

## Capacitors

Name: \_\_\_\_\_

**Directions:** Answer the following questions about the Lego capacitor.

1) Briefly explain how a capacitor works internally.

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2) List two uses of capacitors.

i) \_\_\_\_\_ ii) \_\_\_\_\_

3) Briefly explain what electromagnetic induction is, and how it allows us to charge a capacitor with a generator.

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4) What energy conversion takes place when you charge the capacitor by cranking the generator?

\_\_\_\_\_ to \_\_\_\_\_

5) What energy conversion takes place when the capacitor powers the car?

\_\_\_\_\_ to \_\_\_\_\_

6) Given what you now know about gear ratios, what considerations will you make when designing a generator? Consider: how can it be geared so that the capacitor is charged fastest? How can you gear your capacitor car so that it moves fastest?

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