

Breathing Rate Investigation

Question: What is the effect of exercise on breathing rate?

Hypothesis:

Make a prediction about the effects exercise on breathing rate.

EXPLAIN the reason for your prediction.

Try and include the following terms in your explanation:

aerobic respiration, energy, muscular contraction, ATP, gas exchange, diffusion, glucose, carbon dioxide

Method:

1. **Determine your resting breathing rate.** Sit down and breathe normally. Use a clock or stopwatch to time a 1 minute time period. During this time, count the number of times you inhale. RECORD this information in the table in the data section.
2. Repeat Step 1 two more times. Record your trials. Calculate an mean resting breathing rate.
3. **Determine your breathing rate during exercise.** Run in place for 1 minute. During this time, count the number of times you inhale. RECORD this information in the table in the data section.
4. Repeat Step 3 two more times. Record your trials. Calculate an average breathing rate during exercise.
5. For the last test, **choose an activity** that you can do for one minute (sit-ups, jumping jacks, jump rope, standing on one foot, dance the “twist”, touching your toes, etc.). While doing the activity, count the number of times you inhale in one minute. RECORD this information in the data section.
6. Repeat Step 5 two more times. Record your trials. Calculate a mean breathing rate.

Data collection:

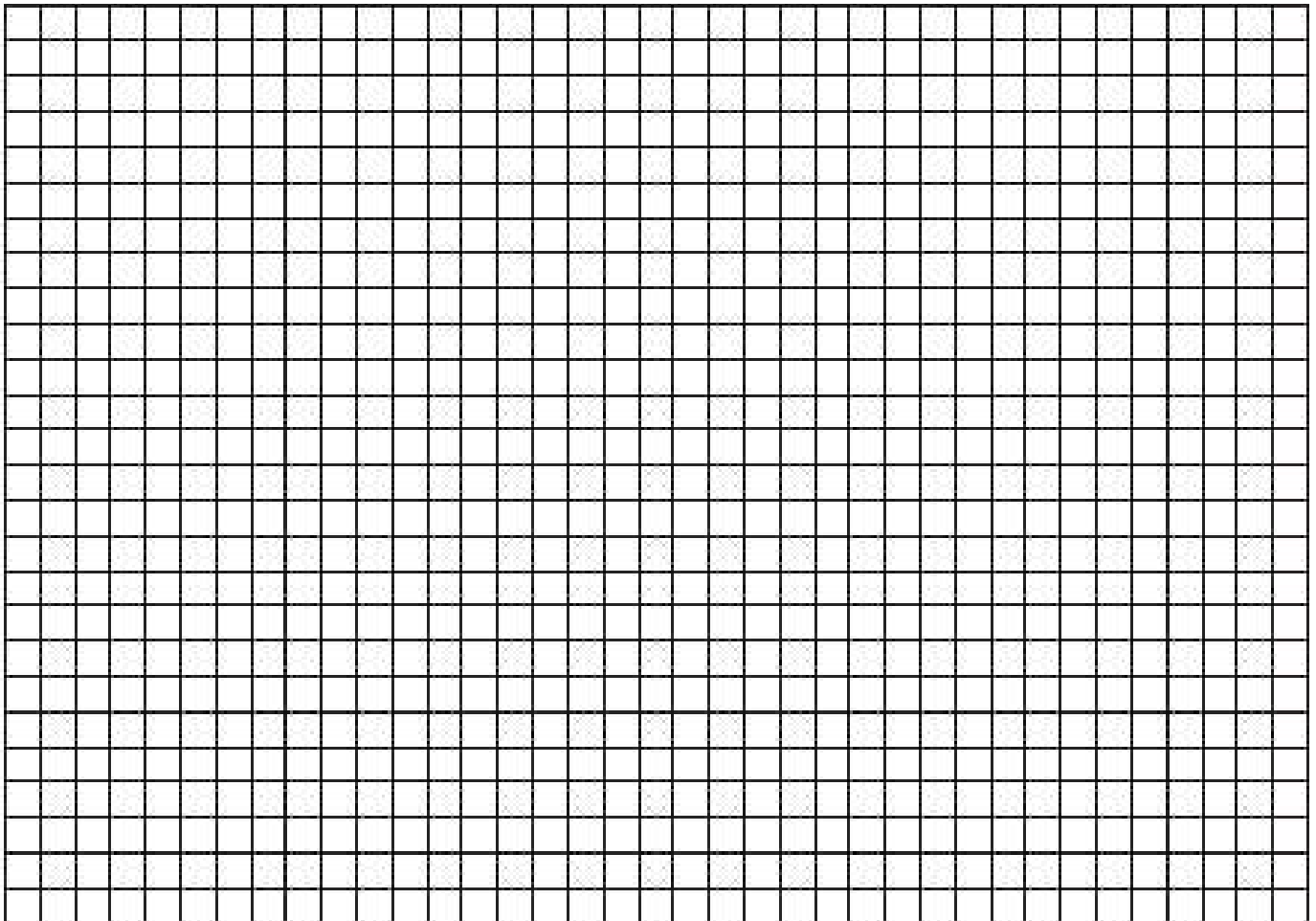
In the table below, record your trials and means. Be sure to use label your data with appropriate labels and title.

Title _____

	Sitting at Rest	Running in Place	(Record your activity here)
Trial 1			
Trial 2			
Trial 3			
Mean			

Bar Graph: Create a bar graph of the **MEANS** from your three activities.

- Give your graph a title
- Include appropriate labels for your x and y axis
- Label your y-axis with an appropriate scale



Analysis

1. What is the relationship between breathing rate and exercise? WHY do you think your data turned out as it did?

2. Did your data support your hypothesis? Were there any surprises? EXPLAIN!

3. What were some controlled variables in your experiment (ie: the variables that did NOT change from trial to trial)

4. What could you do to improve the reliability of your data?

5. Other than exercise, what other factors could possibly affect one's breathing rate? Explain two possible examples.