

Student Name _____ Date Submitted _____

*** PILOT VERSION ***

NOTE: CDX Program requires Windows (PC) or Parallels Mac

AUTOMOTIVE TECHNOLOGY 12 (online)

Section 1.0 Send-In: *Basic Engine Principles*

Complete this send-in as part of your course enrollment. This will be your first mark entered for the course. When this assignment has been received by SCIDES, your course materials will be sent to you.

This send-in consists of:

- Auto Tech 12 Course Planner _____ / 5 marks
- Signed Disclaimer
- Safety & Hand Tools Assignment _____ / 23 marks

TOTAL: _____ / 28 marks _____ %



Mail:

- 1) This **Cover Sheet**
- 2) **Return Address** (page 2 or Comment Sheet) – Fill out with your complete name and address.
- 3) **Send-In Assignments** – Completed above noted assignments.

*Be sure to put proper **postage** on the envelope (if necessary) and add your **return address**.*

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You are **REQUIRED** to fill out your return address on this page if you **DOWNLOADED** this Assignment. [If the Assignment was mailed to you, please fill out the back of the white page of the 3 part District Education Comment Sheet.]

Please Print Clearly

NAME
ADDRESS
CITY / TOWN
PROVINCE / COUNTRY
POSTAL CODE

Complete your MAILING address.

Is this a change of address?

Yes

No

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Name: _____

___ / 5 marks

Automotive Technology 1 2 Course Planner

Complete all the following contact information that applies to you and check the one that is the best way to contact you during the day:

Home Phone: _____ Work Phone: _____ Cell: _____

Email: _____

other way to contact you (explain) _____

When is the best time for your teacher or tutor/marker to contact you? ___:___ AM PM

Check your Grade: Grade 10 Grade 11 Grade 12 Graduated

Timetable Options/Course Plan

One of the keys to being successful in anything that you do is to take the time to plan carefully. The objective of this section is to help you create a timetable for managing your schoolwork and enable you to set goals for finishing all of your courses by your desired completion date. **Most full-time students complete 3 to 5 assignments each week.**

The flexibility of our distributed learning program offers you many choices but a plan for completion is essential to success. Most full-time students complete 8 courses in a school year (10 months). The most common timetables are "semestered" (4 courses at a time) or "linear" (8 courses at a time).

What is your planned schedule? Semester System (22 weeks) Linear System (44 weeks)

other: *(explain)* _____

What is your intended **start** date for this course? Now Other date: _____

What is your intended **completion** date for this course? _____ (month) _____ (year)

How many courses are you taking with us this year? _____ How many with other schools/programs? _____

Auto Tech 12 (online) consists of 35 more send-in assignments, 4 Workshop Activity assignments and 4 quizzes. How many assignments/quizzes per week must you do to complete this course as planned? _____



- *Mark target submission dates on a calendar.*
- *Add this same information from other courses to help you create a schedule for completion.*
- *Record the actual dates you submit work so you can track your progress.*



Delivery Method

Automotive Technology 12 is delivered entirely online through Moodle. You may access this course once you've completed registration and this assignment by going to the Vancouver Community College website (www.vcc.ca). Included in the package that will be mailed to you is a separate sheet with user name and login instructions.

Anything else?

Is there anything else you would like us to know about you or your education plans that will help us provide you with better service?

Automotive Technology 12 Disclaimer

Please note that work done on automobiles by students can only be completed in an approved facility with either a certified instructor or a licensed automotive technician supervising. As SCIDES is offering Automotive Technology 12 from a distance, students and parents must sign this disclaimer indicating that the student will not attempt any of the practical aspects of automotive repair as outlined in this course unless an approved arrangement has been made between the SCIDES instructor and a local facility.

I UNDERSTAND AND ACKNOWLEDGE THAT I,
_____, WILL NOT ATTEMPT ANY OF THE
PRACTICAL ASPECTS OF AUTOMOTIVE REPAIR AS OUTLINED IN THE
AUTOMOTIVE TECHNOLOGY COURSE THAT I AM TAKING AT SCIDES UNLESS
ARRANGEMENTS HAVE BEEN MADE WITH MY SCIDES INSTRUCTOR.

