vifalio

FREE STUDY GUIDE · USA 2026

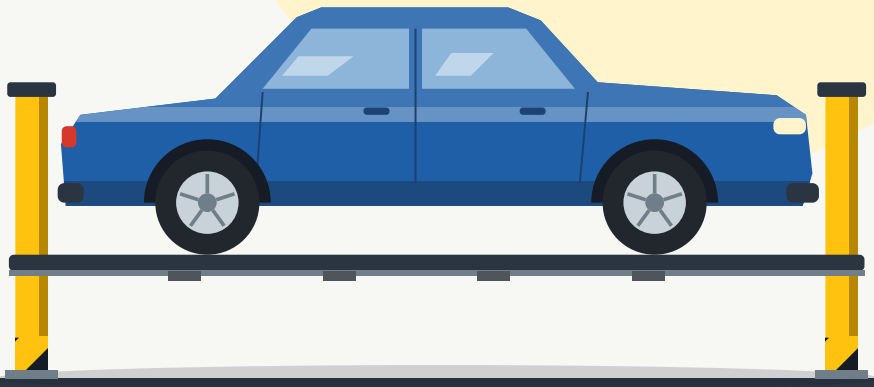
# MECHANIC 2026

## HOW TO BECOME AN AUTO MECHANIC

## ASE A1-A8 · TOOLS · PAY

The road to the service bay in the US: school or shop, ASE tests A1-A8, G1 and L1, the experience rule, EPA 609 for A/C work, a starter tool kit and the BLS median pay. Plus 40 practice questions.

- ASE A1-A8, Master, G1 and L1
- Starter tool kit with prices
- Engine, brakes, electrical, A/C
- BLS median pay: $50,620
- 40 practice questions + answers



# HOW TO USE THIS GUIDE

Read it in order once. Then review the study pages until you score 8 of 10 in every practice section.

### 1 KNOW THE PATH

Pages 3-5: ASE basics, ways into the trade and the BLS pay.

### 2 GEAR UP

Page 6: a starter tool kit with price estimates.

### 3 KNOW THE TESTS

Pages 7-9: A1-A8, G1, L1, car parts and electrical math.

### 4 STUDY THE SYSTEMS

Pages 10-13: engine, drive train, brakes, electrical and A/C.

### 5 TEST YOURSELF

Pages 15-18: 40 original questions. Check page 19 after each section.

### 6 GET STARTED

Pages 20-21: your first job and a 30-day study plan.

## WHAT'S INSIDE


3 ASE in plain words
4 Ways in + timeline
5 The job + BLS median pay
6 Starter tool kit + prices
7 The A1-A8 tests, G1, L1
8 Car parts + diagnostic tools
9 Electrical math: Ohm's law
10 Engine: A1 + A8
11 Drive train: A2 + A3
12 Steering + brakes: A4 + A5
13 Electrical + A/C: A6, A7, 609
14 Glossary: 30 terms EN / ES
15 Practice: engine
16 Practice: drive train
17 Practice: steering + brakes
18 Practice: electrical + A/C
19 Answer key with explanations
20 First job: ways in
21 Your 30-day study plan


**ASE A1-A8**
Tests, Master, G1, L1

**TOOLS + PAY**
Kit estimates, BLS pay

**BILINGUAL**
EN / ES glossary

**vifalio.com**
Free guide

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# ASE CERTIFICATION IN PLAIN WORDS

ASE (National Institute for Automotive Service Excellence) runs a voluntary, national certification. A credential takes three things.

### 1 PASS THE TEST

A computer-based, multiple-choice test. Each A-series test has 40 to 50 scored questions.

### 2 SHOW EXPERIENCE

Documented hands-on work experience. You may test first: the certificate waits for it.

### 3 STAY CURRENT

Credentials last 5 years. Then you pass a recertification test (A1-A9 also have a renewal app).

**Pass with no documented experience? You get a score report, not a certificate, until ASE approves your experience.**

| Test series | Work experience ASE asks for |
|---|---|
| **G1 (entry level)** | 1 year of documented, relevant work experience. |
| **A1-A9 and most tests** | 2 years of documented, relevant work experience. |
| **L1-L4 (advanced)** | 3 years. L1 also requires that you passed A8 first. |
| **School counts** | Up to half of the requirement may be met with appropriate vocational training. |

## ASE TESTS: GOOD TO KNOW

- Every question is multiple-choice with one correct answer.
- A1-A9 and G1 can show each question in Spanish, side by side.
- All tests have a pop-up English-to-Spanish glossary.
- First-time tests are at a test center; G1 can also be taken remotely.
- Get the official study guide and task list for each test.

## CREDENTIALS

**5 YEARS**

**Every ASE credential is valid for 5 years. Then you recertify.**

## MASTER AUTO TECH = PASS ALL 8

- A1 + A2
- A3 + A4
- A5 + A6
- A7 + A8

## WHERE ASE FITS

**VOLUNTARY**

ASE is not a government license. Many employers prefer or require it, and it may bring higher pay (BLS).

**OVER 50 TESTS**

Auto, collision, truck, school bus, transit bus, parts and more. This guide covers the Automobile series plus G1 and L1.

**A/C work is a separate federal rule: to service vehicle A/C for pay you need EPA Section 609 certification (page 13).**

Sources: ase.com (Become Certified, FAQs, Work Experience, A1-A9 and L1 test pages) and "ASE Certification: Need to Know" (revised January 2026); BLS Occupational Outlook Handbook. Fees change: check ase.com before you pay.



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# WAYS IN + A SAMPLE TIMELINE

There is no single road. This is a common order; schools, employers and states vary.

### 1 TRAIN

High school auto shop, a trade school, a community college or a dealer-sponsored program.

SCHOOL

### 2 START

Lube tech, tire tech, helper or trainee: learn the shop, safety and the basics.

ENTRY JOB

### 3 TEST

G1 if you like, then A-series tests in your strongest areas. You can test before the experience is done.

ASE TESTS

### 4 CERTIFY

Document the experience. Pass A1-A8 for Master Automobile Technician status.

MASTER

## SAMPLE TIMELINE (A-SERIES)

- The rule: 2 years of experience for A1-A9.
- School can cover up to half: 1 year.
- Example: school + 1 year on the job = ready for the certificate, if ASE credits your training.
- Master: all 8 tests passed, experience approved.

## CERTIFICATION DOES NOT

- Replace a state or local license where one exists.
- Replace EPA Section 609 for A/C refrigerant work.
- Cover areas you did not test in.
- Make you an expert on every brand.

