

Unit Standards **30572**  
**Demonstrate knowledge of  
vehicle or machine batteries**

Level 2 Credit 3 v1

**Student Name:**

**School:**

**Date:**

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

**Feedback:**      **Excellent work**   
                         **Good work**

**Please attempt all questions**   
**Please resubmit**

## **USEFUL WEBLINKS**

### **How batteries work**

[https://youtu.be/4IgHj2Uim\\_0](https://youtu.be/4IgHj2Uim_0)

<https://youtu.be/HhxtfULIO7c>

### **Types of batteries**

<https://youtu.be/IBh7XoXz60k>

### **Battery safety**

<https://youtu.be/1ThScytBNwI>

### **Checking battery electrolyte**

<https://youtu.be/-5dDVO00tPc>

<https://youtu.be/NS6phSxHIC0>

[https://youtu.be/c\\_76ZhTPG0Y](https://youtu.be/c_76ZhTPG0Y)

### **Battery load test**

<https://youtu.be/tsJUuLu1cw0>

<https://youtu.be/COJr7OB23Hw>

### **High rate discharge test**

<https://youtu.be/9edBdxFr4ow>

<https://youtu.be/r70EDO-pk14>

### **Batttery Recharging**

<https://youtu.be/UdIPn4EMyJ0>

### **Memory Saver**

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

### **Jump Starting**

<http://youtu.be/ItHN0y1Nu7A>

## REVIEW QUESTIONS ONE

Q1 Define the purpose of a lead acid battery.

Q2 How many positive and negative plates are in a nine plate grid?

Positive plates

Negative plates

Q3 Which three chemicals are used in a lead acid battery?

Q4 What is the function of a separator plate?

Q5 Explain two reasons why a battery might fail?

Q6 Describe the main feature of:

1. A Dry Cell battery

2. A Wet Cell battery

Q7 Complete the following sentence:

The electrolyte of a \_\_\_\_\_ battery usually contains 35%  
and \_\_\_\_\_ distilled water.

Q8 Explain why deep cycle batteries are often used in caravans and boats?

Q9 List three advantages associated with gel batteries.

Q10 What are the main differences between lithium iron phosphate batteries and lithium ion batteries?

Q11 What are the main features of AGM batteries?

Q12 How many volts and amps would be supplied by a **parallel** circuit of 8 batteries if each battery supplied 12 volts and 120amps?

Volts:

Amps:

## REVIEW QUESTIONS TWO

- Q13 Explain three safety precautions to take when working with batteries:
- Q14 When carrying out a visual inspection of a battery what three conditions would lead you to suspect faults with the battery?
- Q15 Name the tool used to measure the specific gravity of electrolyte in a battery:
- Q16 Complete the following sentence:  
The electrolyte in a fully charged battery should read \_\_\_\_\_ on the hydrometer  
Scale. The electrolyte on a \_\_\_\_\_ battery would read 1.120.
- Q17 List two possible causes of discoloured electrolyte

### REVIEW QUESTIONS THREE

Q18 Complete the following sentence:

The hydrometer is a \_\_\_\_\_ type tool that measures the \_\_\_\_\_ of the \_\_\_\_\_ in a cell. When reading the hydrometer it should be read at \_\_\_\_\_. Read the \_\_\_\_\_ scale at the electrolyte level.

Q 19 Complete the following table:

Specific Gravity reading from hydrometer	Percentage of charge
1.265 sp.gr	% charged
_____ sp.gr	75% charged
1.190 sp.gr	% charged
_____ sp.gr	25% charged
1.120 sp.gr	

Q20 Complete the following sentence:

The purpose of a high rate discharge test is to \_\_\_\_\_ whether or not a battery is \_\_\_\_\_ of meeting the \_\_\_\_\_ required to start a vehicle.

Q21 What is the purpose of a high rate discharge test?

Q22 Describe the method to determine the voltage of a battery using a digital voltmeter.

## REVIEW QUESTIONS FOUR

Q23 Complete the following sentences.

Remove the \_\_\_\_\_ cable from the \_\_\_\_\_ first. Now remove the \_\_\_\_\_ cable, but make sure the \_\_\_\_\_ do not touch. (Remember, the negative is the \_\_\_\_\_ and \_\_\_\_\_ cable you will work with assuming that the negative is the \_\_\_\_\_. You can tell if the negative \_\_\_\_\_ is \_\_\_\_\_ by seeing if the cable is \_\_\_\_\_ to the car \_\_\_\_\_ or \_\_\_\_\_.

Q24 Calculate the rate of charge for the following batteries.

1. Reserve capacity of 120 minutes
2. Reserve capacity of 200 minutes
3. Reserve capacity of 360 minutes

Q25 List three precautions to take when charging maintenance free battery.

Q26 Why are memory saving devices commonly used in the motor industry?

Q27 Explain the procedure to follow when connecting jumper cables.

Q28 Describe how acidic deposits should be removed from a battery tray.

Q29 Complete the following sentence.

It would be wise to \_\_\_\_\_ the vehicle which, had the  
for at least \_\_\_\_\_ to enable your vehicles  
to \_\_\_\_\_ the battery \_\_\_\_\_ .

Q30 List 2 methods of jumpstarting a flat battery.

Q31 What is an anti- spike device?

Q32 Why are blocking diodes used in split charging systems?

Q33 Why is ventilation particularly important when dealing with marine batteries?

Q34 What are the main features of a battery switch?

Q35 Why is it important that used batteries are correctly disposed of?

Q36 What action be taken before carrying out electric welding on a vehicle?

Q37 What are the potential hazards that should be avoided when replacing wiring to protect ECUs?





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