Name _____ Date _____ Period _____

ZornScience
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Power
Physics

Part A: Thinking About Power

1. Two cranes each lift identical 500 kg beams to the top of the same building. Crane X takes 40 s and crane Y takes 20 s.

a. Which crane does more work on its beam? Explain.

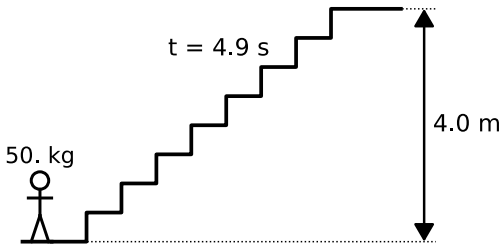
b. Which crane has more power? How many times more? Explain.

2. A microwave label says 1,100 W. Explain what this number means in terms of joules and seconds. Then explain how you can tell whether the letter W in a problem stands for work or for watts.

Part B: Calculating Power

Show knowns, equation, substitution with units, and answer. Use $g = 9.8\ \text{m/s}^2$.

3. André runs up a flight of stairs as shown, at a steady pace.



a. How much work does he do against gravity?

b. What is his power?

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4. A 9.0 W LED bulb is left on for 3.0 hours. How much energy does it transfer?

5. A 1,200 W electric kettle transfers 24,000 J of energy to the water. How long does this take?

Part C: Putting It Together

6. An elevator motor lifts an 800. kg elevator car 15 m at a constant speed in 20. s.

a. How much work does the motor do?

b. What is the motor's power in watts and in kilowatts?

c. What is the motor's power in horsepower (1 hp ≈ 746 W)?

7. Three students do work in the weight room. Complete the table, then answer the questions.

Student	Work (J)	Time (s)	Power (W)
Lena	1,800	6.0	?
Omar	2,400	?	200
Zoe	?	3.0	500

a. Show your work for each missing value.

b. Omar did the most work. Does that make him the most powerful? Explain.

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