

# PRACTICE EXAM 2: A4 SIMULATION

## — SUSPENSION AND STEERING

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1. A vehicle equipped with hydraulic power steering exhibits a complaint of whining noise from the power steering pump. The MOST likely cause is:

- A. A worn input shaft bearing
- B. Air in the clutch hydraulic system
- C. Low fluid level, air in the system, or a worn pump
- D. A failed control arm bushing

2. The proper procedure for verifying power steering pump pressure is to:

- A. Connect a power steering pressure gauge to the high-pressure line, run the engine at idle, and read pressure with the wheels straight and turned to the lock
- B. Apply compressed air to the pump
- C. Replace the pump as a precaution
- D. Visually inspect for visible damage only

3. A vehicle has been brought in with a complaint of power steering fluid leak. The fluid is dark and contains visible debris. The MOST appropriate action is to:

- A. Apply additional sealer to the leak
- B. Reuse the fluid after filtering
- C. Replace the leaking component only
- D. Identify and repair the leak source, flush the system, and refill with fresh fluid

4. The proper purpose of the power steering pressure switch is to:

- A. Generate hydraulic pressure for the steering
- B. Signal the PCM during high power steering loads to adjust idle speed
- C. Drive the steering pump
- D. Filter contaminants from the steering fluid

5. A vehicle equipped with hydraulic power steering exhibits a complaint of momentary heavy effort when first starting to turn. After the initial moment, steering effort returns to normal. The MOST likely cause is:

- A. A worn pulley
- B. Air in the clutch hydraulic system
- C. A failed control arm bushing
- D. A worn power steering control valve, internal leakage in the steering gear, or air in the system

6. The proper procedure for bleeding air from a hydraulic power steering system is to:

- A. Apply compressed air to the system
- B. Replace the pump as a precaution
- C. Top off the fluid, turn the wheels lock-to-lock multiple times with the engine off, then run the engine and turn lock-to-lock until the fluid clears
- D. Visually inspect for visible damage only

7. A vehicle's power steering high-pressure hose has been replaced. After installation, the customer reports a leak at the hose fittings. The MOST likely cause is:

- A. Improper fitting torque, damaged O-rings, or cross-threaded fittings
- B. A failed control arm bushing

- C. Air in the clutch hydraulic system
- D. A worn input shaft bearing

8. The proper purpose of an idler arm in a parallelogram steering system is to:

- A. Generate hydraulic pressure for the steering
- B. Drive the steering pump during operation
- C. Filter contaminants from the power steering fluid
- D. Support the passenger side of the center link, allowing it to pivot during steering input

9. A vehicle equipped with parallelogram steering has been brought in with a complaint of excessive steering wheel free play. The MOST likely cause is:

- A. A failed control arm bushing
- B. Worn idler arm, worn pitman arm, worn center link, or worn tie rod ends
- C. A worn pulley
- D. Air in the clutch hydraulic system

10. The proper procedure for inspecting an idler arm is to:

- A. Apply compressed air to the idler arm
- B. Replace the idler arm as a precaution
- C. Apply vertical force to the idler arm and observe for excessive vertical movement, comparing to specification
- D. Visually inspect for visible damage only

11. A vehicle's pitman arm shows visible play when manipulated by hand. The MOST appropriate action is:

- A. Reuse the pitman arm with assembly lubricant
- B. Replace the pitman arm with a new component
- C. Apply hard-facing material to the worn surface
- D. Apply additional grease to compensate

12. The proper purpose of the rear axle's lateral link (Panhard rod or track bar) is to:

- A. Generate hydraulic pressure for the suspension
- B. Drive the suspension during operation
- C. Filter contaminants from the suspension components
- D. Locate the rear axle laterally, preventing side-to-side movement during cornering

13. A vehicle equipped with rear leaf springs has been brought in with a complaint of rear axle hop during acceleration. The MOST likely cause is:

