

Lifting & Lowering Questions

NAME:

Theory

Using the information located in <https://www.gwellwood.com/subjects/mechanics/lifting-lowering/>, the internet, your brain, and other resources to answer the following questions.

There are no partial marks – when it says “Describe” – *DESCRIBE*.

Terminology

Define, using your own words, the following:

1. Describe using your own words, the following:
 - a. Bump
 - b. Droop
 - c. Roll
 - d. Roll Center
 - e. Jacking (with respect to suspension, NOT thievery)
 - f. Spring Rate

7. What are TWO disadvantages for using lifting blocks?
 - a.

 - b.

8. Find a site that outlines HOW TO install an axle flip-kit (*cough* <http://www.gwellwood.com/project-cars/the-crusty-chevy/flip-kit-c-notch-and-spindles/> *cough*).

Sketch HOW the adapter piece looks to mount the axle on the opposite side of the leaf springs.

9. Why aren't longer shackles a good idea?

10. How are leaf springs re-arched? (*cough* <http://www.gwellwood.com/project-cars/the-hideous-hardbody/hideously-de-arcde/> *cough*)

11. What would happen if regular shocks were used with longer coil springs?

12. What is the flaw with this modified steering link?



13. DESCRIBE two methods to improve steering geometry on a lifted solid axle truck (it's usually wise to do both at the same time)

a.

b.

14. "IFS" stands for:

15. What are two ways to lift an IFS truck?

a.

b.

16. A vehicle with 300lb/in springs (spring rate), has 2" of Stock Bump Travel. Each spring sees 500lbs of weight. Each spring has 8 coils.

a. How much SPRING COMPRESSION is there in inches (at ride height)?

$$\frac{(\text{Weight})}{(\text{Spring Rate})}$$

b. What is each COIL CONTRIBUTION to holding up the vehicle?

$$\frac{(\text{Spring Compression})}{(\text{Total \# of Coils})}$$

c. What is the BUMP LOAD on the spring at full bump in pounds (total force on the spring, fully bottomed out)?

$$(\text{Spring Rate}) \times (\text{Spring Compression} + \text{Bump Travel})$$

d. Two coils are cut off. What is the NEW SPRING COMPRESSION now (in inches)?

$$(\text{Coil Contribution}) \times (\text{Remaining \# of Coils})$$

e. What is the car's LOWERED AMOUNT in inches?

$$(\text{Spring Compression (un cut)}) - (\text{New Spring Compression})$$

f. What is the CUT SPRING RATE in lbs/in?

$$\frac{(\text{Weight})}{(\text{New Spring Compression})}$$

g. What is the LOWERED BUMP TRAVEL now?

$$(\text{Stock Bump Travel}) - ((\text{Coil Contribution}) \times (\text{\# of Cut Coils}))$$

- h. To keep the Total Load on the spring at full bump the same, what spring rate does the vehicle now require?

$$\frac{\text{(Bump Load)}}{\text{(Lowered Bump Travel)}}$$

- i. Is the shortened spring going to work, or is it going to bottom out?

17. Mr Wellwood lowered his Nissan mini-truck almost 5". His truck required shorter shock absorbers. Why is this?

18. How are Dropped Spindles and Dropped Control Arms different in the way they lower a vehicle?



19. DESCRIBE two ways to lower a leaf spring vehicle

a.

b.

20. Which would you choose, for your chunky metalflake lowrider and why - Air Ride vs. Hydraulics?



21. In your own vehicle that you have right now, chose whether you are going to Lift or Lower it (you MUST choose).
- a. Find three different manufacturers/suppliers of parts to get the job done. List their name and their URL below:
 - i.
 - ii.
 - iii.
 - b. Pick one, and list out the parts you would be purchasing from this ONE supplier. Attach an image of the parts/kit.
 - c. Explain why you chose this particular setup. Include at least 5 well-thought out and convincing reasons.
 - i.
 - ii.
 - iii.
 - iv.
 - v.