## RED FLAGS IN SCHOOL AND COURSE ADS

- "Guaranteed job" or "guaranteed pass".
- "ASE certified in a weekend", with no word about work experience.
- A "lifetime" ASE certificate (ASE credentials last 5 years).
- Pressure to sign a loan before you can visit the shop and talk to graduates.

## WAYS TO TRAIN (EXAMPLES, NOT ENDORSEMENTS)

- Trade schools and community colleges: certificate or associate degree programs (BLS).
- Programs accredited by the ASE Education Foundation: students can take ASE entry-level tests, no work experience needed.
- Manufacturer and dealer programs: training focused on one brand (BLS).
- Compare cost, hands-on hours, job placement and how much ASE experience credit the program gives.

Sources: BLS Occupational Outlook Handbook (How to Become One); ASE Certification: Need to Know (experience: 2 years, up to half from training); aseeducationfoundation.org (Entry-Level testing). Example timeline only.



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# WHAT AN AUTO MECHANIC DOES

You inspect, diagnose and repair cars and light trucks. Today the job is half wrench, half laptop.

| $50,620 | $24.34/HR | 825,800 | +5% |
|---|---|---|---|
| Median pay per year (BLS) | Median pay per hour (BLS) | Jobs in the US (2025) | Projected job growth |
| May 2025 | May 2025 | BLS | 2025-35, BLS |

**Median: half earn more, half less. Lowest 10%: under $34,660. Highest 10%: over $81,790 (May 2025). No pay is guaranteed.**

## A NORMAL DAY

- Inspect and road-test vehicles
- Scan for codes and test circuits
- Replace brakes, belts, fluids and filters
- Repair engines, transmissions and A/C
- Explain the repair to the service writer
- Write clear notes on the repair order

## WHY THERE IS DEMAND

- BLS projects about 66,200 openings a year, on average, over 2025-35.
- Many openings come from techs who retire or change jobs.
- Automobile dealers paid the highest median among the top industries: $59,920 (May 2025).

## WHERE MECHANICS WORK

Dealerships · Independent shops · Tire + auto chains · Quick lube · Fleet garages · Government fleets · Rental fleets · Auto parts stores · Mobile repair

## HOW YOU GROW

**Lube / tire tech** — Oil, tires, inspections

→ **Apprentice** — Brakes, basic repairs

→ **ASE certified** — A-tests in your areas

→ **Master tech** — A1-A8 + experience

→ **L1 specialist** — Hard diagnosis, trains others

Pay and jobs: U.S. Bureau of Labor Statistics, Occupational Outlook Handbook, Automotive Service Technicians and Mechanics (median pay May 2025: $50,620 per year, $24.34 per hour; 825,800 jobs in 2025; +5% projected 2025-35; about 66,200 openings a year).

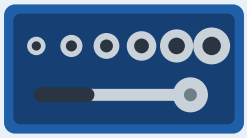


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# STARTER TOOL KIT (PRICE ESTIMATES)

Techs usually buy their own hand tools; shops usually own lifts, power and diagnostic tools (BLS). Prices are our estimates for 2026.

1



### SOCKET SET

1/4, 3/8 and 1/2 in drive, SAE + metric, ratchets.

**$100-$500**

2

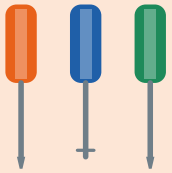


### COMBINATION WRENCHES

SAE + metric, open end + box end.

**$50-$300**

3



### SCREWDRIVERS

Flat, Phillips and Torx bits, a few lengths.

**$25-$100**

4



### PLIERS

Slip-joint, needle-nose, locking and cutters.

**$40-$150**

5

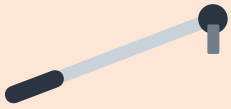


### TORQUE WRENCH

Click type. Wheels, heads and caps go to spec.

**$50-$300**

6



### BREAKER BAR

Long handle for stuck bolts, not a ratchet.

**$25-$80**

7

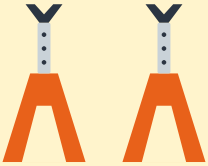


### FLOOR JACK

2-3 ton. Many shops have lifts and their own jacks.

**$100-$400**

8



### JACK STANDS

A pair rated for the load. Never work under a jack.

**$40-$150**

9




### DIGITAL MULTIMETER

Volts, ohms, amps. Your main electrical tool.

**$30-$200**

10

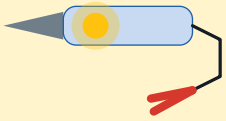


### OBD-II CODE READER

Codes and live data. Shops own pro scan tools.

**$30-$300**

11



### TEST LIGHT

Quick check for power and ground.

**$10-$40**

12



### ROLLING TOOLBOX

Keeps it all safe and organized.

**$200-$1,500**

## BUY SMART

- Start with a solid basic set; add special tools as the jobs ask for them.
- Ask about tool programs or allowances before you buy big items on credit.
- **Whole list: about $700 to $4,020. Estimates; prices vary by brand and store.**

Sources: BLS Occupational Outlook Handbook (who usually owns which tools). Price ranges are Vifalio estimates for new tools in the US (November 2026), not quotes; drawings simplified.

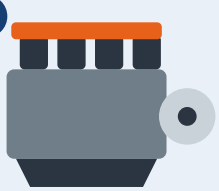


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# THE ASE AUTOMOBILE TESTS A1-A8

Pass all 8 to earn Master Automobile Technician status. A9 (light vehicle diesel) exists but is not required for Master.

A1

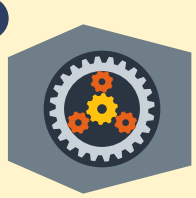


**ENGINE REPAIR**

Block, heads, valve train, lubrication, cooling.

45 scored questions · 75 min

A2

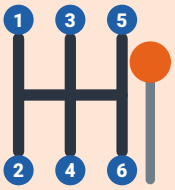


**AUTOMATIC TRANSMISSION / TRANSAXLE**

Hydraulics, torque converter, gear sets, electronic controls.

45 scored questions · 75 min

A3

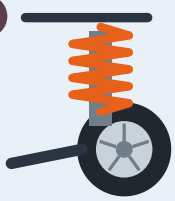



**MANUAL DRIVE TRAIN + AXLES**

Clutch, manual gearbox, driveshafts, CV joints, differentials.

