER

What factors do you think affect heart rate? Review the observations you collected and brainstorm ideas with your partners. Some factors that might affect heart rate include:

One of the factors that affects heart rate is activity. Some activities require more oxygen than others. Write a scientific question related to heart rate and **different** activities on the lines below:

NAME: _____

Methods For Measuring Pulse Rate

You may have found it difficult to accurately count the heartbeats you heard with the stethoscope because of interference from other noises in the room. An easier way to count heartbeats is to feel the pulse caused each time the heart pumps blood. There are two methods for measuring pulse. You should sit quietly for several minutes before measuring your “**resting**” pulse rate. You can practice with a partner or by yourself. Try both ways, and then decide which way works best for you:

Wrist Method: With the palm of your partner’s hand facing up, place the tips of your first two fingers on the fleshy part of your partner’s thumb. Slide your fingers about 2 inches toward the wrist, stop, and press firmly to feel the pulse of blood that each heartbeat sends through the artery. To measure heart rate, count the number of pulses in 30 seconds. Multiply that number by 2, and you will have the number of beats per minute (“bpm”).



Illustration Copyright © 2005 Nucleus Medical Art. All rights reserved.
www.nucleusinc.com

Neck Method: Place the tips of your first two fingers on either side of your windpipe, near the lump, called an Adam’s apple, in the middle of your neck. Press gently until you can feel a pulse. To measure heart rate, count the number of pulses in 30 seconds. Multiply that number by 2, and you will have the number of beats per minute (“bpm”).



Illustration Copyright © 2005 Nucleus Medical Art. All rights reserved.
www.nucleusinc.com

NAME: _____

INVESTIGATION 1 – EFFECT OF DIFFERENT ACTIVITIES ON PULSE RATE

Write the question you are investigating:

DESIGN A PROCEDURE to explore how different types of activity affect pulse rate. Describe how you will change the independent variable, measure the dependent variable, and keep the other factors constant in your experiment. Include enough detail so that you or someone else could repeat your experiment and get similar outcomes. Consider multiple trials to gain confidence in your results.

DEPENDENT VARIABLE: Pulse rate

INDEPENDENT VARIABLE: _____

CONSTANTS: _____

PREDICTION: _____

I predict this because I think that _____

PROCEDURE:

Get your teacher’s approval before you begin your experiment. _____

Inquiry Component III – Working With Data

NAME: _____

Conduct your experiment and record your data in a table in the space below. Do the data seem reasonable? If not, do you need to repeat any trials to correct errors? What must be done to the data to make sense of it?

Change the table so it fits your experiment:

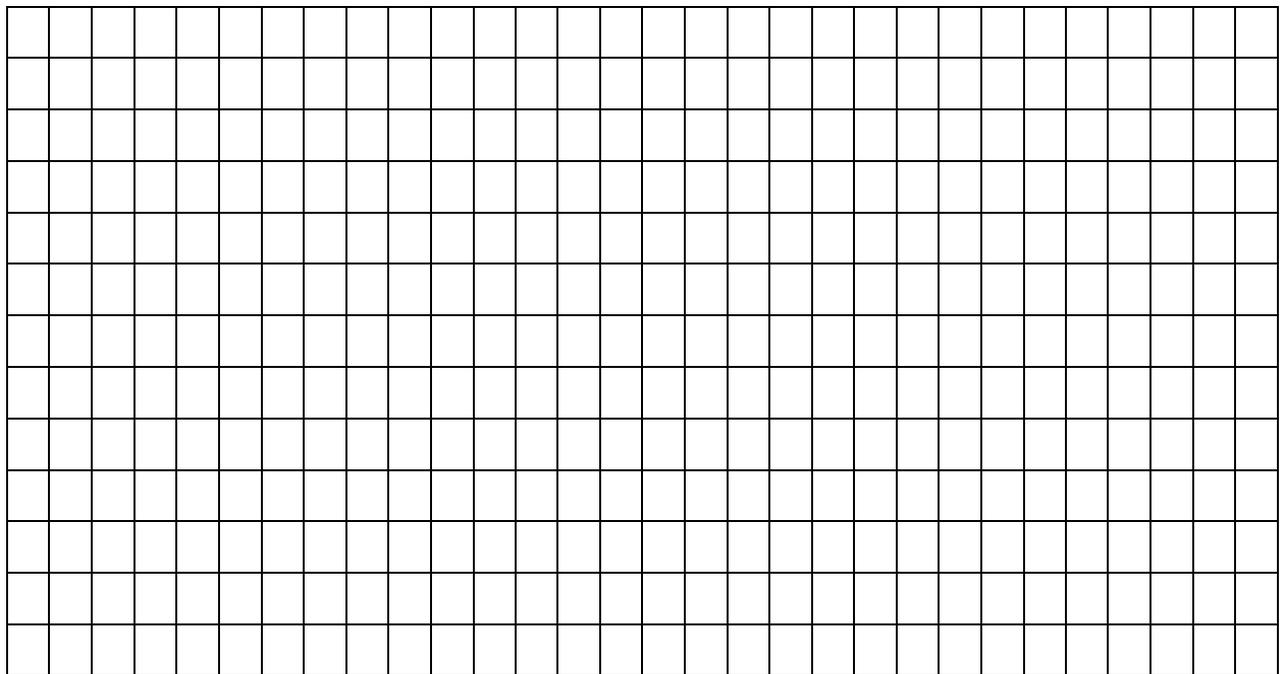
(Title)

	RESTING PULSE (bpm)	DURATION OF ACTIVITY	PULSE AFTER ACTIVITY (bpm)	

NAME: _____

Display your data in an appropriate graph. Be sure to:

- Consider what kind of graph is most appropriate to show the data collected
- Include a title and scale, and label each axis with a variable
- Plot appropriate and accurate data that will lead toward a conclusion



NAME: _____

INVESTIGATION 2 – EFFECT OF OTHER VARIABLES ON PULSE RATE.

Review your original heart rate observations and consider what you have read about the circulatory and respiratory systems.

Make observations of heartbeats or pulse rates again. What do you notice this time? Record your observations in a chart in the space below:

What other variables might cause the heart to beat faster or slower? You might consider physiological factors, such as age, gender, height or body position; or you might be interested in exploring environmental factors, such as temperature, lighting or time of day.

Choose ONE factor that can be investigated through a scientific experiment. Write the question you will investigate here: _____