Student Signature _____ Date _____

I UNDERSTAND AND ACKNOWLEDGE THAT MY CHILD,
_____, WILL NOT ATTEMPT ANY OF THE
PRACTICAL ASPECTS OF AUTOMOTIVE REPAIR AS OUTLINED IN THE
AUTOMOTIVE TECHNOLOGY COURSE THAT HE/SHE IS TAKING AT SCIDES
UNLESS ARRANGEMENTS HAVE BEEN MADE WITH MY SCIDES INSTRUCTOR.

Parent Signature _____ Date _____

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Automotive Technology 12A

Activation Assignment: Basic Engine Principles

Directions:

Please review the following pages familiarizing yourself with:

1. Terms and Definitions
2. Small engine parts description
3. Small engine parts diagram
4. The components of a four-stroke cycle engine
5. The diagram on the four engine strokes

Complete the 13 matching questions and fill in the parts of the four-stroke cycle engine. Please send this in with your completed application form.

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Engine Operation

Unit 1

Information Sheet

1. Terms and definitions

- a. B.D.C. (Bottom dead center) – Lowest position the piston can go
- b. Combustion – The process of burning fuel and air
- c. Compression – The pressing or squeezing together of the fuel and air in an engine
- d. Gasket – Anything used as a packing, such as a non-metallic substance, placed between two metal surfaces to act as a seal
- e. Governor – A device consisting of a control which is used to regulate engine speed
- f. Score – A scratch, ridge, or groove marring a finished surface
- g. Spark gap – The space between the electrodes of a spark plug through which the spark jumps
- h. Stroke – The total distance traveled by the piston in either direction
- i. T.D.C. (Top dead center) – Highest position the piston can go