40 scored questions · 60 min

A4



**SUSPENSION + STEERING**

Springs, shocks, steering systems, wheel alignment, tires.

40 scored questions · 60 min

A5



**BRAKES**

Hydraulics, drum and disc brakes, power assist, ABS.

45 scored questions · 75 min

A6



**ELECTRICAL / ELECTRONIC SYSTEMS**

Circuits, battery, starting, charging, lighting, body electrical.

50 scored questions · 90 min

A7

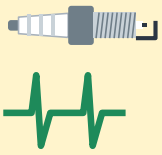


**HEATING + AIR CONDITIONING**

Refrigerant system, heating and cooling, climate controls.

50 scored questions · 75 min

A8



**ENGINE PERFORMANCE**

Ignition, fuel, emissions, OBD diagnosis, drivability.

50 scored questions · 75 min

## TWO MORE TESTS WORTH KNOWING

**G1 · Automobile Maintenance and Light Repair**

An entry-level professional test with a 1-year experience rule. First-timers can take it remotely, with Spanish on screen.

**L1 · Advanced Engine Performance Specialist**

You must pass A8 first, and it needs 3 years of experience. Some questions use a Composite Vehicle reference document.

Sources: ase.com/tests/a1-a9 (test names, scored questions, time, Master status), ase.com/tests/l1, ASE Certification: Need to Know (G1, L1, experience). Test content summarized in our words.

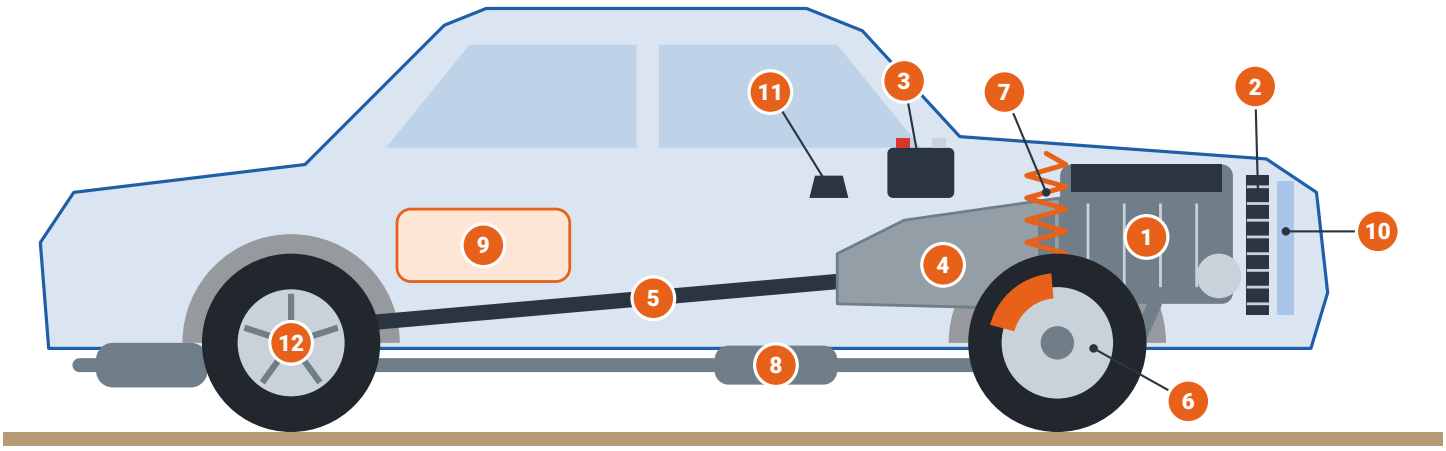


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# PARTS OF A CAR + DIAGNOSTIC TOOLS

Know the names and where they live: the tests, the repair order and the service writer all use them.

**SIMPLIFIED SIDE VIEW (REAR-WHEEL DRIVE LAYOUT, NOT TO SCALE)**




1. **Engine**
   Makes power: A1, A8
2. **Radiator**
   Sheds engine heat: A1
3. **Battery**
   Stores power: A6
4. **Transmission**
   Changes gear ratio: A2, A3
5. **Driveshaft + differential**
   Carry power to the wheels: A3
6. **Disc brake**
   Rotor + caliper: A5
7. **Strut / coil spring**
   Holds the car up: A4
8. **Exhaust + converter**
   Cleans exhaust gases: A8
9. **Fuel tank**
   Feeds the fuel system: A8
10. **A/C condenser**
    Sheds A/C heat: A7
11. **OBD-II port**
    Under the dash: scan here
12. **Tire + wheel**
    Size, pressure, wear: A4

## DIAGNOSTIC TOOLS (IN GENERAL)

| Tool | What it tells you |
|---|---|
| **Scan tool (OBD-II)** | Trouble codes, freeze frame and live data. Required on US cars and light trucks from model year 1996 |
| **Digital multimeter (DMM)** | Voltage, resistance and current, plus voltage drop on a live circuit |
| **Pressure gauges** | Compression, fuel pressure, A/C high and low side, cooling system |
| **Service information** | Specs, wiring diagrams and test procedures from the maker |

**A code tells you where to look, not which part to buy. Test, confirm, then repair.**

Sources: general automotive theory; ASE test names from ase.com; OBD-II in light-duty vehicles from model year 1996: EPA, EPA420-F-03-042. Drawing by Vifalio, simplified; layouts vary (many cars are front-wheel drive).

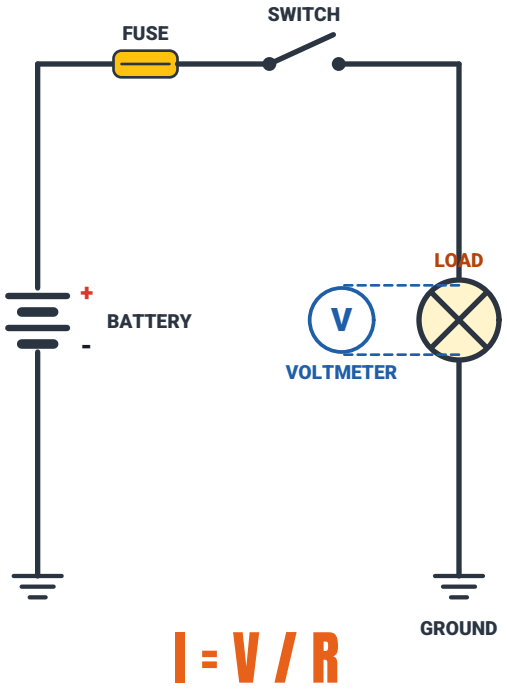


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# ELECTRICAL MATH: OHM'S LAW

A6 lives on three numbers: volts (V), amps (I) and ohms (R). I = V / R. Sample table for study; your service information has the real specs.

