**Four and 2 Stroke Engines**

**Answers**

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1. The four stroke engine has two of these. One is for exhaust and one is for intake. What are they?  
   valves

/1

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/4

/1

/1

/2

/2

/1

1. What is TDC? Top Dead Center
2. Name the four strokes of a four stroke engine in order.  
   Intake, compression , power, exhaust
3. What is BDC? Bottom Dead Center
4. What creates a vacuum inside the combustion chamber?  
   the piston going down in the cylinder
5. What are two reasons that two stroke engines could be discontinued in the future?  
   The downward motion of the piston on the intake stroke of a four stroke engine creates a negative pressure which is remedied by a charge of gas and air mixture through the carburator. By the time the piston reaches BDC, the pressure has been equalized.
6. What two strokes happen on the “compression” stroke of a two stroke engine?  
   Intake and compression
7. Which direction is the piston going while travelling on the exhaust stroke on a four stroke engine?  
   up
8. What gives two stroke engines a significant power boost over four stroke engines?  
   Two stroke engines fire once every cycle where four stoke engines fires once every second cycle. Having more firing strokes produces more power

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/1

/3

/1

/1

/4

1. If there is only one power stroke on a four stroke engine, what carries the engine through the other 3 strokes?  
   Momentum
2. Convert 1 gallon of mixing oil to 1000 miles how many liters of mixing oil would you use and within how many kilometers when using a two stroke engine?  
    3.785 l / US gallon 1609 kms / 1000miles 425mls oil per km driven
3. What direction in the piston travelling on the power stroke on four stroke engine?  
   Down
4. When does the spark plug fire on a four stroke engine?  
   12 degrees before TDC of power stroke
5. What three things is the piston doing in a two stroke engine?  
   The piston is acting like the combustion chamber, crankcase, and valves
6. What is BTDC?  
   Before Top Dead Center
7. Define combustion.  
   the act or process of burning
8. What fuels are used in today’s combustion engine? Gasoline, diesel, hydrogen, natural gas, propane, bio-diesel (accept any 4)
9. Using the internet, research external combustion engines. Create a T-chart explaining the differences between an internal combustion engine and an external combustion engine, addressing the following: fuel used, size, power available, portability, cost, practicality. Put the chart, along with a picture of both engines on a separate piece of paper.

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The student response should be similar to this form. There will be a variety of responses but should fall within the general descriptions.

|  |  |  |
| --- | --- | --- |
| **Internal Combustion** | **Difference in:** | **External Combustion** |
| Petroleum based | Fuel used | Anything that burns |
| Small to very large | Size | Small to large |
| Massive Hp | Power available | Hasn’t been developed |
| Very | Portability | Not |
| Cheap to $$$ | Cost | Moderately cheap to $$$ |
| Very | Practicality | Technology not developed |

The following information is very basic and should be contained in the T chart

19. Identify the type of engine that is used and the fuel that is most commonly used with this engine that is used to power:

a plane

* shaft engine and jet engines typically burn avgas (high octane) or jet fuel in Turbines

a snowmobile

* two stroke and four stroke engines, single and multi-piston, mixed high octane gas or high octane gas alone.

a sea dragger

* internal combustion diesel engines that burn diesel fuel

a space shuttle

* rocket boosters that burn solid fuel and liquid hydrogen fuel (depending on the stage)

a funny car

* v-8 internal combustion engines that burn 85 – 90% nitromethane and 10 – 15% methanol

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