- A. Worn rear shocks, worn leaf spring bushings, or broken leaf spring leaves
- B. A failed power steering pump
- C. A worn pulley
- D. Air in the clutch hydraulic system

14. The proper procedure for inspecting leaf springs is to:

- A. Apply compressed air to the springs
- B. Replace the springs as a precaution
- C. Visually inspect for visible damage only

D. Inspect for broken leaves, sagging, worn bushings, broken or loose center bolt, and worn shackle hardware

15. A vehicle equipped with rear coil springs and shock absorbers has been brought in with a complaint of rear-end sag. The MOST likely cause is:

- A. A worn pulley
- B. Sagged or broken rear coil springs
- C. A failed control arm bushing
- D. Air in the clutch hydraulic system

16. The proper procedure for verifying coil spring height is to:

- A. Measure the ride height at each corner of the vehicle on a level surface, comparing to the manufacturer's specification
- B. Apply compressed air to the spring
- C. Replace the spring as a precaution
- D. Visually inspect for visible damage only

17. A vehicle equipped with independent rear suspension has been brought in with a complaint of rear toe wear pattern on a tire. The MOST likely cause is:

- A. A failed power steering pump
- B. A worn pulley
- C. Improper rear toe alignment, worn rear control arm bushings, or worn rear toe links
- D. Air in the clutch hydraulic system

18. The proper procedure for adjusting rear toe on an independent rear suspension is to:

- A. Apply compressed air to the rear suspension
- B. Replace the rear control arms as a precaution
- C. Visually estimate the adjustment
- D. Loosen the toe-adjustment cam or eccentric, adjust toe to specification, retorque, and verify the measurement

19. A vehicle's rear camber measurement reads negative 2.0 degrees with the manufacturer's specification at negative 0.5 degrees  $\pm$  0.5 degree. The MOST likely effect on tire wear is:

- A. Inside-edge wear on the rear tire on that side
- B. A failed power steering pump
- C. A worn pulley
- D. Air in the clutch hydraulic system

20. The proper procedure for adjusting rear camber on a vehicle equipped with adjustable rear control arms is to:

- A. Apply compressed air to the suspension
- B. Replace the control arms as a precaution
- C. Loosen the camber adjustment cam, adjust camber to specification, retorque, and verify the measurement
- D. Visually estimate the adjustment

21. A vehicle has been brought in with a complaint of pull during acceleration that disappears during deceleration. Alignment is within specification. The MOST likely cause is:

- A. A failed power steering pump

B. Torque steer from unequal driveshaft lengths or a worn motor mount that allows engine movement under acceleration loads

C. A worn pulley

D. Air in the clutch hydraulic system

22. The proper procedure for diagnosing a vehicle pull complaint that varies with throttle position is to:

A. Replace the alignment as the most direct repair

B. Replace the steering rack as a precaution

C. Replace the transmission fluid as the only step

D. Verify the pull under varied throttle conditions, inspect motor mounts and driveshafts, and consider torque steer characteristics of the platform

23. A vehicle equipped with MacPherson struts has been brought in with a complaint of clunking during steering input. The MOST likely cause is:

A. A failed power steering pump

B. A worn pulley

C. A worn strut bearing or strut mount that produces clunking as the strut rotates during steering

D. Air in the clutch hydraulic system

24. The proper procedure for replacing a MacPherson strut is to:

A. Compress the spring with the proper spring compressor, replace the strut, transfer the spring and strut mount, install the assembly, and verify alignment after installation

B. Apply compressed air to the strut

C. Replace the strut without spring compression

D. Visually inspect for visible damage only

25. A vehicle's strut bearing has been replaced. After installation, the customer reports a noise during steering input. The MOST likely cause is:

- A. A failed power steering pump
- B. Improper bearing installation, missing bearing components, or improper torque on the strut mount
- C. A worn pulley
- D. Air in the clutch hydraulic system