### A SIMPLE CIRCUIT: POWER, FUSE, SWITCH, LOAD, GROUND




**I = V / R**

### SAMPLE TABLE · AMPS = VOLTS / OHMS

| LOAD (OHMS) | VOLTS 12.0 V | 12.6 V | 13.5 V | 14.4 V |
|---|---|---|---|---|
| 0.5 | 24.0 | 25.2 | 27.0 | 28.8 |
| 1 | 12.0 | 12.6 | 13.5 | 14.4 |
| 1.5 | 8.0 | 8.4 | 9.0 | 9.6 |
| 2 | 6.0 | **6.3** 1 | 6.8 | **7.2** 1 |
| 3 | 4.0 | 4.2 | 4.5 | 4.8 |
| 4 | 3.0 | 3.1 | 3.4 | 3.6 |
| 6 | 2.0 | 2.1 | 2.2 | 2.4 |
| 8 | 1.5 | 1.6 | 1.7 | 1.8 |
| 12 | 1.0 | 1.1 | 1.1 | 1.2 |
| 24 | 0.5 | 0.5 | 0.6 | 0.6 |

Above the thick line: 10 A or more. As resistance drops toward zero (a short), current jumps and the fuse blows.

## EXAMPLE 1: CURRENT AND POWER

1. Load 2 ohms at 12.6 V: table = 6.3 A
2. Check: I = V / R = 12.6 / 2 = 6.3 A
3. Power: P = V x I = 12.6 x 6.3 = 79.4 W
4. Engine running, 14.4 V: table = 7.2 A
5. **Same load, more volts = more amps**

## EXAMPLE 2: VOLTAGE DROP

1. Battery 12.6 V; at the load, circuit on: 11.8 V
2. Lost in wires, switch, ground: 0.8 V
3. Sample spec for this circuit: 0.5 V max
4. 0.8 V is over 0.5 V: a bad connection
5. **Test the power side, then the ground side**

### MORE OHMS, FEWER AMPS

Corrosion or a loose pin adds resistance: dim lamps, slow motors, clicking relays.

### SHORT = HUGE CURRENT

Resistance near zero pulls huge current. Find the short before you put in a new fuse.

### LIVE OR DEAD?

Voltage drop is measured with the circuit on and working. Ohms are measured with power off.

Sources: Ohm's law (I = V / R) and power (P = V x I), general electrical theory. Every number on this page is a study example; the maker's service information has the real specs.



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# ENGINE: A1 REPAIR + A8 PERFORMANCE

Most engines in the shop are 4-stroke gasoline engines. Know the cycle, then test before you replace parts.

| Stroke | What happens |
|---|---|
| **1. Intake** | Piston moves down, intake valve open: air and fuel come into the cylinder |
| **2. Compression** | Both valves closed, piston moves up and squeezes the mixture |
| **3. Power** | The spark plug fires, the burning mixture pushes the piston down |
| **4. Exhaust** | Exhaust valve open, piston moves up and pushes the burnt gases out |
| **The cycle** | 4 strokes = 2 crankshaft turns (720°); the camshaft turns once |

## COMPRESSION TEST (EXAMPLE)

- Readings: 165, 160, 168, 120 psi.
- Lowest / highest = 120 / 168 = 71%.
- One cylinder far below the rest: do a wet test.

## WET TEST: WHAT IT MEANS

- Add a little oil to the low cylinder, retest.
- Reading goes up a lot: worn rings likely.
- Stays low: valves or head gasket likely.

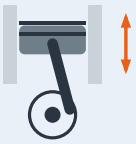
## OBD-II CODES: HOW TO READ

- P = powertrain. P0 = generic (SAE) code.
- P0300 = random misfire; P0301 = cylinder 1.
- P0171 = system too lean, bank 1.

## FUEL TRIM (A8)

- Positive trim: the computer adds fuel (lean).
- Negative trim: it takes fuel away (rich).
- High positive trim at idle only: vacuum leak?

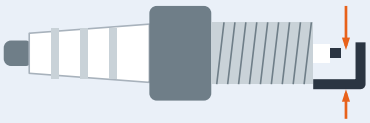
### ENGINE BASICS + TESTS (SIMPLIFIED)



4 STROKES = 2 CRANK TURNS



COMPRESSION GAUGE



SPARK PLUG GAP

## MEMORIZE

- Test before you replace
- Low cylinder? Do a wet test
- A code says where to look

Sources: general engine theory; OBD-II code format per SAE J2012 (generic P0 codes); ASE A1 and A8 test names from ase.com. Readings are invented for practice; follow the maker's specs and procedures.



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# DRIVE TRAIN: A2 AUTOMATIC + A3 MANUAL

Power leaves the engine, goes through a transmission and reaches the wheels. Know the path and the math.

| Part | What it does |
|---|---|
| **Torque converter** | Fluid coupling between engine and automatic transmission; multiplies torque at low speed |
| **Planetary gear set** | Sun gear, planet gears on a carrier and a ring gear: holding parts gives different ratios |
| **Clutch (manual)** | Connects and disconnects the engine and the gearbox when you press the pedal |
| **Differential** | Lets the drive wheels turn at different speeds in a turn |
| **CV joints / U-joints** | Carry power through changing angles to the wheels |

## GEAR RATIO MATH (EXAMPLE)

- Ring gear 41 teeth, pinion 11 teeth.
- 41 / 11 = 3.73 : 1 axle ratio.
- The pinion turns 3.73 times per wheel turn.

## OVERALL RATIO (EXAMPLE)

- 1st gear 3.20 x axle 3.73 = 11.94 : 1.
- Overdrive 0.70 x 3.73 = 2.61 : 1.
- Overdrive: output turns faster than input.

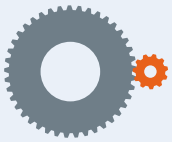
## ATF CHECKS (A2)

- Check the level the way the maker says.
- Dark fluid with a burnt smell: dig deeper.
- Use only the fluid type the maker lists.

## CLUTCH + CV SIGNS (A3)

- Revs rise, speed doesn't: clutch slipping.
- Grinding into gear: clutch dragging.
- Torn CV boot: grease out, dirt in. Fix it early.

