

## Resistance, Reactance, and Impedance worksheet

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This worksheet covers the following concepts:

- Phase relations of voltage and current in an inductive AC circuit. (PENDING).
- Phase relations of voltage and current in a capacitive AC circuit. (PENDING).
- Calculation of inductive reactance (PENDING).
- Calculation of capacitive reactance (PENDING).
- Combinations of reactance and resistance (PENDING).
- Vectors and trigonometry review (PENDING).

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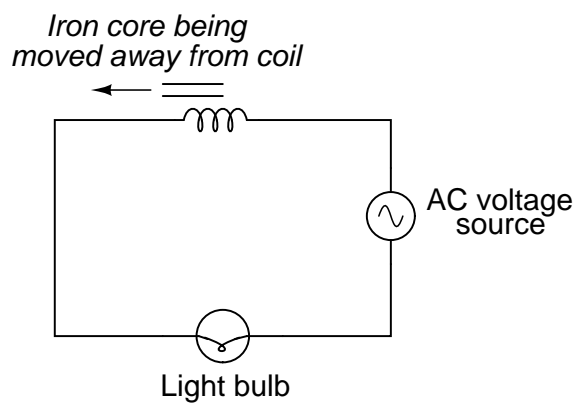
Resources and methods for learning about these subjects (list a few here, in preparation for your research):

## Questions

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### Question 1

What will happen to the brightness of the light bulb as the iron core is moved away from the wire coil in this circuit? Explain why this happens.



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## Answers

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Answer 1

The light bulb will glow brighter when the iron core is moved away from the wire coil, due to the change in inductive reactance ( $X_L$ ).

Follow-up question: what circuit failure(s) could cause the light bulb to glow brighter than it should?

## Notes

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### Notes 1

One direction you might want to lead your students in with this question is how AC power may be controlled using this principle. Controlling AC power with a variable *reactance* has a definite advantage over controlling AC power with a variable *resistance*: less wasted energy in the form of heat.