2. Small engine parts (Transparency 1)

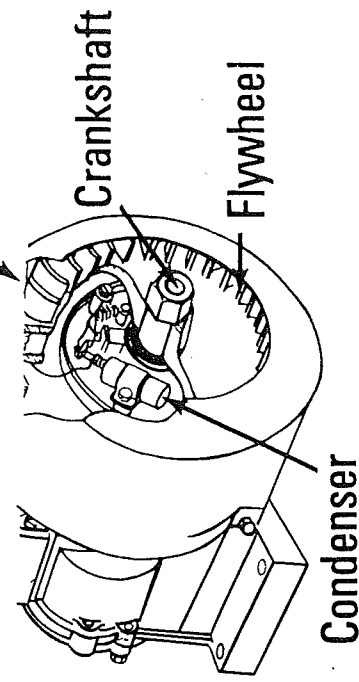
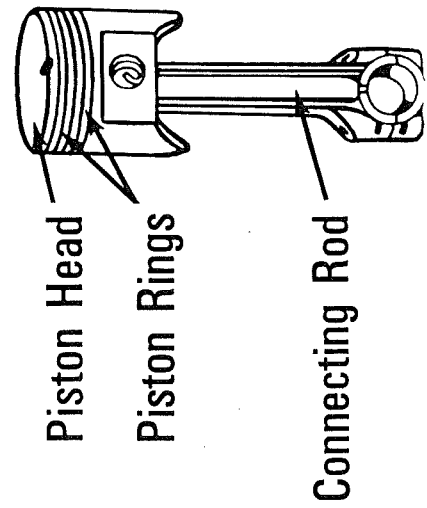
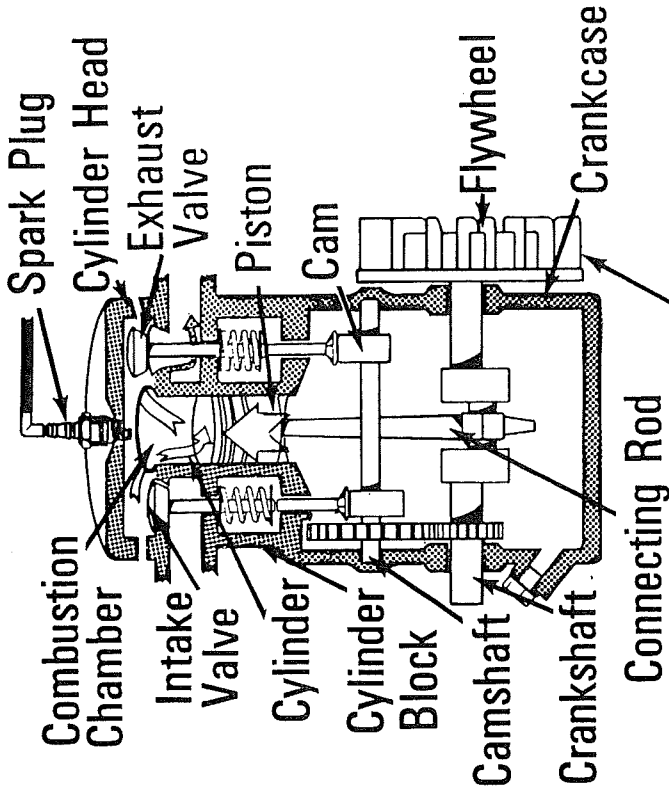
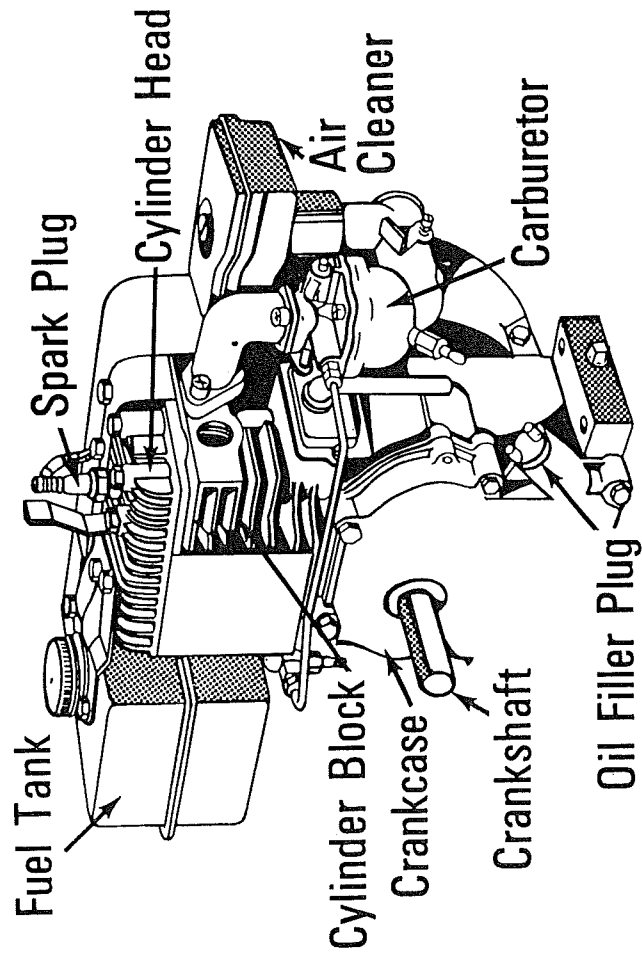
- a. Air cleaner – The device which filters the air to be mixed with the fuel in the engine
- b. Cam – The device which rotates to raise and lower the valves
- c. Camshaft – The shaft containing lobes or cams to operate the engine
- d. Carburetor – A device for automatically mixing fuel in the proper proportion with air to produce a combustible gas
- e. Combustion chamber – The volume of the cylinder above the piston with the piston on top dead center
- f. Condenser – A device for temporarily collecting and storing a surge of electrical current for later discharge
- g. Connecting rod – A rod that connects the piston to the crankshaft

