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الوطنية الأرثوذكسية
الشميساني

The National
Orthodox School
Shmaisani

Experiment one: Which fuel source has more heat energy?

- ✓ **Objective:** To compare possible fuel sources for the amount of energy they give off in the form of heat energy.



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- ✓ **Planning:** Complete the table to show the independent, dependent and control variables.

Variable	Independent, dependent or control?
Type of fuel	Independent (I Investigate)
Volume of water	Control (keep the same to make it a fair test)
Mass of fuel burned	
Temperature change of water	Dependent (Result of the investigation)

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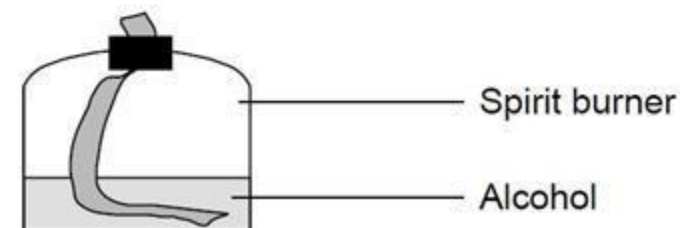
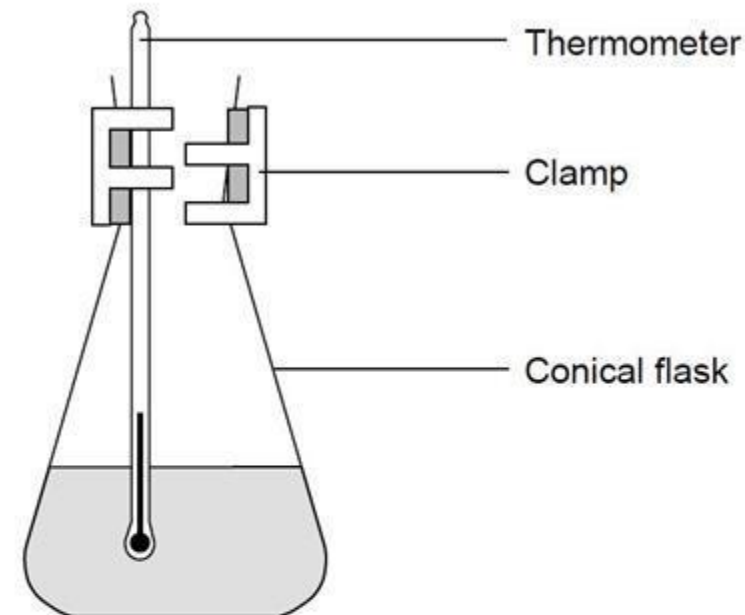
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Procedure:

1. Measure 100 cm³ of cold tap water into a conical flask.
2. Clamp the flask at a suitable height so that a spirit burner can easily be placed below.
3. Weigh the spirit burner (and cap) containing the alcohol (fuel) and record this mass and the name of the alcohol.
4. Record the initial temperature of the water in the flask.
5. Place the spirit burner under the flask and light the wick.
6. Allow the alcohol to heat the water so the temperature rises
7. Using a fresh 100 cm³ of cold tap water, repeat the experiment with another alcohol.



✓ Results

Fuel	Initial temp.	Duration of heating	Final temp.	Temperature change
				Final temp – Initial temp
ethanol	Ex: 23.5	3 min	Ex: 27	27-23.5= 3.5
butanol	Ex: 28	3 min	Ex: 35	35-28= 7

✓ Conclusion

- ✓ Different types of fuel have different amount of energy.
- ✓ The energy is released by burning (combustion reaction)

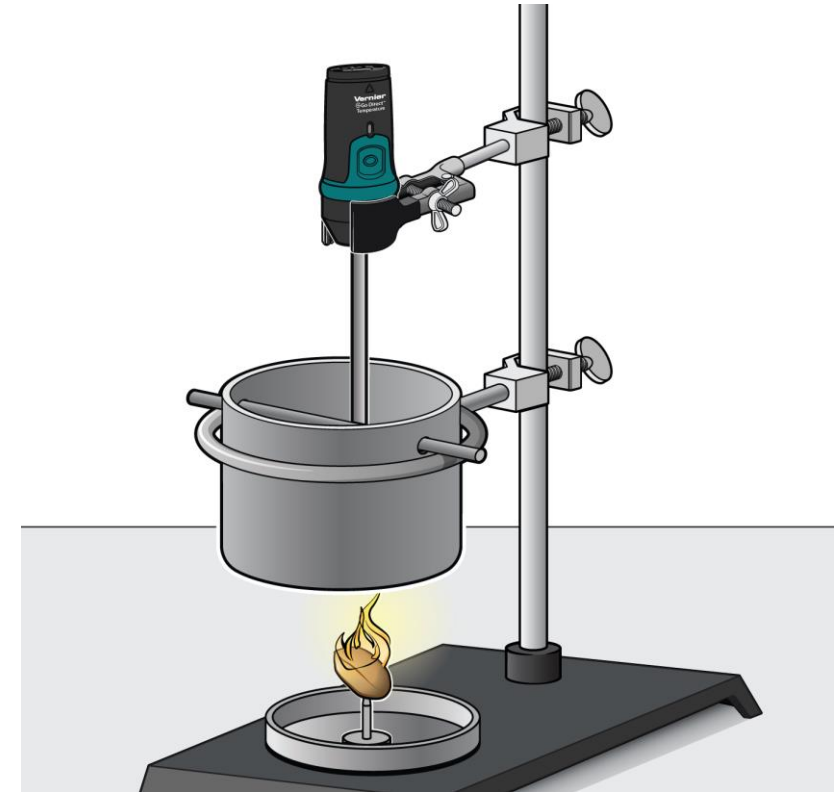


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Experiment two: Which food has more heat energy?

- ✓ **Objective:** To compare possible food types for the amount of energy they give off in the form of heat energy.



<https://www.youtube.com/watch?v=Tmiq7bdtti8>

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- ✓ **Planning:** Complete the table to show the independent, dependent and control variables.

Variable	Independent, dependent or control?
Type of food	Independent (I Investigate)
Volume of water	Control (keep the same to make it a fair test)
Mass of food burned	
Temperature change of water	Dependent (Result of the investigation)

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✓ Results

Type of food	Initial temp. C	Duration of heating	Final temp. C	Temperature change C Final temp – Initial temp
nuts	Ex:38	2 min	Ex:41.5	41.5-38= 3.5
bread	Ex:42	2 min	Ex:44	44-42= 2

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Thank you