

QUESTIONS - Steering

First & Last Name:

Using the information in www.gwellwood.com/subjects/mechanics/steering/, the internet and other sources to answer the questions below.

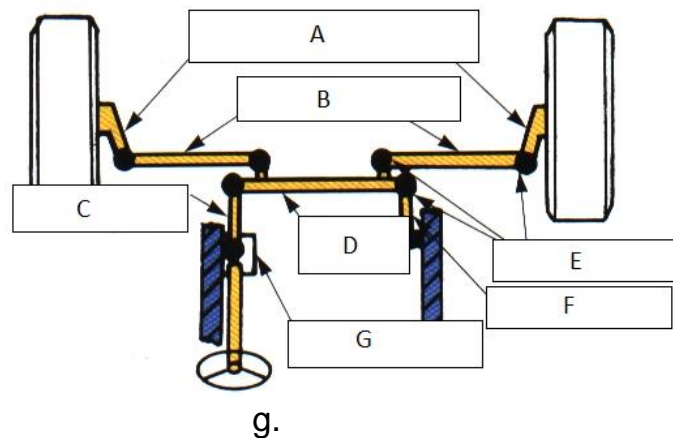
There are NO Partial Marks - when it says "describe" – DESCRIBE

1. Why do you suppose the original steering called a "tiller"?

2. What manufacturer first used a "Steering Wheel?"

3. Identify the parts in the diagram below

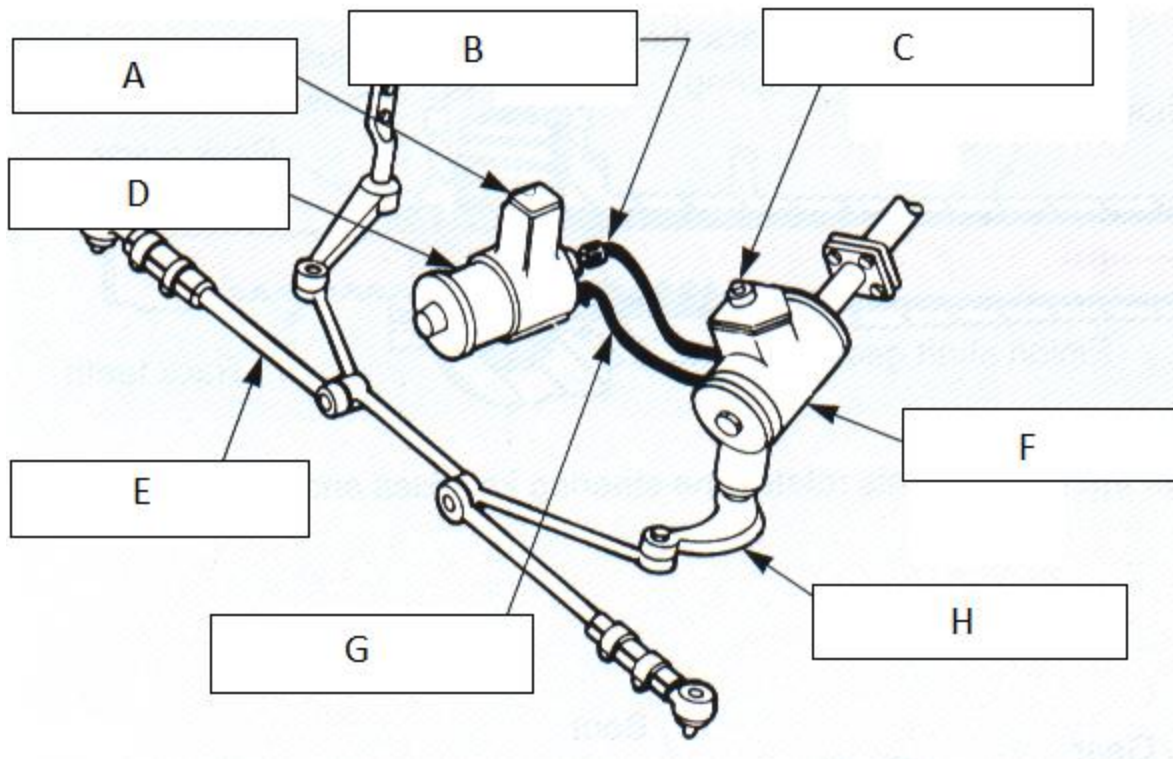
- a.
- b.
- c.
- d.
- e.
- f.



4. What type of steering system is this?

7. Describe how to replace an outer tie rod end without messing up the alignment setting.

8. Identify the components in the Power Steering diagram below



a.

e.

b.

f.

