

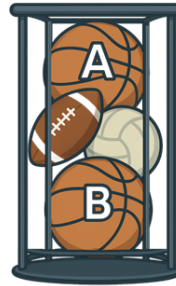
MCQ	Example 1	
Which of the following is a ferromagnetic material?		
Options		Comments
A	gold	
B	silver	
C	copper	
D	iron	
Bloom's Level		
Remember	<input type="checkbox"/> Recall examples of ferromagnetic materials (iron, nickel, cobalt)	
Learning Outcome		
Students will be able to identify ferromagnetic materials and distinguish them from non-magnetic materials.		

MCQ	Example 2	
Which of these is a good conductor of electricity?		
Options	Comments	
A	wood	
B	plastic	
C	glass	
D	copper	
Bloom's Level		
Remember	<input type="checkbox"/> Students are recalling a factual property of copper. <input type="checkbox"/> No reasoning, calculation, or application required.	
Learning Outcome		
Students will be able to identify materials that conduct electricity and distinguish them from insulators based on their physical properties.		

MCQ		Example 3	
What happens to the kinetic energy of a car when its velocity is doubled?			
Options		Comments	
A	The car has double its original kinetic energy		
B	The car has half its original kinetic energy		
C	The car has four times its original kinetic energy		
D	The car has one quarter of its original kinetic energy		
Bloom's Level			
Understand	<input type="checkbox"/> Reason qualitatively about how doubling velocity affects energy. <input type="checkbox"/> No numerical calculation is required; reasoning alone is sufficient.		
Learning Outcome			
Students will be able to explain and apply the relationship between kinetic energy and velocity , specifically predicting how changes in velocity affect the kinetic energy of an object.			

MCQ**Example 4**

Two basketballs, A and B, are kept in a rack as shown below.



Basketball A is higher up in the rack while basketball B sits at the bottom of the rack. Which basketball, A or B, has more energy?

Options		Comments
A	Basketball A has more energy because it is the furthest away from the Earth's surface	
B	Basketball B has the most energy because it is closest to the surface of the Earth	
C	Both basketballs have the same amount of energy because they have the same mass	
D	Both basketballs have the same amount of energy because they are not moving	

Bloom's Level**Understand**

- Students interpret a scenario involving energy states at different heights.
- No numerical calculation is required; reasoning alone is sufficient.

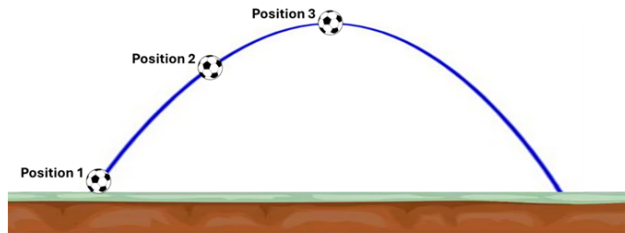
Learning Outcome

Students will be able to **compare gravitational potential energy of objects at different heights** and determine how height affects stored energy.

MCQ

Example 5

The picture below shows a ball at positions 1, 2 and 3 after being kicked.



Which of the following best represents the amount of kinetic energy and potential that the ball has at each position shown above. Ignore air resistance.

Options		Comments
A		
B		
C		
D		

Bloom's Level

Analyse

- Interpret a physical scenario (projectile motion).
- Decompose velocity into components.
- Relate height changes to PE and speed changes to KE.
- Evaluate multiple representations and select the consistent one.

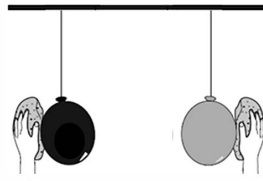
Learning Outcome

Students will be able to **describe and compare the distribution of kinetic energy and gravitational potential energy** of a moving object at different positions during its motion.





MCQ

Example 6

Two balloons are rubbed with a wool cloth a shown below.



Which of the following correctly shows what happens to the two balloons after they are rubbed?

Options	Comments
<p>A</p> 	
<p>B</p> 	
<p>C</p> 	
<p>D</p> 	

Bloom's Level

Analyse

- Recognize charge transfer from friction.
- Apply the principle that **like charges repel**.
- Interpret images and select the scenario consistent with physics.
- Higher cognitive demand than simple recall because students must **evaluate visual representations of physical phenomena**.