26. The proper purpose of a strut bearing is to:

- A. Generate hydraulic pressure for the suspension
- B. Drive the suspension during operation
- C. Allow the strut to rotate within the strut mount during steering input
- D. Filter contaminants from the suspension fluid

27. A vehicle has been brought in with a complaint of bumper-to-bumper movement (front-to-rear pitching) over rolling road surfaces. The MOST likely cause is:

- A. A failed power steering pump
- B. A worn pulley
- C. Air in the clutch hydraulic system
- D. Worn shocks or struts at all four corners that cannot dampen the suspension motion

28. The proper procedure for verifying suspension condition during a complete vehicle inspection is to:

- A. Inspect all suspension components for wear, perform bounce tests at each corner, inspect for fluid leakage, and verify ride height
- B. Replace all suspension components as a precaution

- C. Apply compressed air to the suspension
- D. Visually inspect for visible damage only

29. A vehicle's tire shows visible cupping (scalloping) wear pattern across the tread. The MOST likely cause is:

- A. A failed power steering pump
- B. A worn pulley
- C. Air in the clutch hydraulic system
- D. Worn shocks or struts that allow the wheel to bounce, producing cupping wear

30. The proper procedure for diagnosing tire cupping is to:

- A. Replace the tire as the most direct repair
- B. Inspect shocks and struts for proper damping, verify wheel balance, and verify alignment
- C. Replace the steering rack as a precaution
- D. Replace the transmission fluid as the only step

31. A vehicle's wheel has been verified to be out of balance. The MOST appropriate action is to:

- A. Replace the wheel as a precaution
- B. Replace the tire as a precaution
- C. Balance the wheel using a wheel balancer, install the appropriate balance weights, and verify the balance is within specification
- D. Apply compressed air to the wheel

32. The proper purpose of wheel balance is to:

- A. Distribute mass evenly around the wheel's rotational axis to prevent vibration during operation
- B. Generate hydraulic pressure for the steering system
- C. Drive the wheel during operation
- D. Filter contaminants from the wheel components

33. A vehicle equipped with TPMS has been brought in with a complaint that the TPMS warning light is flashing rather than steady. The MOST likely cause is:

- A. A failed power steering pump
- B. A TPMS system fault, failed TPMS sensor, or fault in the TPMS module that the system has detected
- C. A worn pulley
- D. Air in the clutch hydraulic system

34. The proper procedure for diagnosing a TPMS system fault is to:

- A. Replace the TPMS module as the most direct repair
- B. Replace the steering rack as a precaution
- C. Use a scan tool to retrieve TPMS DTCs, verify each sensor's communication, and identify the specific fault
- D. Replace the transmission fluid as the only step

35. A vehicle has been brought in with a complaint of vibration that varies with vehicle speed. The vibration is most pronounced between 50 and 65 mph. The MOST likely cause is:

- A. A failed power steering pump
- B. A worn pulley

C. Air in the clutch hydraulic system

D. Wheel imbalance, tire defect, or worn driveline components producing speed-related vibration

36. The proper procedure for diagnosing a speed-related vibration is to:

A. Apply compressed air to the wheels

B. Verify the vibration speed range, inspect tires for damage, verify wheel balance, and inspect driveline components

C. Replace the tires as a precaution

D. Visually inspect for visible damage only

37. A vehicle has been brought in with a complaint of vibration felt only through the seat (rear of the vehicle). The MOST likely cause is:

A. Rear wheel imbalance, rear tire defect, or worn rear driveline components

B. A failed power steering pump

C. A worn pulley

D. Air in the clutch hydraulic system

38. The proper procedure for diagnosing rear-end vibration is to:

A. Apply compressed air to the rear axle

B. Verify rear wheel balance, inspect rear tires for damage, inspect rear driveline components, and verify rear axle condition

C. Replace the rear suspension as a precaution

D. Visually inspect for visible damage only

39. A vehicle equipped with rear disc brakes has been brought in with a complaint of vibration during braking that is felt through the steering wheel and the brake pedal. The MOST likely cause is:

