STEM 101
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Name: _____
Period: _____

BODY DETECTIVE CASE FILE

UNIT: PULSE OXIMETRY

OBJECTIVE:

Students will act as body detectives by analyzing pulse oximeter data to solve activity cases and explain how the body maintains stable oxygen levels during movement.

MATERIALS:

- ✓ Pencil

MISSION:

A middle school student wore a pulse oximeter during the school day, but their activity log was lost. The only clues remaining are body measurements collected at different times.

- Your mission is to:
- Analyze the evidence.
- Identify what the student was doing.

Remember:

- Heart rate changes based on activity.
- Oxygen levels usually remain stable because the body maintains balance (homeostasis).

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STUDENT DIRECTIONS:

Step 1: Examine the Case File

Study the body data carefully. Use scientific reasoning to determine what activity may have occurred.

Possible School Activities

- Sitting in class
- Walking between classes
- Playing basketball at recess
- Respiratory illness
- Climbing stairs
- Resting after PE
- Climbing a mountain
- Talking with friends
- Shallow breathing
- Reading quietly

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Table 1

Case	Heart Rate (bpm)	Oxygen Saturation (SpO_2 %)	What Was the Student Doing?
A	72 bpm	99%	_____
B	145 bpm	97%	_____
C	95 bpm	98%	_____
D	80 bpm	99%	_____
E	150 bpm	88%	_____
F	75 bpm	90%	_____
G	72 bpm	92%	_____

Step 2: Detective Notes

Explain why you chose the activity for each case. Use either heart rate (BPM) or oxygen saturation (SpO_2) to support your reasoning.

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Table 2

Case	Heart Rate (bpm)	Oxygen Saturation (SpO_2 %)	Explain Your Reasoning from Table 1
A	72 bpm	99%	_____ _____
B	145 bpm	97%	_____ _____
C	95 bpm	98%	_____ _____

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D	80 bpm	99%	_____ _____
E	150 bpm	88%	_____ _____
F	75 bpm	90%	_____ _____
G	72 bpm	92%	_____ _____