**Alternative Fuels Honor Instructor Helps**

In these combined files are the work sheets, the answer book, and the PowerPoint presentation. The PowerPoint covers all the requirements of the honor although they are not necessarily in the exact order of the requirements. The steam engine photo in slide #3 is included since this engine runs on used motor oil. For one of the requirements (#10), I have chosen to talk about my experience as a hybrid vehicle owner, comparing it to my previous non-hybrid car. Another part of requirement #10 I chose to do was to have a talk by someone who has worked in that field of science (which I have done).

I explained my experience as we talked about some of the other parts of the honor. You may choose to do something different, which is ok. I would recommend that you search YouTube. There are plenty of videos that deal with ethanol production from corn, algae-based oil and other alternative fuels that could be watched to fulfill this requirement.

[**1. Explain the difference between a conventional fuel and an alternative fuel?**](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#1._Explain_the_difference_between_a_conventional_fuel_and_an_alternative_fuel.3F)

**[2. Briefly describe each of the following alternative fuels and their benefits:](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels%22%20%5Cl%20%222._Briefly_describe_each_of_the_following_alternative_fuels_and_their_benefits%3A)**

[a. Algae Based Fuels](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#a._Algae_Based_Fuels) [b. Bio alcohol](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#b._Bioalcohol) [c. Biodiesel](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#c._Biodiesel)

[d. Hydrogen](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#d._Hydrogen) [e. Electricity](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#e._Electricity) [f. Ethanol](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#f._Ethanol)

[g. Liquid Nitrogen](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#g._Liquid_Nitrogen) [h. Methanol](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#h._Methanol) [i. Natural Gas](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels%22%20%5Cl%20%22i._Natural_Gas)

[j. Non-fossil Methane](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#j._Non-fossil_Methane) [k. Nuclear Power](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#k._Nuclear_Power) [l. Propane](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#l._Propane)

[m. Vegetable Oil](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#m._Vegetable_Oil)

[**3. Discover at least three reasons why alternative fuels are important?**](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#3._Discover_at_least_three_reasons_why_alternative_fuels_are_important.3F)

[**4. What are some advantages of alternative fuels? Disadvantages of alternative fuels?**](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#4._What_are_some_advantages_of_alternative_fuels.3F_Disadvantages_of_alternative_fuels.3F)

* + [Advantages:](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#Advantages:)
	+ [Disadvantages:](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#Disadvantages:)

[**5. Illustrate through drawings, sketches, or photographs, the elements that make up natural gas.**](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#5._Illustrate_through_drawings.2C_sketches.2C_or_photographs.2C_the_elements_that_make_up_natural_gas.)

[**6. Explain the difference between compressed natural gas and liquefied natural gas?**](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#6._Explain_the_difference_between_compressed_natural_gas_and_liquefied_natural_gas.3F)

[**7. Draw the steps or view an electronic animation that illustrates the alternate fuel conversion process as used in the automobile industry.**](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#7._Draw_the_steps_or_view_an_electronic_animation_that_illustrates_the_alternate_fuel_conversion_process_as_used_in_the_automobile_industry.)

[**8. Describe how a propane vehicle operates.**](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#8._Describe_how_a_propane_vehicle_operates.)

[**9. Discuss with a group the importance of finding alternative fuel methods.**](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#9._Discuss_with_a_group_the_importance_of_finding_alternative_fuel_methods.)

[**10. Do two of the following individually or as a group:**](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#10._Do_two_of_the_following_individually_or_as_a_group:)

[a. Visit a facility that produces an alternative fuel of your choice. Prepare and give an oral presentation on your activity.](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#a._Visit_a_facility_that_produces_an_alternative_fuel_of_your_choice._Prepare_and_give_an_oral_presentation_on_your_activity.)

[b. Create a science project demonstration that illustrates how an alternative fuel can be used.](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#b._Create_a_science_project_demonstration_that_illustrates_how_an_alternative_fuel_can_be_used.)

[c. Have someone who works in the alternative fuels industry come and speak to you or your group.](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#c._Have_someone_who_works_in_the_alternative_fuels_industry_come_and_speak_to_you_or_your_group.)

[d. Calculate and demonstrate cost savings for modern alternative fuel/hybrid vehicles. Demonstrate your finding through a presentation, display, or verbal report.](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#d._Calculate_and_demonstrate_cost_savings_for_modern_alternative_fuel.2Fhybrid_vehicles._Demonstrate_your_finding_through_a_presentation.2C_display_or_verbal_report.)

[**11. Discuss with a group the following texts as they relate to alternative fuels.**](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#11._Discuss_with_a_group_the_following_texts_as_they_relate_to_alternative_fuels.)

[a. Psalm 24:1](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#a._Psalm_24:1)

[b. Colossians 1:16-17](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#b._Colossians_1:16-17)

[c. John 1:3](http://wiki.pathfindersonline.org/w/Adventist_Youth_Honors_Answer_Book/Nature/Alternative_Fuels#c._John_1:3)