- A. A failed power steering pump
- B. A worn pulley
- C. Warped rotors at multiple wheels, with the vibration transmitted through the brake hydraulic system
- D. Air in the clutch hydraulic system

40. The proper procedure for verifying brake rotor condition is to:

- A. Measure rotor runout with a dial indicator and verify rotor thickness with a micrometer, comparing both to specification
- B. Apply compressed air to the rotor
- C. Replace the rotor as a precaution
- D. Visually inspect for visible damage only

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## — ANSWER KEY, EXPLANATIONS, AND TASK REMEDIATION

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1. C — Low fluid level, air in the system, or a worn pump. Power steering pump whine is the diagnostic signature of pump cavitation or wear. Low fluid level allows air ingestion, and a worn pump generates noise as internal clearances increase beyond specification. *ASE Task Reference: A4 Domain A — Steering Systems Diagnosis and Repair. Review subsection 4.1.*
2. A — Connect a power steering pressure gauge to the high-pressure line, run the engine at idle, and read pressure with the wheels straight and turned to the lock. Pump pressure verification requires a calibrated pressure gauge in the high-pressure line. Readings at multiple steering positions reveal pump output and system condition. *ASE Task Reference: A4 Domain A — Steering Systems Diagnosis and Repair. Review subsection 4.1.*
3. D — Identify and repair the leak source, flush the system, and refill with fresh fluid. Dark fluid with debris indicates internal contamination throughout the system. Repairing only the leak source leaves contaminated fluid that will damage the rebuilt or remaining components; flushing is essential. *ASE Task Reference: A4 Domain A — Steering Systems Diagnosis and Repair. Review subsection 4.1.*
4. B — Signal the PCM during high power steering loads to adjust idle speed. The pressure switch monitors power steering hydraulic pressure and signals the PCM during high-load steering events. The PCM raises idle speed to compensate for the additional engine load, preventing stalling during low-speed turns. *ASE Task Reference: A4 Domain A — Steering Systems Diagnosis and Repair. Review subsection 4.1.*
5. D — A worn power steering control valve, internal leakage in the steering gear, or air in the system. Momentary heavy effort at the start of a turn is the diagnostic signature of internal valve or gear issues. The valve hesitates to direct pressure properly, or air in the system briefly compresses before the system delivers full assist. *ASE Task Reference: A4 Domain A — Steering Systems Diagnosis and Repair. Review subsection 4.1.*
6. C — Top off the fluid, turn the wheels lock-to-lock multiple times with the engine off, then run the engine and turn lock-to-lock until the fluid clears. Power steering bleeding requires lock-to-lock cycling with the engine off (to fill passages) followed by engine-running cycling (to circulate

and clear remaining air). The fluid clearing of bubbles confirms complete bleed. *ASE Task Reference: A4 Domain A — Steering Systems Diagnosis and Repair. Review subsection 4.1.*

