

## Unit Standard **30566**

### **Demonstrate knowledge of steering and suspension systems**

Level 3 Credit 2 v1

**Student Name:**

**School:**

**Date:**

**Marked By:** \_\_\_\_\_ **Mark** \_\_\_\_\_ **%**

**Feedback:**      **Excellent work**

**Good work**

**Please attempt all questions**

**Please resubmit**

## USEFUL WEBLINKS

### **Steering and Suspension**

<http://youtu.be/MCiwQb5sQ74>

### **Non Independent Suspensions**

<http://youtu.be/ZyGX4Qu69sE>

### **Rack and Pinion**

<http://youtu.be/iHqOyAOeDis>

<http://youtu.be/LfqieV1xzJQ>

[http://youtu.be/uTqU35K\\_8AU](http://youtu.be/uTqU35K_8AU)

### **Recirculating Ball**

<http://youtu.be/kBFz6wfli7w>

<http://youtu.be/BIM1AyxYkw>

<http://youtu.be/B7Ar1VxE4JU>

### **4 Wheel Steering**

<http://youtu.be/bAczejx2G7U>

<http://youtu.be/-O-GmDK3jms>

### **Worm and Nut**

<http://youtu.be/xxsgE8acedw>

### **Power Steering**

<http://youtu.be/i6Mv8CLc93Y>

<http://youtu.be/uL2MOjyhqmo>

### **Electronic Stability Control**

<http://youtu.be/Y2uXzp2HzKg>

<http://youtu.be/MCRLKRluk1w>

### **Wheel Alignment**

<http://youtu.be/MiYJwJvbFoQ>

[http://youtu.be/F6ZZ\\_U\\_F11Y](http://youtu.be/F6ZZ_U_F11Y)

### **Suspension in Action**

<http://youtu.be/JenlKKwHmtk>

<http://youtu.be/WDDdFEHHXVM>

### **MacPherson Strut**

<http://youtu.be/yGRm2Nn8As4>

### **Torsion Bars**

<http://youtu.be/WICtlNsereA>

### **Double Wishbone**

[http://youtu.be/u6ssbkt7\\_kw](http://youtu.be/u6ssbkt7_kw)

<http://youtu.be/PEWMU7fk1xU>

### **Shock Absorbers**

<http://youtu.be/9fWfFiKBxSc>

## REVIEW QUESTIONS ONE

Q1 What is the function of a vehicle steering system?

Q2 Complete the following sentences.

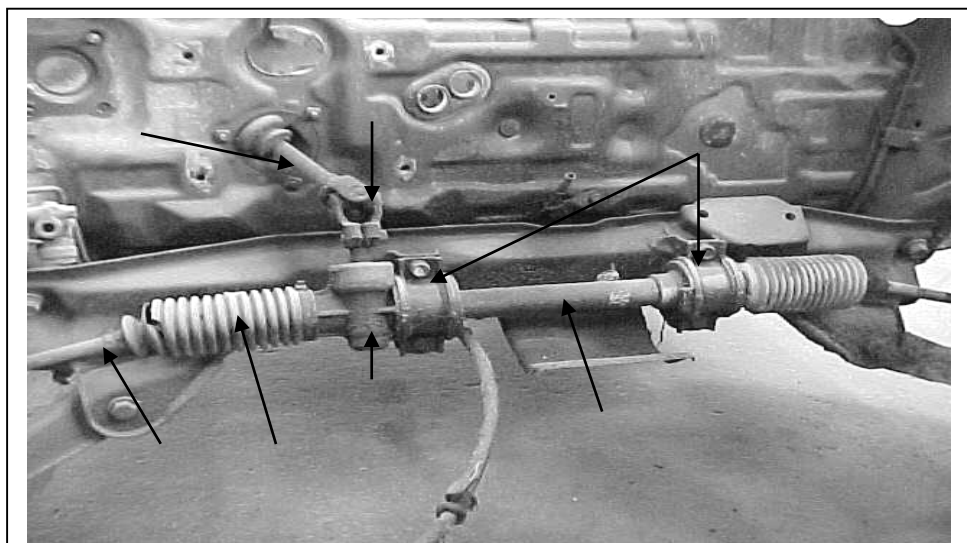
The rotating \_\_\_\_\_ of the steering \_\_\_\_\_ activates

\_\_\_\_\_ inside the steering \_\_\_\_\_. Faulty steering

can cause \_\_\_\_\_ at the least, and complete \_\_\_\_\_ of

\_\_\_\_\_ of the \_\_\_\_\_ at worst.

Q3 Name the components indicated by the arrows below.



Q4 Explain in your own words how the rack and pinion system operates.

Q5 Complete the following sentences.

The electric power steer (EPS) \_\_\_\_\_ calculates the optimum assist force based on the steering \_\_\_\_\_ signal, the vehicle speed, and engine speed signals from the ECU, and outputs an electric \_\_\_\_\_ to drive the EPS motor.

The force from the electric motor is transmitted to the intermediate \_\_\_\_\_ via the reduction gears, this assisting steering operation of the driver.

Q6 Explain in your own words how all wheel steering operates.

Q7 Describe the advantages that can be derived from power assisted steering.

Q8 Explain the purpose of wheel alignment.

Q9 Explain each of the following terms.

Camber

Caster

Toe

Toe-out  
on turns

## **REVIEW QUESTIONS TWO**

Q10 List three benefits that may be derived from a suspension system.