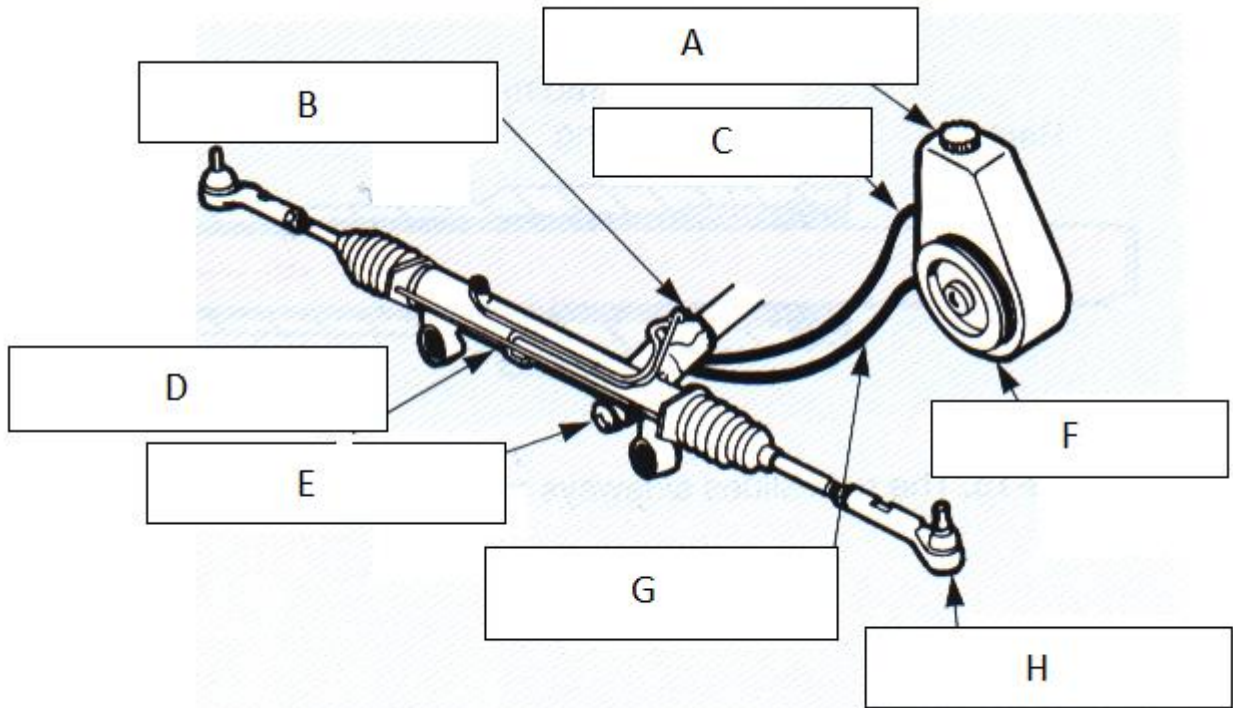
c.

g.

d.

h.

9. Identify the components in the diagram below



- | | |
|----|----|
| a. | e. |
| b. | f. |
| c. | g. |
| d. | h. |

10. What do you look for when inspecting a steering box?

11. What do you look for when inspecting Tie Rod Ends?

12. What do you look for when inspecting Spindles?

13. What do you look for when inspecting a Track Rod (center Link)?

14. What do you look for when inspecting the Idler Arm?

15. What do you look for when inspecting the Pitman Arm?

16. How does Power Steering know that you are steering, and need power assist?

17. How does the steering system receive power assist in a typical hydraulic power assist system?

18. In a power steering system, identify the cause of the following faults:

a. Growling from the pump

b. Groaning

c. Squealing on full lock

d. Loss of fluid

19. VIDEO QUESTION (How to Check Your Power Steering System):

Describe how you would inspect the power steering system and its components:



WATCH MY WHEEL ALIGNMENT VIDEO: IT MAKES ALL THIS MAKE SENSE

20. What seven (7) things do we want our vehicles to do?

a.

b.

c.

d.

e.

f.

g.

h.

21. Define using your own words, AND **sketch** or **paste** a picture of each of these alignment settings:

a. Camber:

b. Caster:

c. Toe:

22. Two alignment settings are “tire wearing.” What are they?

a. _____

b. _____

23. One of the angles is NOT “tire wearing.” Which one is it, and describe WHY it does not wear the tires.

24. Describe the likely result of the following:
a. Excessive toe out

b. Excessive negative camber

c. Excessive positive caster

d. More caster on one side than the other

25. What was the issue with the Hatchet-Murdering Fiat?

26. In what order do I do a four-wheel alignment?

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

27. Why are Radial Tires better than Bias Ply or Bias Belted tires?

28. Wheels should always be balanced. Why is Dynamic Balancing better than Static Balancing?

29. Identify the cause of the following wear patterns
a. "Wire Showing"



b. "Diagonal Wear" (*don't think steering*)



c. "Wear On One Side"



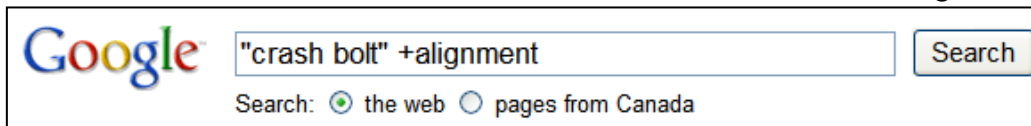
d. "Heel-Toe Wear" (*sharp edge on one side of tread, rounded edge on other*)



30. Pick the steering system you think is the best (Rack & Pinion or Parallelogram), In the space below, convince me that the system you chose is superior. You must explain the advantages, as well as describe in detail how the steering system you chose is better. You may use more paper if you desire. Your answer must be hand written. I want to see your opinion and how you made your opinion – it does not matter to me which system you choose, I'm not trying to trick you into anything.

31. Describe how to physically adjust Toe on most cars (Google)

32. Google the following (do an image search), and tell me what a Crash Bolt is and how a Crash Bolt works. One brand of crash bolt is Ingalls.



Google "crash bolt" +alignment Search

Search: the web pages from Canada

33. Go to www.tirerack.com and enter in your favourite vehicle. Pick a TYPE of tire that amuses you (winter, all-season, ultra-high-performance, etc), and either the stock size, or an alternate as suggested by Tire Rack.
- Type of Tire:

Pick THREE different tires within the size and category you chose (each from a different manufacturer).

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34. Read through a number of the reviews of each tire
- In the space below, list a couple main **strengths** of **each** of the three tires as well as a couple main **weakness** of each of the three tires.

- -
 -
 -
- Pick one of the three that you would buy if you could. Explain why you would choose it using examples taken from the reviews. "It's the best" is not a valid answer – explaining ~why~ it's the best there is.



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- -
 - Print, cut and paste a picture of the tire to this document