7. A — Improper fitting torque, damaged O-rings, or cross-threaded fittings. Post-installation leaks at fitting connections are the diagnostic signature of installation errors. Improper torque, damaged O-rings, or cross-threaded fittings each prevent proper sealing at the connection. *ASE Task Reference: A4 Domain A — Steering Systems Diagnosis and Repair. Review subsection 4.1.*
8. D — Support the passenger side of the center link, allowing it to pivot during steering input. The idler arm provides the pivot point for the passenger side of the center link in parallelogram steering. The pitman arm drives the driver side; the idler arm allows the matching pivot motion on the opposite side. *ASE Task Reference: A4 Domain A — Steering Systems Diagnosis and Repair. Review subsection 4.1.*
9. B — Worn idler arm, worn pitman arm, worn center link, or worn tie rod ends. Excessive steering wheel free play in parallelogram steering is the diagnostic signature of wear in the steering linkage. Each component contributes to the connection between the steering box and the wheels; wear in any link produces play at the steering wheel. *ASE Task Reference: A4 Domain A — Steering Systems Diagnosis and Repair. Review subsection 4.1.*
10. C — Apply vertical force to the idler arm and observe for excessive vertical movement, comparing to specification. Idler arm inspection requires applying vertical force and observing movement. The amount of movement must be compared to specification, since some flexibility is normal but excessive movement indicates wear. *ASE Task Reference: A4 Domain A — Steering Systems Diagnosis and Repair. Review subsection 4.1.*
11. B — Replace the pitman arm with a new component. Pitman arm play indicates internal wear that cannot be repaired. Replacement is required because the pitman arm is the connection between the steering box output and the steering linkage. *ASE Task Reference: A4 Domain A — Steering Systems Diagnosis and Repair. Review subsection 4.1.*
12. D — Locate the rear axle laterally, preventing side-to-side movement during cornering. The Panhard rod (track bar) is a single lateral link between the rear axle and the chassis. It prevents the axle from moving side-to-side during cornering, maintaining proper rear axle position. *ASE Task Reference: A4 Domain B — Suspension Systems Diagnosis and Repair. Review subsection 4.2.*
13. A — Worn rear shocks, worn leaf spring bushings, or broken leaf spring leaves. Rear axle hop during acceleration is the diagnostic signature of inadequate suspension control. Worn shocks cannot dampen the wheel motion, worn bushings allow excessive movement, and broken leaves reduce spring rate control. *ASE Task Reference: A4 Domain B — Suspension Systems Diagnosis and Repair. Review subsection 4.2.*
14. D — Inspect for broken leaves, sagging, worn bushings, broken or loose center bolt, and worn shackle hardware. Leaf spring inspection requires checking multiple potential failure points. Each

failure mode produces different symptoms but all affect proper suspension operation. *ASE Task Reference: A4 Domain B — Suspension Systems Diagnosis and Repair. Review subsection 4.2.*

15. B — Sagged or broken rear coil springs. Rear-end sag is the diagnostic signature of failed coil springs. Springs sag from age and load cycling, or break completely; both conditions allow the rear of the vehicle to sit lower than specification. *ASE Task Reference: A4 Domain B — Suspension Systems Diagnosis and Repair. Review subsection 4.2.*
16. A — Measure the ride height at each corner of the vehicle on a level surface, comparing to the manufacturer's specification. Ride height measurement requires a level surface and comparison to specification. Ride height changes affect alignment angles and overall vehicle behavior, so verification is essential during diagnosis. *ASE Task Reference: A4 Domain B — Suspension Systems Diagnosis and Repair. Review subsection 4.2.*
17. C — Improper rear toe alignment, worn rear control arm bushings, or worn rear toe links. Rear toe wear pattern is the diagnostic signature of rear toe issues. Improper alignment produces direct toe wear; worn bushings or toe links allow toe to vary under load, producing the same wear pattern. *ASE Task Reference: A4 Domain C — Wheel Alignment Diagnosis. Review subsection 4.3.*
18. D — Loosen the toe-adjustment cam or eccentric, adjust toe to specification, retorque, and verify the measurement. Rear toe adjustment uses the toe-adjustment cam or eccentric on the rear control arm or toe link. Adjustment, retorque, and verification confirm proper alignment. *ASE Task Reference: A4 Domain C — Wheel Alignment Diagnosis. Review subsection 4.3.*
19. A — Inside-edge wear on the rear tire on that side. Excessive negative camber tilts the top of the wheel inward, concentrating tire load on the inside edge. The inside-edge wear pattern develops as the tire wears unevenly across the tread. *ASE Task Reference: A4 Domain C — Wheel Alignment Diagnosis. Review subsection 4.3.*
20. C — Loosen the camber adjustment cam, adjust camber to specification, retorque, and verify the measurement. Rear camber adjustment uses the camber adjustment cam on the rear control arm. Loosening, adjusting, retorquing, and verifying confirms the proper alignment angle. *ASE Task Reference: A4 Domain C — Wheel Alignment Diagnosis. Review subsection 4.3.*
21. B — Torque steer from unequal driveshaft lengths or a worn motor mount that allows engine movement under acceleration loads. Acceleration-only pull is the diagnostic signature of torque steer. Front-wheel-drive vehicles with unequal driveshaft lengths produce torque steer naturally; worn motor mounts allow engine movement that exacerbates the symptom. *ASE Task Reference: A4 Domain B — Suspension Systems Diagnosis and Repair. Review subsection 4.2.*
22. D — Verify the pull under varied throttle conditions, inspect motor mounts and driveshafts, and consider torque steer characteristics of the platform. Throttle-dependent pull diagnosis requires verification across throttle positions and inspection of components affected by torque transfer.