## DRIVE TRAIN PARTS (SIMPLIFIED)



RING 41 : PINION 11



CLUTCH DISC



CV BOOT: LOOK FOR TEARS

## MEMORIZE

- **Ratio = driven / drive**
- **Right fluid, right level**
- **Clicks in turns = CV joint**

Sources: general drive train theory; ASE A2 and A3 test names from ase.com. Gear numbers are examples; always follow the maker's fluid type, checking procedure and specs.



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# STEERING, SUSPENSION + BRAKES: A4 + A5

Stopping and steering are safety systems. Measure, compare with the spec, and never guess.

| Item | What to know |
|---|---|
| **Disc brakes** | The caliper squeezes the pads against the rotor |
| **Master cylinder** | Turns pedal force into hydraulic pressure for every wheel |
| **Brake fluid** | DOT fluids absorb water over time; use the type shown on the cap |
| **ABS** | Wheel speed sensors let the module pulse pressure so wheels don't lock |
| **Alignment** | Camber, caster and toe set how the tires meet the road |

## HYDRAULIC MATH (EXAMPLE)

- 100 lb on a 1 sq in piston = 100 psi.
- Caliper piston of 3 sq in: 100 x 3 = 300 lb.
- Same pressure everywhere in the system.

## ROTOR CHECKS

- Measure thickness with a micrometer.
- Below the minimum stamped on it: replace.
- Check runout with a dial indicator.

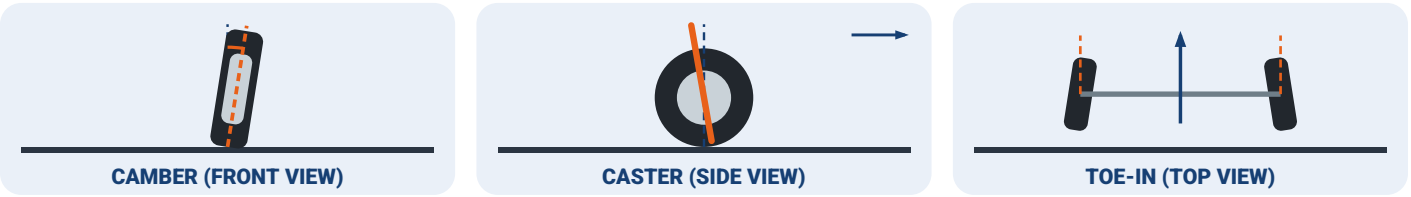
## ALIGNMENT ANGLES

- Camber: tilt in or out, seen from the front.
- Caster: steering axis tilt, seen from the side.
- Toe: wheels point in or out, seen from above.

## PULL OR WEAR?

- Pulls only when braking: calipers, pads, hoses.
- Both outer edges worn: low tire pressure.
- Feathered tread: check toe.

### ALIGNMENT ANGLES (SIMPLIFIED, EXAGGERATED)




### MEMORIZE

- **Pressure = force / area**
- **Under minimum? Replace**
- **Edge wear = check alignment**

Sources: general brake and alignment theory (pressure = force / area); ASE A4 and A5 test names from ase.com. Example numbers only; follow the maker's specs, fluid type and minimum thickness.



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# ELECTRICAL + A/C: A6, A7 + EPA 609

Check the battery first, then the circuit. To work on vehicle A/C for pay you also need EPA Section 609 certification.

| Reading | Means | Reading | Means |
|---|---|---|---|
| 12.6 V or more (rest) | About 100% | 12.0 V (rest) | About 25% |
| 12.4 V (rest) | About 75% | 11.9 V or less (rest) | Discharged |
| 12.2 V (rest) | About 50% | 13.5-14.5 V (running) | Charging |

## PARASITIC DRAW

- Key off, modules asleep: measure amps.
- Pull fuses one by one until the draw drops.
- That fuse's circuit holds the problem.

## EPA SECTION 609

- A/C service for pay: 609 certified tech.
- Training + test from an approved program (ASE is one).
- Use EPA-certified recovery equipment.

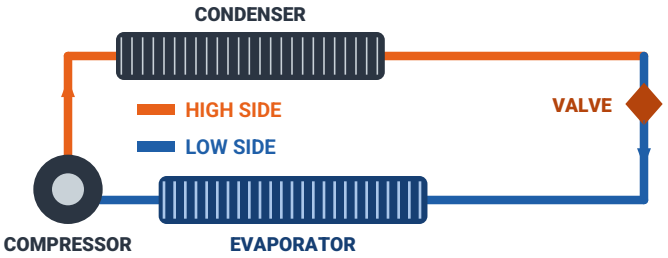
## A/C BASICS (A7)

- Compressor: low side in, high side out.
- Condenser sheds heat; evaporator takes cabin heat.
- Never vent refrigerant: recover it.

## SHOP RULES (EPA)

- Shops keep proof of 609 on site.
- Records kept for 3 years.
- CFC-12 under 20 lb: sold to 609 techs only.

### THE A/C LOOP + EPA SECTION 609




**609** **EPA SECTION**

**Required to service vehicle A/C for pay, whatever the refrigerant: training and a test from an EPA-approved program.**

### MEMORIZE

- **Battery first, then circuit**
- **Never vent refrigerant**
- **609 before any A/C work**

Sources: EPA Section 609 pages (epa.gov/mvac: who must be certified, approved programs, equipment, 3-year records, CFC-12 sales, no venting). Battery voltages are common approximations near 80°F; follow the battery maker and service information.



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# SHOP ENGLISH: 30 TERMS

Words you will hear in the bay, on the repair order and at the test. Useful for mixed English and Spanish crews.

| English | Español |
|---|---|
| 1. Wrench | Llave |
| 2. Socket | Dado |
| 3. Ratchet | Matraca |
| 4. Torque wrench | Llave de torque |
| 5. Screwdriver | Desarmador |
| 6. Pliers | Pinzas |
| 7. Jack stand | Torreta (soporte) |
| 8. Lift | Elevador |
| 9. Spark plug | Bujía |
| 10. Cylinder head | Cabeza del motor |
| 11. Head gasket | Empaque de cabeza |
| 12. Piston | Pistón |
| 13. Crankshaft | Cigüeñal |
| 14. Camshaft | Árbol de levas |
| 15. Timing belt | Banda de distribución |

| English | Español |
|---|---|
| 16. Radiator | Radiador |
| 17. Water pump | Bomba de agua |
| 18. Alternator | Alternador |
| 19. Starter | Marcha (arranque) |
| 20. Battery | Batería |
| 21. Fuse | Fusible |
| 22. Ground | Tierra |
| 23. Brake pads | Balatas |
| 24. Rotor | Disco (rotor) |
| 25. Caliper | Caliper (mordaza) |
| 26. Brake fluid | Líquido de frenos |
| 27. Tie rod end | Terminal de dirección |
| 28. Ball joint | Rótula |
| 29. Shock absorber | Amortiguador |
| 30. Coolant | Anticongelante |

## 5 PHRASES FOR THE SHOP

- **What's the year, make and model?** ▶ ¿Qué año, marca y modelo es?
- **Did you scan it for codes?** ▶ ¿Ya le sacaste los códigos?
- **Torque it to spec.** ▶ Apriétalo al torque de especificación.
- **Put it on jack stands first.** ▶ Primero ponlo sobre torretas.
- **The customer approved the repair.** ▶ El cliente aprobó la reparación.



