

# QUESTIONS - Suspension

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First & Last Name:

Using the information located in [www.gwellwood.com/subjects/mechanics/steering/](http://www.gwellwood.com/subjects/mechanics/steering/), the internet, and other sources to answer the following questions:

1) The purpose of the suspension is:

a)

b)

2) There are four common types of frames used in automobiles. What are they?

a)

b)

c)

d)

3) Lotus (one of my favourite manufacturers) used a Backbone chassis in a few of their vehicles. Name one.

4) Maserati used a space frame in the Type 61, called the "Birdcage." Why did they choose this frame design instead of what was traditionally used at the time?

5) VIDEO QUESTION (2009 Chevy Malibu vs. 1959 Chevy Bel Air): What did YOU find most surprising in this video?



6) What controls the constant "oscillating" movement of springs?

7) What is the main advantage of independent suspension over solid axle?

8) What is the advantage of Double-Wishbone/SLA suspension?

9) What is the advantage of MacPherson struts?

10) Pick a spring type (Coil, Leaf, Air Bag, or Torsion Bar) and tell me **WHY** YOU think it is the best. There is no right or wrong – I want to see your opinion and how you formed your opinion.



11) How does a Torsion Bar spring work?

12) Which one of the springs above is the **only** type that performs **TWO** tasks?

13) VIDEO QUESTION (Suspension – How It Works): What was something in this video you found interesting?

14) What are bump stops made out of? Why do you suppose they are made out of this material?

15) BONUS QUESTION: Name a car that uses essentially ONLY bumpstops for its suspension instead of springs (no coil, air bag, torsion bar, or leaf springs at all).

16) Describe, using your own words, how a shock absorber controls spring oscillation

17) How can you visually tell if your shocks are poached?

18) In order for a vehicle to absorb bumps nicely, shock valving is \_\_\_\_\_ on bump. In order for a vehicle to be controlled coming off the bump, shock valving is \_\_\_\_\_ on rebound.

19) Define BUMP:

20) Define REBOUND:

21) A car bottoms out HARD, and frequently. What is the likely problem?

22) A car is unstable on bumpy roads. What is the likely problem?

23) A loaded pickup and camper *sways continuously* side-to-side when on the highway. What is the likely problem? (NOT sway bars)

24) Suspension bushings are often made of rubber. Why do you think this is?

25) Sometimes people replace their rubber bushings with polyurethane.

a) What is the main advantage?

b) What are two disadvantages?

i)

ii)

26) When inspecting balljoints on a double wishbone suspension, you need to move the wheel up and down - ANY play is bad. Where do you place the jackstand to do this?

27) When inspecting balljoints on a MacPherson strut suspension, you need to move the wheel up and down - ANY play is bad. Where do you place the jackstand to do this?

28) Describe, using your own words, how a Sway Bar works:



29) VIDEO QUESTION (Over The Waves (1938)) Point out **seven (7)** things you found interesting about suspension.

a)

b)

c)

d)

e)

f)

g)