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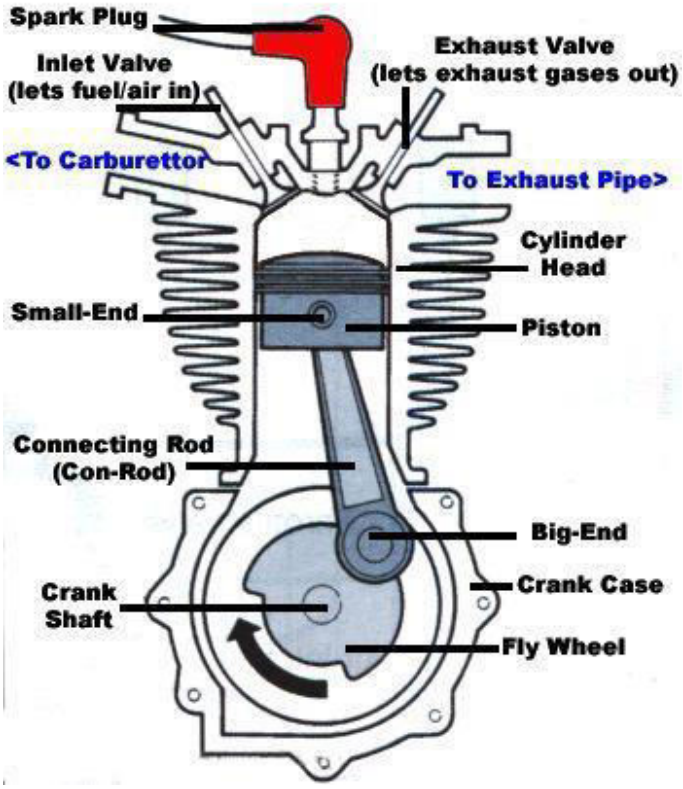
WORKSHEET NO: 10

LESSON PLAN

Subject: Applied Technology		**Year/Level:** 13
	Lesson 1	**Date:**
Topic: **Motorized Machines and Engines**		

Four –Stroke Engines

A **four-stroke engine** (also known as **four cycle**) is an internal combustion (IC) engine in which the piston completes four separate strokes while turning a crankshaft. A stroke refers to the full travel of the piston along the cylinder, in either direction. The four separate strokes are termed:



Intake: also known as induction or suction This stroke of the piston begins at top dead center (T.D.C.) and ends at bottom dead center (B.D.C.). In this stroke the intake valve must be in the open position while the piston pulls an air-fuel mixture into the cylinder by producing vacuum pressure into the cylinder through its downward motion.

Compression: This stroke begins at B.D.C, or just at the end of the suction stroke, and ends at T.D.C. In this stroke the piston compresses the air-fuel mixture in preparation for ignition during the power stroke (below). Both the intake and exhaust valves are closed during this stage.

Combustion: also known as power or ignition This is the start of the second revolution of the four stroke cycle. At this point the crankshaft has completed a full 360 degree revolution. While the piston is at T.D.C. (the end of the compression stroke) the compressed air-fuel mixture is ignited by a spark plug (in a gasoline engine) or by heat generated by high compression (diesel engines),

forcefully returning the piston to B.D.C. This stroke produces mechanical work from the engine to turn the crankshaft.

Exhaust: also known as outlet. During the *exhaust* stroke, the piston once from B.D.C. to T.D.C. while the exhaust valve is

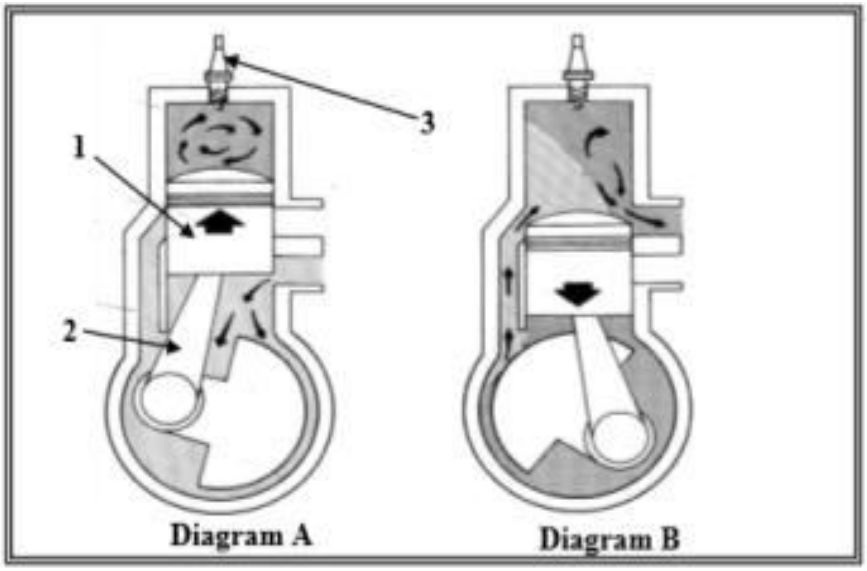
open. This action expels the spent air-fuel mixture through the exhaust valve.

REVIEW QUESTION

1. Discuss the difference between a two stroke and four stroke engines.

2. List down with their uses the main parts of internal combustions of engines?

(a) Study the cross-sections of a two-stroke internal combustion engine shown below and answer the questions that follow.



(i) Name the parts labelled 1 and 2 in Diagram A.

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(ii) Explain the function of the part marked 3.

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(iii) Explain one possible problem which can arise if the air filter is blocked.

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(iv) Explain the cycle that is taking place in Diagram B.

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(b) (i) Explain how the parts of a two-stroke engine are cooled.

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(ii) Explain the function of the crankshaft in a four-stroke engine.

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(iii) State three advantages of a four-stroke engine over a two-stroke engine.

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