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# PRACTICE · ENGINE (A1 + A8)

10 original questions. Pick one answer for each. Answers and explanations on page 19.

**1** **In a 4-stroke engine, which stroke has both valves closed and the piston moving up?**

(A) Intake
(B) Power
(C) Compression
(D) Exhaust

**2** **One full 4-stroke cycle takes how many crankshaft turns?**

(A) 2 turns (720°)
(B) 1 turn (360°)
(C) 4 turns
(D) Half a turn

**3** **Compression: 170, 165, 168 and 110 psi. The best next step is:**

(A) Replace all spark plugs
(B) Replace the engine
(C) Ignore it
(D) A wet test on the low cylinder

**4** **Wet test: the low cylinder's reading rises a lot. Likely cause:**

(A) A burnt exhaust valve
(B) Worn piston rings
(C) A bad plug wire
(D) A dirty air filter

**5** **Two side-by-side cylinders read low; the wet test changes little. Suspect:**

(A) Worn rings in both
(B) A head gasket leak between them
(C) A weak fuel pump
(D) A weak battery

**6** **Code P0302 means:**

(A) System too lean, bank 2
(B) Random misfire
(C) Cylinder 2 misfire detected
(D) Low catalyst efficiency

**7** **Fuel trim +18% at idle, near 0% at 2,500 rpm. Most likely:**

(A) A vacuum leak
(B) A rich mixture
(C) A clogged exhaust
(D) A stuck-open thermostat

**8** **Milky, light-brown engine oil is a common sign of:**

(A) Low tire pressure
(B) A worn clutch
(C) A weak alternator
(D) Coolant in the oil (head gasket)

**9** **A check engine light is on. The first step is to:**

(A) Replace the O2 sensors
(B) Clear codes and return the car
(C) Replace the computer
(D) Verify the complaint, read codes and freeze frame

**10** **A cooling system pressure test looks for:**

(A) Coolant leaks, outside or inside
(B) Fuel pressure
(C) Tire wear
(D) Water in brake fluid

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# PRACTICE · DRIVE TRAIN (A2 + A3)

10 original questions. Pick one answer for each. Answers and explanations on page 19.

**11** **Ring gear 41 teeth, pinion 11 teeth. Axle ratio:**

(A) 2.73:1
(B) 3.73:1
(C) 4.10:1
(D) 0.27:1

**12** **1st gear 3.20:1 with a 3.73:1 axle. Overall ratio:**

(A) 6.93:1
(B) 7.46:1
(C) 13.06:1
(D) 11.94:1

**13** **An overdrive gear ratio is:**

(A) Exactly 1:1
(B) More than 3:1
(C) Less than 1:1
(D) Zero

**14** **In an automatic transmission, the torque converter:**

(A) Couples engine and transmission through fluid
(B) Shifts gears by cable
(C) Cools the coolant
(D) Replaces the differential

**15** **A planetary gear set is made of:**

(A) Two spur gears only
(B) A belt and two pulleys
(C) A sun gear, planets on a carrier and a ring gear
(D) A clutch disc and flywheel

**16** **ATF is dark and smells burnt. This suggests:**

(A) Normal new fluid
(B) Overheating or internal clutch wear
(C) Too much coolant
(D) A tire problem

**17** **Manual car: under load the revs rise but speed doesn't. Likely:**

(A) The clutch is dragging
(B) A torn CV boot
(C) Low tire pressure
(D) The clutch is slipping

**18** **Clicking from the front during tight, slow turns usually means:**

(A) A worn outer CV joint
(B) Worn brake pads
(C) Low engine oil
(D) A loose gas cap

**19** **The differential lets the drive wheels:**

(A) Always turn at the same speed
(B) Turn at different speeds in a turn
(C) Stop without brakes
(D) Change gear ratio while driving

**20** **Grinding when shifting with the pedal fully down points to a clutch that is:**

(A) Slipping
(B) Brand new
(C) Dragging (not releasing)
(D) Overfilled with oil

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# PRACTICE · STEERING + BRAKES (A4 + A5)

10 original questions. Pick one answer for each. Answers and explanations on page 19.

**21** **100 lb of force on a 1 sq in master cylinder piston makes:**

(A) 100 psi
(B) 10 psi
(C) 1,000 psi
(D) 1 psi

**22** **At 100 psi, a caliper piston with 3 sq in of area pushes with:**

(A) 33 lb
(B) 100 lb
(C) 300 lb
(D) 103 lb

**23** **A rotor is thinner than the minimum stamped on it. You:**

(A) Machine it thinner
(B) Replace it
(C) Reuse it as is
(D) Grease it

**24** **DOT 3 and DOT 4 brake fluid should be changed because it:**

(A) Turns into oil
(B) Gets thicker with use
(C) Evaporates completely
(D) Absorbs water over time

**25** **A spongy brake pedal is most often caused by:**

(A) Worn tires
(B) Old wheel bearing grease
(C) A tight parking brake cable
(D) Air in the hydraulic system

**26** **ABS uses wheel speed sensors to:**

(A) Spot wheel lockup so the module can pulse pressure
(B) Measure tire pressure
(C) Set the toe
(D) Charge the battery

**27** **Camber is the tilt of the wheel:**

(A) Forward or back, seen from the side
(B) In or out at the top, seen from the front
(C) Pointing in or out, from above
(D) Up and down while driving

**28** **Both outer edges of a tire are worn, the center is fine. Most likely:**

(A) Overinflation
(B) A bad wheel speed sensor
(C) Underinflation
(D) Wrong engine oil

**29** **Feathered wear across the tread is usually caused by:**

(A) Low brake fluid
(B) A weak battery
(C) Incorrect toe
(D) Wrong engine oil

**30** **The car pulls to one side only when braking. Check first:**

(A) Calipers, pads and brake hoses
(B) Engine mounts
(C) Spark plugs
(D) The A/C compressor

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# PRACTICE · ELECTRICAL + A/C (A6 + A7)

10 original questions. Pick one answer for each. Answers and explanations on page 19.