- h. Crankcase – The housing in which the crankshaft and many other parts of the engine operate
- i. Crankshaft – The main shaft of the engine which, in conjunction with the connecting rods, changes the reciprocating motion of the pistons into rotary motion
- j. Cylinder – A round hold having some depth bored to receive a piston also sometimes referred to as *bore* or *barrel*
- k. Cylinder block – The largest single part of an engine; the basis or main mass of metal in which the cylinders are bored or placed
- l. Cylinder head – A detachable portion of an engine fastened securely to the cylinder block which contains all or a portion of the combustion chamber
- m. Exhaust valve – A valve which permits the remains of the burned fuel to leave the chamber
- n. Fuel tank – The device which contains the fuel to be burned in the engine
- o. Flywheel – A heavy wheel which maintains the speed of the engine while it is running
- p. Intake valve – A valve which permits a fluid or gas to enter the chamber and seals the exit
- q. Oil filler plug – The device which closes the opening where the crankcase is filled with oil
- r. Piston – A cylindrical part closed at one end which is connected to the crankshaft by the connecting rod
- s. Piston head – The part of the piston above the rings
- t. Piston ring – An expanding ring placed in the grooves of the piston to provide a seal to prevent the passage of fluid or gas past the piston
- u. Spark plug – A device inserted into the combustion chamber of an engine containing an insulated control electrode for conducting current
- v. Valve - A device for opening and closing the openings that admit the air and gas mixture into the cylinder

