



**BOY SCOUTS OF AMERICA**  
**Troop 146**  
St. Francis Church  
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**Second Class Requirement 2d1**  
**"Explain when it is appropriate to use a lightweight stove and when it is appropriate to use a propane stove."**  
(Handbook page 392)

\_\_\_\_\_ Name

**Note #1:** This is a requirement that only a dedicated gearhead will appreciate.

**Note #2:** Yes, there are two kinds of camp stoves, but the requirement as written is all wrong:

Wrong: "lightweight stove" vs. "propane stove"

Right: "gas in a cartridge stove" vs. "liquid fuel stove"



Cartridge stove

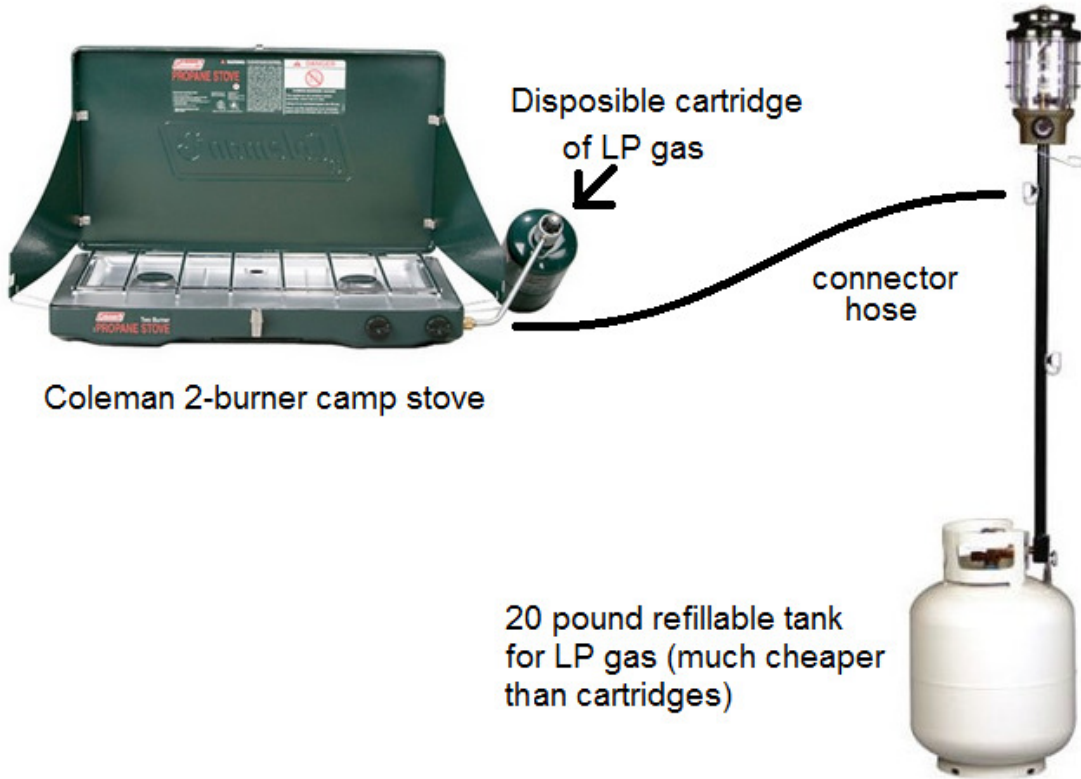
Disposable cartridge has compressed or liquified gas.



Liquid fuel stove

Refillable bottle has white (unleaded) gasoline or kerosene.

**Note #3:** Troop 146 doesn't own any liquid fuel stoves. We have two kinds of stoves that both work off compressed liquified propane (LP) gas.



The troop owns two of these Texsport backpacking stoves.

Probably a little too heavy for serious backpacking, but they work fine for us.

1. The Troop doesn't own any liquid fuel stoves. Why not?

- We're nervous about where to store a bottle full of gasoline in between camping trips.
- Even though a fuel bottle filled with gasoline is colored bright red, it sure could be mistaken for an ordinary water bottle.
- You wouldn't believe how tricky it is to "prime" a liquid fuel stove before it has a flame suitable for cooking.
- Fuel spills are a real hazard.
- Even though all our Scouts are far too smart to do something stupid like splashing gasoline on a campfire, why take a chance on its happening?
- All of the above.



Cartridge stove

Disposable cartridge has compressed or liquified gas.



Liquid fuel stove

Refillable bottle has white (unleaded) gasoline or kerosene.

2. Take another look at the comparison image above. Which type of stove will be cheaper to operate?

- The cartridge stove will be cheaper to operate.
- The liquid fuel stove will be cheaper to operate.

3. Take another look at the comparison image above. Which type of stove will be quicker to set up when you're ready to start cooking?

- The cartridge stove will be quicker to set up.
- The liquid fuel stove will be quicker to set up.

4. Take another look at the comparison image above. The gas in the cartridge is under pressure and will start feeding fuel to its cartridge stove just as soon as it's connected. QUESTION: How does the gasoline in the red bottle feed fuel to its liquid fuel stove?
- There must be some kind of gravity feed.
  - The red bottle must have some kind of pump built in that you use to build up pressure.
5. Take another look at the comparison image above. Which type of stove makes it easier to check how much fuel remains?
- The cartridge stove is easier to check how much fuel remains.
  - The liquid fuel stove is easier to check how much fuel remains.
6. Take another look at the comparison image above. Which type of stove should perform better in cold weather? To answer you will need some science: A gas that is made colder will lose pressure. Automobile tires in winter are also subject to this effect.
- The cartridge stove will perform better in the cold.
  - The liquid fuel stove will perform better in the cold.
7. Take another look at the comparison image above. This question is about stability. Which type of stove will be a better choice if you intend to heat up a really big pot of water for spaghetti?
- The cartridge stove is better, because it's less likely to tip over.
  - The liquid fuel stove is better, because it's less likely to tip over.
8. Take another look at the comparison image above. On a backpacking trek, it's nice if your load gets lighter as time goes on. For example, packs with food get lighter after each meal has been eaten. Which type of stove/fuel will get lighter after each cooked meal?
- The cartridge stove gets noticeably lighter the more you use it.
  - The liquid fuel stove gets noticeably lighter the more you use it.