**31** **A 2-ohm load on a 12.6 V circuit draws:**

(A) 25.2 A
(B) 3.2 A
(C) 14.6 A
(D) 6.3 A

**32** **Power used by that load (12.6 V, 6.3 A):**

(A) About 2 W
(B) About 79 W
(C) About 19 W
(D) About 126 W

**33** **Same voltage, but corrosion adds resistance. The current:**

(A) Goes down
(B) Goes up
(C) Stays the same
(D) Doubles

**34** **12.6 V at the battery, 11.8 V at the load with it on. Voltage drop:**

(A) 24.4 V
(B) 11.8 V
(C) 0.8 V
(D) 0.08 V

**35** **A fully charged 12 V battery at rest reads about:**

(A) 12.6 V
(B) 10.5 V
(C) 11.2 V
(D) 15.5 V

**36** **Engine running, charging system OK. Battery voltage is usually about:**

(A) 9-10 V
(B) 12.0 V
(C) 18-20 V
(D) 13.5-14.5 V

**37** **To find a parasitic draw, you:**

(A) Measure ohms with the battery on
(B) Replace the alternator
(C) Measure key-off amps, pull fuses one at a time
(D) Rev the engine

**38** **Under EPA rules, servicing vehicle A/C for pay requires:**

(A) Only a driver's license
(B) Section 609 certification
(C) An ASE A5 certificate
(D) Nothing at all

**39** **In the A/C system, the condenser:**

(A) Takes heat from the cabin
(B) Releases refrigerant heat to the outside air
(C) Pumps the refrigerant
(D) Stores engine oil

**40** **Under EPA rules, refrigerant from a vehicle A/C system must be:**

(A) Vented outside
(B) Vented if the amount is small
(C) Mixed with coolant
(D) Recovered with approved equipment, never vented

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# ANSWER KEY WITH EXPLANATIONS

Score each section. 8 of 10 or more: you know the basics. Real ASE tests ask in their own words and go deeper.

## ENGINE (A1 + A8)

**1 · C** Valves closed, piston up: the mixture is squeezed before the spark.

**2 · A** Two crank turns per cycle; the camshaft turns once.

**3 · D** Add a little oil and retest to tell rings from valves.

**4 · B** Oil seals the rings for a moment, so the reading rises.

**5 · B** Two low neighbor cylinders often point to the head gasket.

**6 · C** P030X: X is the cylinder number. P0300 = random/multiple.

**7 · A** Unmetered air is a bigger share of total air at idle.

**8 · D** Check the head gasket and look for cracks.

**9 · D** Verify, scan, then test. Never replace parts on a code alone.

**10 · A** Pressurize the cold system; watch for drips or a pressure drop.

## STEERING + BRAKES (A4 + A5)

**21 · A** Pressure = force / area: 100 / 1 = 100 psi.

**22 · C** Force = pressure x area: 100 x 3 = 300 lb.

**23 · B** Below minimum there is nothing left to machine.

**24 · D** Water lowers the boiling point and causes corrosion.

**25 · D** Air compresses, fluid doesn't. Bleed the system.

**26 · A** The module pulses pressure to keep the wheels turning.

**27 · B** Camber = front view. Caster = side view. Toe = top view.

**28 · C** Low pressure lets the edges carry the load.

**29 · C** Toe scrubs the tire sideways and feathers the tread.

**30 · A** Uneven braking side to side: sticking caliper, bad pads or hose.

## DRIVE TRAIN (A2 + A3)

**11 · B** 41 / 11 = 3.73: driven teeth / drive teeth.

**12 · D** Multiply the two: 3.20 x 3.73 = 11.94.

**13 · C** Output turns faster than input, for example 0.70:1.

**14 · A** It also multiplies torque at low speed; a clutch can lock it up.

**15 · C** Holding or driving different members gives different ratios.

**16 · B** Burnt fluid is a warning sign: inspect further.

**17 · D** Slip = the disc can't hold: worn, oily or weak pressure plate.

**18 · A** Outer CV joints click in turns, often after a torn boot.

**19 · B** The outer wheel travels farther in a turn, so it turns faster.

**20 · C** Drag: the disc keeps turning. Check hydraulics and adjustment.

## ELECTRICAL + A/C (A6 + A7)

**31 · D** I = V / R = 12.6 / 2 = 6.3 A.

**32 · B** P = V x I = 12.6 x 6.3 = 79.4 W.

**33 · A** More resistance = less current: dim lamps, slow motors.

**34 · C** 12.6 - 11.8 = 0.8 V lost in wires, switches and grounds.

**35 · A** About 12.6 V or more at rest means about full charge.

**36 · D** Above rest voltage: the alternator is charging.

**37 · C** When the draw drops, that fuse's circuit has the problem.

**38 · B** Clean Air Act Section 609: training and a test from an approved program.

**39 · B** Condenser = heat out (front). Evaporator = heat in (cabin).

**40 · D** Venting is prohibited; use certified recovery equipment.

**Missed a question? Go back to the matching study page (9-13) and read that topic again.**



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# FIRST JOB: WAYS INTO THE SHOP

Most techs start with simple work and grow job by job. These are common ways in.

## COMMON WAYS IN

**LUBE / TIRE TECH**
Oil changes, tires, inspections. Many shops hire beginners for this work and train them up.

**TRAINEE / HELPER**
Work next to an experienced tech: real jobs, a mentor, and hours that count as experience.

**TRADE SCHOOL / COLLEGE**
Certificate or associate degree. Ask how much ASE experience credit it gives.

**HIGH SCHOOL AUTO SHOP**
Auto, electronics and math classes help. Some programs offer ASE entry-level tests.

**DEALER PROGRAMS**
Some automakers and dealers sponsor training on their brand. Ask the service manager.

**FLEETS**
City, school district, utility and company fleets hire techs and helpers too.

**No job is guaranteed. Check every school and program yourself before you pay or sign.**

## WHERE TO LOOK

- Dealership service departments: ask for the service manager.
- Tire and quick-lube chains: frequent entry-level openings.
- Job sites: "lube tech", "tire tech", "apprentice technician", "C-tech".
- Your local American Job Center: ask about training funds (WIOA).
- Independent shops and fleet garages near you.