Platform-specific torque steer characteristics affect the diagnosis. *ASE Task Reference: A4 Domain B — Suspension Systems Diagnosis and Repair. Review subsection 4.2.*

23. C — A worn strut bearing or strut mount that produces clunking as the strut rotates during steering. MacPherson strut clunking during steering input is the diagnostic signature of strut bearing or mount wear. The bearing allows the strut to rotate during steering; wear in the bearing produces the clunk during the rotation. *ASE Task Reference: A4 Domain B — Suspension Systems Diagnosis and Repair. Review subsection 4.2.*
24. A — Compress the spring with the proper spring compressor, replace the strut, transfer the spring and strut mount, install the assembly, and verify alignment after installation. MacPherson strut replacement requires safe spring compression, strut replacement, component transfer, installation, and post-installation alignment verification. Each step is critical for safe and proper operation. *ASE Task Reference: A4 Domain B — Suspension Systems Diagnosis and Repair. Review subsection 4.2.*
25. B — Improper bearing installation, missing bearing components, or improper torque on the strut mount. Post-installation strut bearing noise is the diagnostic signature of installation errors. Improper installation, missing components, or improper torque each prevent proper bearing operation. *ASE Task Reference: A4 Domain B — Suspension Systems Diagnosis and Repair. Review subsection 4.2.*
26. C — Allow the strut to rotate within the strut mount during steering input. The strut bearing's primary function is to allow strut rotation during steering input. Without the bearing, the strut would bind during steering motion, producing harsh steering and accelerated wear. *ASE Task Reference: A4 Domain B — Suspension Systems Diagnosis and Repair. Review subsection 4.2.*
27. D — Worn shocks or struts at all four corners that cannot dampen the suspension motion. Front-to-rear pitching over rolling roads is the diagnostic signature of dampers worn at multiple corners. Without proper damping at all four corners, the suspension oscillates fore and aft as the vehicle traverses changing road surfaces. *ASE Task Reference: A4 Domain B — Suspension Systems Diagnosis and Repair. Review subsection 4.2.*
28. A — Inspect all suspension components for wear, perform bounce tests at each corner, inspect for fluid leakage, and verify ride height. Comprehensive suspension inspection requires multiple verification methods. Each method reveals different aspects of suspension condition; together they provide complete assessment. *ASE Task Reference: A4 Domain B — Suspension Systems Diagnosis and Repair. Review subsection 4.2.*
29. D — Worn shocks or struts that allow the wheel to bounce, producing cupping wear. Tire cupping (scalping) is the diagnostic signature of damper failure. Without proper damping, the wheel bounces during operation, contacting the road unevenly and producing the characteristic scalloped wear pattern. *ASE Task Reference: A4 Domain D — Wheel and Tire Diagnosis. Review subsection 4.4.*