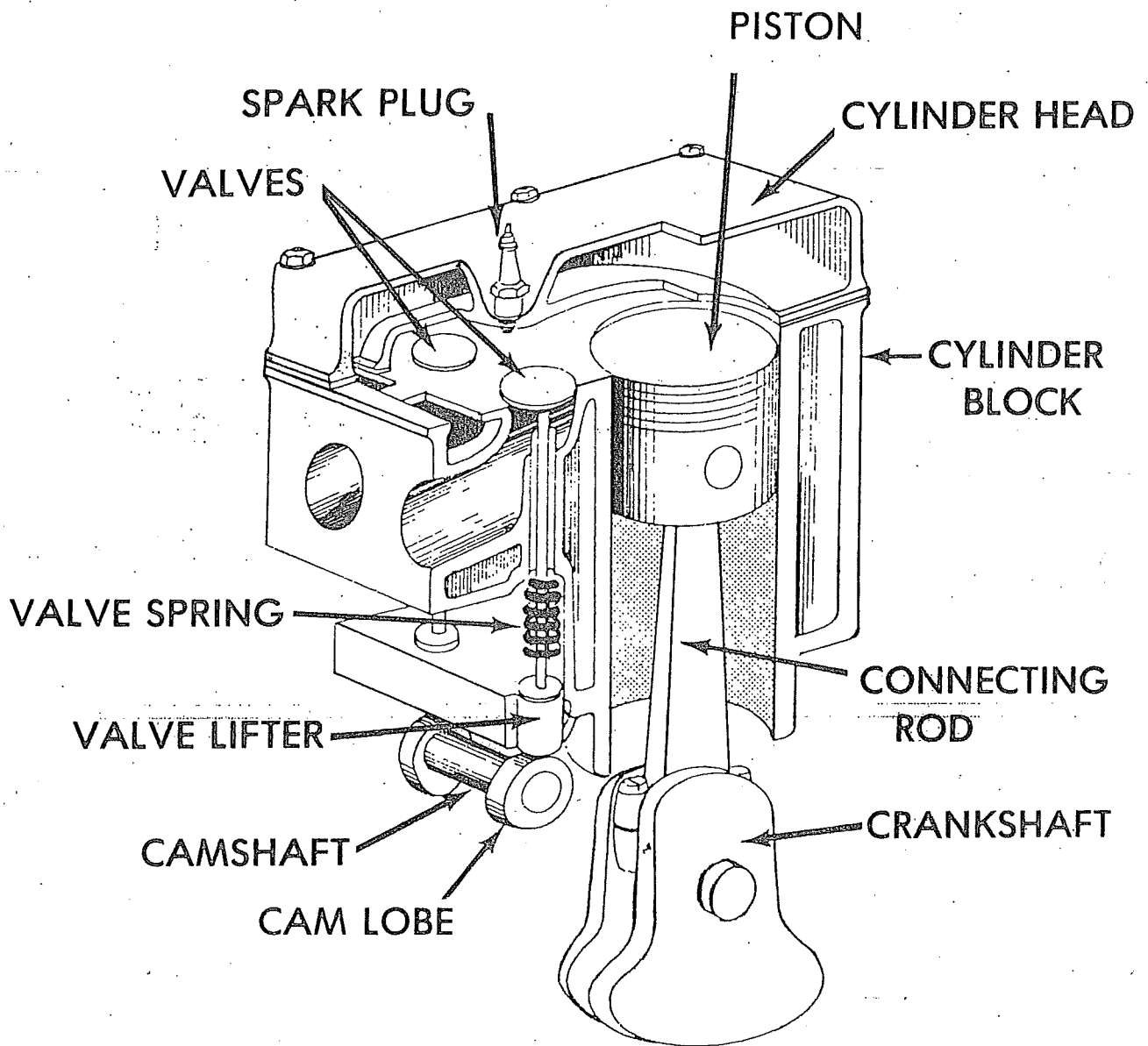
3. Machines powered by small engines

- a. Motorcycles
- b. Chain saws

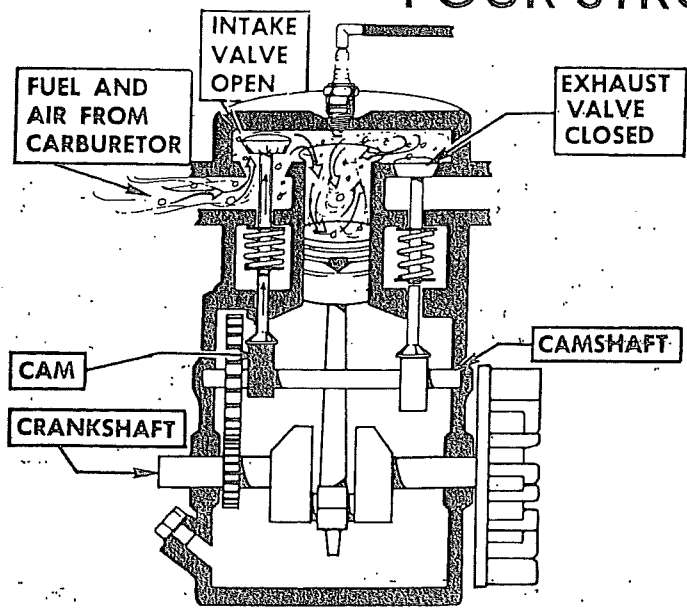
Small Engine Parts



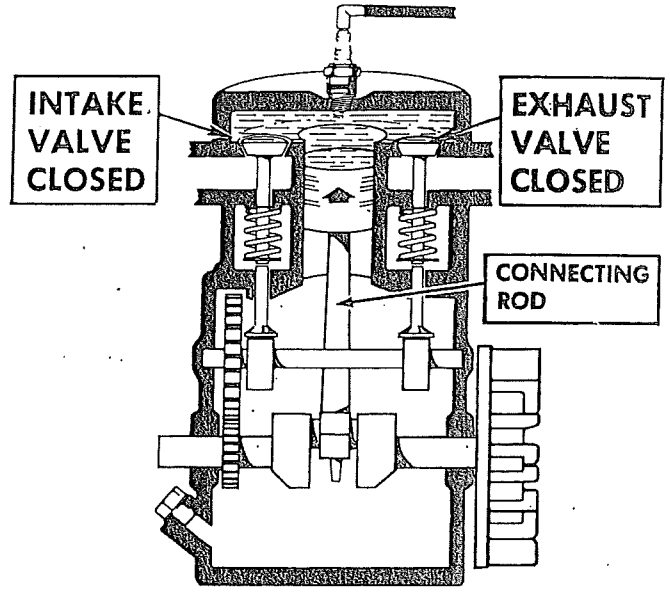
COMPONENTS OF A FOUR-STROKE CYCLE ENGINE