## ASK BEFORE YOU START

- Do you pay for ASE tests or give a raise for them?
- Hourly or flat-rate pay?
- Is there a tool program or allowance?
- Who will train me, and on what?
- Which brands and jobs will I see?
- What safety training and PPE do you give?

# READY-TO-SEND MESSAGES

### To a shop

Hi, I'm looking for a lube tech or trainee job. I'm reliable, I learn fast and I want to grow toward ASE certification. Are you hiring?

### To a dealership

Hi, I'd like to know if your service department hires entry-level techs and whether you offer brand training.

### After the interview

Thank you for your time today, [Name]. I'm ready to start on [date] and to learn the right way, job by job.



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# YOUR 30-DAY STUDY PLAN

About an hour a day. Check each box as you go; move faster or slower as you need.

**DAYS 1-3**

## START HERE

- [ ] Read this guide once
- [ ] Pick a first test (page 7)
- [ ] Get the official ASE study guide

**DAYS 4-7**

## ENGINE

- [ ] 4 strokes + compression (page 10)
- [ ] OBD-II code format
- [ ] Questions 1-10

**DAYS 8-11**

## DRIVE TRAIN

- [ ] Gear ratio math (page 11)
- [ ] Clutch and CV symptoms
- [ ] Questions 11-20

**DAYS 12-15**

## STEERING + BRAKES

- [ ] Hydraulic math (page 12)
- [ ] Camber, caster, toe
- [ ] Questions 21-30

**DAYS 16-19**

## ELECTRICAL + A/C

- [ ] Ohm's law (page 9)
- [ ] Battery + EPA 609 (page 13)
- [ ] Questions 31-40

**DAYS 20-23**

## TOOLS + SHOP

- [ ] Starter kit (page 6)
- [ ] Glossary (page 14)
- [ ] Visit 2-3 shops

**DAYS 24-27**

## REVIEW

- [ ] Redo every missed question
- [ ] 8 of 10 in each section
- [ ] Read the ASE task list

**DAYS 28-30**

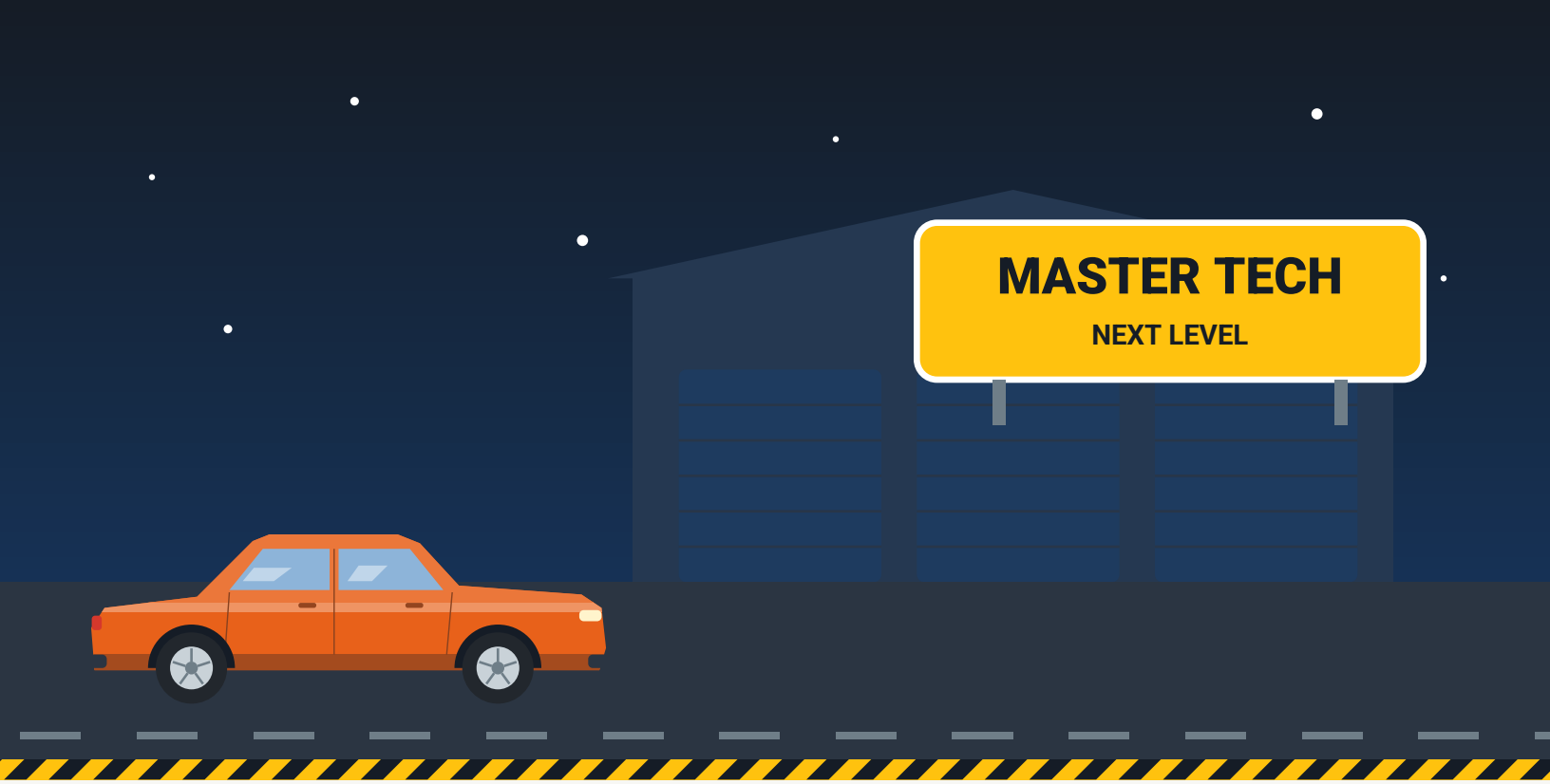
## NEXT STEP

- [ ] Apply for a job or a program
- [ ] Book a test when ready
- [ ] Log your work hours

**Example only. Each ASE test has its own task list; fees and rules change: check ase.com. No job, pay or pass is guaranteed.**



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# FROM THE LUBE BAY TO MASTER TECH

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