30. B — Inspect shocks and struts for proper damping, verify wheel balance, and verify alignment. Tire cupping diagnosis requires inspection of all potential causes: damper condition, wheel balance, and alignment. Each can contribute to or directly cause cupping wear patterns. *ASE Task Reference: A4 Domain D — Wheel and Tire Diagnosis. Review subsection 4.4.*
31. C — Balance the wheel using a wheel balancer, install the appropriate balance weights, and verify the balance is within specification. Wheel balancing requires a calibrated wheel balancer, proper weight installation, and verification that the result is within specification. Each step ensures proper wheel operation at speed. *ASE Task Reference: A4 Domain D — Wheel and Tire Diagnosis. Review subsection 4.4.*
32. A — Distribute mass evenly around the wheel's rotational axis to prevent vibration during operation. Wheel balance distributes mass evenly around the rotational axis. Without proper balance, mass concentrations produce centrifugal force that resonates as vibration at specific speeds. *ASE Task Reference: A4 Domain D — Wheel and Tire Diagnosis. Review subsection 4.4.*
33. B — A TPMS system fault, failed TPMS sensor, or fault in the TPMS module that the system has detected. A flashing TPMS warning indicates a system fault rather than a low-pressure warning. The system has detected a problem with itself (sensor or module fault) that requires diagnosis beyond simple pressure correction. *ASE Task Reference: A4 Domain D — Wheel and Tire Diagnosis. Review subsection 4.4.*
34. C — Use a scan tool to retrieve TPMS DTCs, verify each sensor's communication, and identify the specific fault. TPMS system fault diagnosis requires scan tool integration. DTC retrieval, sensor communication verification, and fault identification together identify the specific issue. *ASE Task Reference: A4 Domain D — Wheel and Tire Diagnosis. Review subsection 4.4.*
35. D — Wheel imbalance, tire defect, or worn driveline components producing speed-related vibration. Speed-related vibration in a specific range is the diagnostic signature of resonance from imbalance or defect. The vibration peaks at specific speeds where the imbalance frequency matches a system resonance. *ASE Task Reference: A4 Domain D — Wheel and Tire Diagnosis. Review subsection 4.4.*
36. B — Verify the vibration speed range, inspect tires for damage, verify wheel balance, and inspect driveline components. Speed-related vibration diagnosis requires systematic inspection of all potential sources. Each component must be evaluated since multiple causes can produce similar symptoms. *ASE Task Reference: A4 Domain D — Wheel and Tire Diagnosis. Review subsection 4.4.*
37. A — Rear wheel imbalance, rear tire defect, or worn rear driveline components. Vibration felt only through the seat (rear of the vehicle) is the diagnostic signature of rear-end issues. The rear suspension and seat connection isolate front-end vibration; rear-source vibration transfers directly through the seat. *ASE Task Reference: A4 Domain D — Wheel and Tire Diagnosis. Review subsection 4.4.*

38. B — Verify rear wheel balance, inspect rear tires for damage, inspect rear driveline components, and verify rear axle condition. Rear-end vibration diagnosis requires rear-specific inspection. Each rear component must be evaluated since the symptom localizes the source to the rear of the vehicle. *ASE Task Reference: A4 Domain D — Wheel and Tire Diagnosis. Review subsection 4.4.*
39. C — Warped rotors at multiple wheels, with the vibration transmitted through the brake hydraulic system. Vibration through both the steering wheel and brake pedal during braking is the diagnostic signature of warped rotors at multiple wheels. The hydraulic system transmits the pulsation through the brake pedal; the steering linkage transmits through the wheel. *ASE Task Reference: A4 Domain B — Suspension Systems Diagnosis and Repair. Review subsection 4.2.*
40. A — Measure rotor runout with a dial indicator and verify rotor thickness with a micrometer, comparing both to specification. Brake rotor verification requires dial indicator measurement of runout and micrometer measurement of thickness. Both measurements must be within specification for the rotor to be serviceable. *ASE Task Reference: A4 Domain B — Suspension Systems Diagnosis and Repair. Review subsection 4.2.*