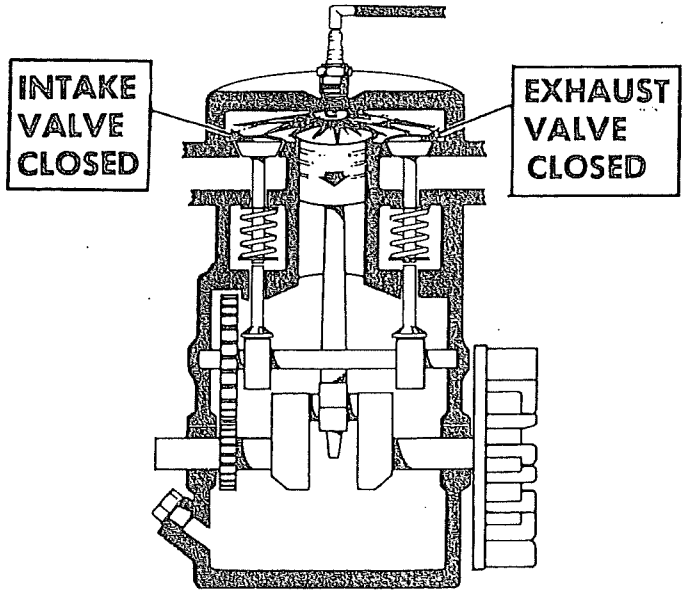
FOUR-STROKE CYCLE



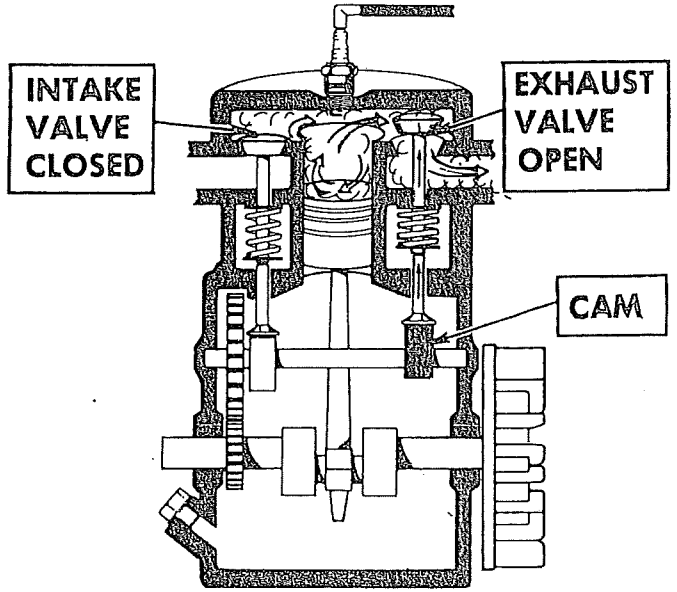
PISTON INTAKE STROKE



PISTON COMPRESSION STROKE



PISTON POWER STROKE



PISTON EXHAUST STROKE

Principles of Operation – Four-Stroke Cycle

Unit III

Test

Name: _____

1. Match the terms on the right to the correct definitions.

- | | |
|---|----------------------------|
| ___ a. Spring attached to a valve to return it to the seat | 1. Exhaust valve |
| ___ b. Device for alternately opening and closing a passage | 2. Power stroke |
| ___ c. Off-center or eccentric enlargement on the camshaft which converts rotary motion to reciprocating motion for operating a valve | 3. Valve seat |
| ___ d. Brief period when both intake and exhaust valves are open | 4. Camshaft |
| ___ e. Upward movement of piston which compresses fuel-air mixture | 5. Intake stroke |
| ___ f. Downward movement of piston which permits fuel air mixture to enter cylinder | 6. Cam lobe |
| ___ g. Push rod or plunger placed between the cam and the valve on an engine | 7. Valve |
| ___ h. Matched surface upon which the valve rests | 8. Valve spring |
| ___ i. Shaft which contains lobes or cams to operate engine valves | 9. Intake valve |
| ___ j. Engine component which opens during exhaust stroke and allows burnt gases to be expelled from cylinder | 10. Overlap |
| ___ k. Upward piston movement which expels burnt gases from cylinder | 11. Compression stroke |
| ___ l. Downward piston movement caused by spark ignition of compressed fuel-air mixture | 12. Exhaust stroke |
| ___ m. Engine component which opens to allow fuel-air mixture to enter cylinder during intake stroke | 13. Valve lifter or tappet |

2. Identify the components of a four-stroke cycle engine.