Q11 Explain the operating principle of a leaf spring.

Q12 Explain the operating principle of a coil spring.

Q13 Explain the purpose of a sway bar.

Q14 List four areas where suspension bushes may be fitted.

Q15 Complete the following sentence.

Instead of the \_\_\_\_\_ action of a \_\_\_\_\_ spring, or the  
\_\_\_\_\_ and \_\_\_\_\_ action of a  
spring, the \_\_\_\_\_ bar \_\_\_\_\_ to exert  
\_\_\_\_\_ against up-and-down movement.

Q16 Where are the adjusting bolts located in a torsion bar suspension system?

Q17 Explain why rubber springs fitted to some heavy vehicles?

Q18 List three types of shock absorbers that may fitted to a vehicle.

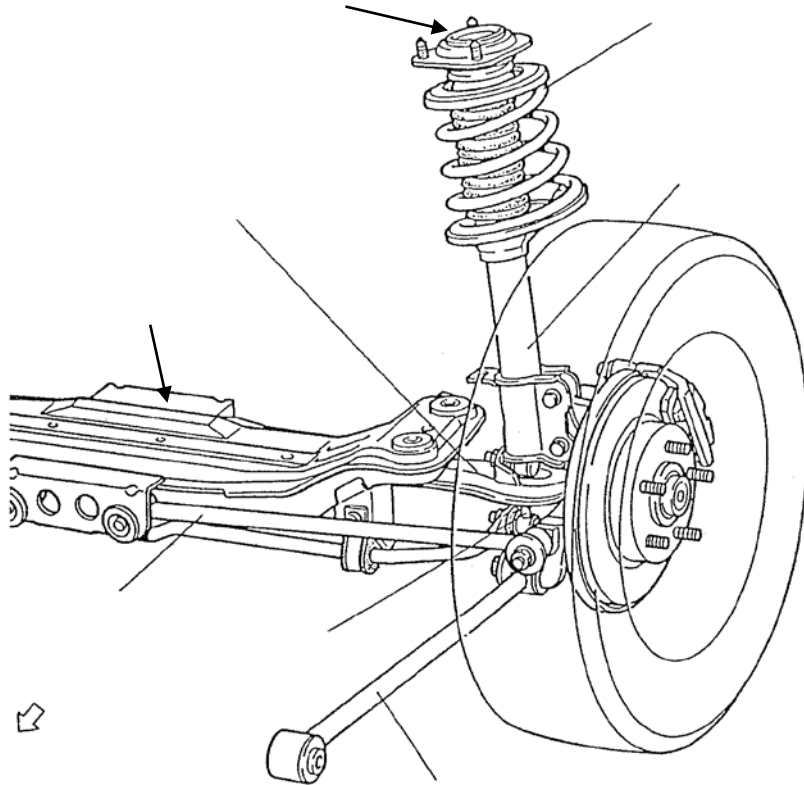
Q19 Explain the purpose of each of the following:

Control arm

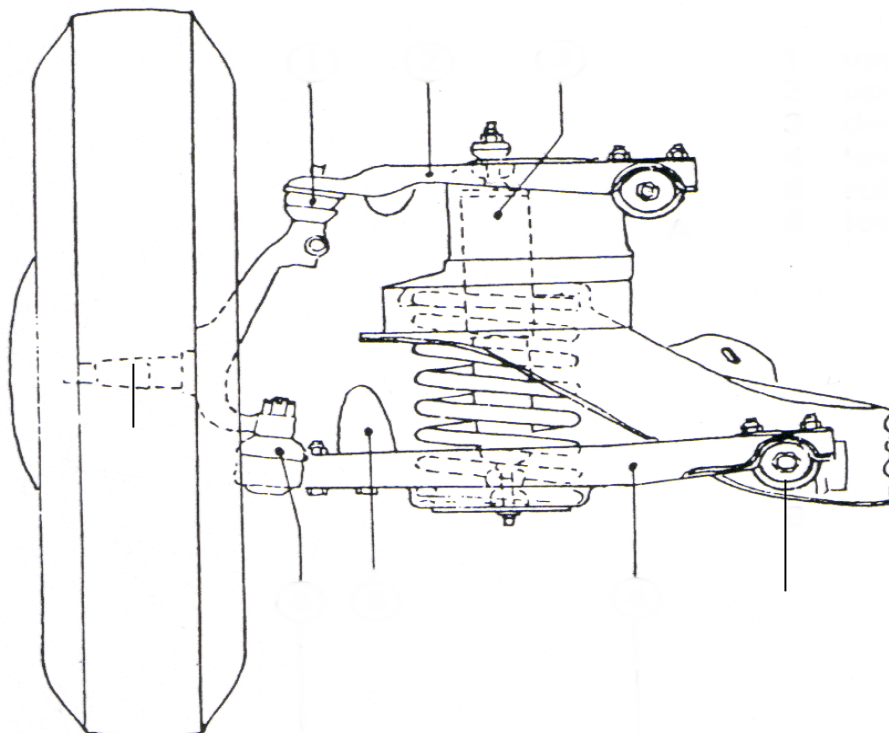
Ball joint

Levelling  
systems

Q20 Name the components indicated by the arrows below.



Q21 Name the components indicated by the arrows below.





Q22 List the functions of a telescopic fork in a motorcycle suspension.