Lab – Cooling System FLUSH

Students: 1. _____ Date: _____
2. _____ Block:_____
3. _____

VEHICLE IDENTIFICATION			
YEAR		**MAKE**	
MODEL		**MILEAGE**	
	COOLANT CAPACITY		***(Buy this amount)***
VIN NUMBER			

WHAT YOU NEED TO KNOW!

KNOW

ENGINE COOLANT does not last forever. It becomes **ACIDIC** and **DISOLVES** the softer metals of your cooling system *(like the Aluminum!).*

We want to **FLUSH** all the **OLD COOLANT OUT**, plus any debris/corrosion

Traditionally, engine coolant lasts about 2 years.
Modern coolants are usually good for 5 years (read the label).
Some coolants can last up to 10 years (But I'm old; I'm skeptical)

ENGINE COOLANT is **TOXIC!** It is **harmful** to **animals**, **people**, and the **environment** – ***IT MUST BE HANDLED and DISPOSED OF PROPERLY!***
(We recycle it)

COOLING SYSTEMS are under **PRESSURE!** You need to bleed that pressure off **SLOWLY** or you're going to wear the coolant **AND HOT COOLANT BURNS!! (+100°C/212°F)** ***ASK*** your instructor for a demo on how to remove the rad cap **SLOWLY**

WHAT YOU NEED!

SHOW ME!

Chemical Flush:

Flush Kit:

Eye Protection and **Surgical Gloves** (Antifreeze is toxic)

<u>Concentrated</u> Engine Coolant **AND** <u>Distilled</u> Water (cheaper) ***-OR-*** <u>Pre-Mixed</u> Engine Coolant (convenienter)

An adequately sized **Drain Pan**

A bottle of **Cooling System Flush**

A Cooling System **Flush Kit**

STOP! ***INSTRUCTOR'S INITIALS:***

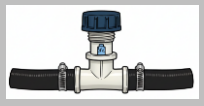
CLEANING!

Radiator Filler Necks have a "stoop" built in, kind of one extra "Are you sure" catch to save you from scalding yourself.

Typical Radiator Cap:

Draining Coolant:

Flush Tee Kit:



Coolant Fill Kit:

WHY 50/50 WATER/ANTIFREEZE?

WATER is what removes the heat, but it freezes at 0° and boils at 100°.

ANTIFREEZE lowers the freezing point AND raises the boiling point AND stops things from corroding, but does NOT remove heat well.

70/30 will cool better

30/70 will go colder before freezing

50/50 is the best compromize

FOLLOW the Instructions on the can of coolant flush – **THEY** are the law here

Typically, it will say *something* like:

1. With the **ENGINE OFF, SLOWLY** Release the pressure from the cooling system by slowly removing the Radiator Cap ***(ASK for a demo!)***

2. **POUR** entire contents of Radiator Flush into the radiator (you might have to drain some out to make room)

3. **RUN** the engine for **10 minutes** with the **HEATER** set to **HOT**

4. **SHUT OFF** the engine, and…. *(this is for the kid that left it running)*

5. **DRAIN** the radiator **IMMEDIATELY** into a suitably-sized container ***NOT THE GROUND*** (the drain is usually at the bottom – it might be a screw, and bolt, a petcock, or maybe even nothing ***(Can't find it? Want to confirm it? ASK!)***

STOP!	***INSTRUCTOR TO CHECK FLUSH TEE PLACEMENT:***	

6. **CUT** a **HEATER HOSE** and insert the correct-size **FLUSH TEE** – place the connection in a convenient position *(can you **GET** to it with a garden hose??).* Tighten the hose clamps good!

7. **CONNECT** a **GARDEN HOSE** to the Tee using the adapter that came with the Flush Tee Kit. Turn the hose **ON** and adjust the water flow such that the water **going in** is **keeping up** with the **water draining out** of the (open) radiator filler neck and the (open) lower drain

8. **START** the car, and let it run until everything draining out is clean.

9. **SHUT OFF** the car, and let **ALL** the water drain out

10. **CLOSE** the radiator drain, and fill up the engine with a **50/50 Mix** of **Antifreeze** and **Distilled water**

11. **START** the engine and let the cooling system **PUSH** the coolant through the system and **BURP** air **OUT**. ***(Consider using a Coolant Fill Kit – looks like a large funnel for burping air out – works awesome!)***

STOP!	***INSTRUCTOR'S INITIALS:***	