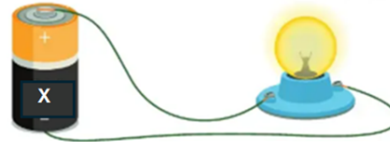
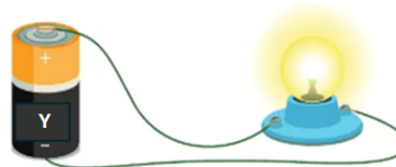
Learning Outcome

Students will be able to **analyze and predict the interactions of objects charged by friction, using the concepts of electron transfer, charge distribution, and electrostatic forces, and interpret visual evidence to support their reasoning.**

FRQ	Designing the FRQ	
<input type="checkbox"/> The distinct sections in this question ensure that there is cohesion between the subparts within the section itself <input type="checkbox"/> The sections also offer a clear progression pathway throughout the question. <input type="checkbox"/> The flow reduces the risk of misinterpretation.		
Section	Cognitive Role	
Part (a)	Conceptual grounding and vocabulary clarification	
Part (b)	Application of concepts and causal analysis	
Part (c)	Evaluation of a claim using evidence and principles	
Overall		Bloom's level
Evaluate		The structured design of this free-response question ensures conceptual cohesion and a clear cognitive progression. Part (a) establishes foundational understanding, part (b) develops application and analytical reasoning, and part (c) culminates in evaluative judgement. This sequencing supports accurate interpretation, minimizes ambiguity, and allows higher-order reasoning to be meaningfully assessed.

FRQ**Part (a)**

What is voltage?

Bloom's Level**Understand** Students must explain a concept, not just recall a name.**Learning Outcome**Students will be able to **define voltage** and describe its role in driving electric current in an electrical circuit.**FRQ****Part (b)**A student connects a bulb to **battery X** in a simple circuit. The bulb glows as shown in the figure below.The same bulb is then connected to **battery Y**. The bulb now appears **brighter**.

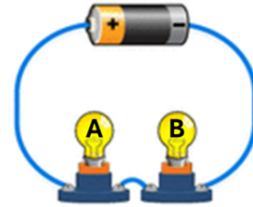
FRQ	Part (b)(i)
Which battery, X or Y, has the greater voltage?	
Bloom's Level	
Understand	<input type="checkbox"/> Students interpret an observation (brightness) and connect it to a physical quantity (voltage)
Learning Outcome	
Students will be able to relate voltage to the brightness of a bulb and use observable evidence to compare the voltages of different batteries.	

FRQ	Part (b)(ii)
Explain your answer using ideas about the bulb's brightness and energy transfer.	
Bloom's Level	
Analyse	<input type="checkbox"/> Requires linking multiple concepts: voltage → energy → brightness. <input type="checkbox"/> Students must connect cause-effect relationships, not just recall formulas.
Learning Outcome	
Students will be able to explain the relationship between voltage, bulb brightness, and energy transfer in an electrical circuit.	

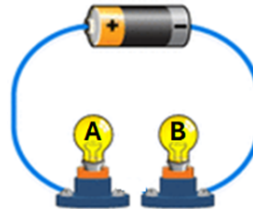
FRQ

Part (c)

The figure below shows two identical bulbs, A and B, connected to a battery.



The wire connecting bulbs A and B is removed, creating an open circuit.



A student claims: “*Bulb A will stay on because it is closer to the battery.*”

Evaluate this statement. Do you agree or disagree? Justify your answer using evidence from the circuit.

Bloom's Level

Evaluate

- Students must **judge the validity of a claim** using evidence from the circuit and principles of current flow.

Learning Outcome

Students will be able to **analyze series circuits and predict the effect of a break in the circuit on individual components.**

(a)	Model Answers
Voltage is the electrical potential energy difference between two points in a circuit.	
Words to that effect	
Points	Marking Guidelines
1	For mentioning electrical potential energy difference (accept electric potential energy difference / potential energy difference)
1	For mentioning between two points in a circuit

(b)(i)	Model Answer
Battery Y has the greater voltage.	
Points	Marking Guidelines
1	For mentioning battery Y has the greater voltage

(b)(ii)	Model Answer
For the bulb to shine brighter, more electrical energy must be supplied to it. Therefore, battery Y must have a greater voltage than battery X since the bulb shines brighter when connected to battery Y.	
Or	
Words to that effect.	
Points	Marking Guidelines
1	For mentioning more (electrical) energy is required to shine brighter
1	For connecting brighter bulb to greater voltage

(c)

No, bulb A will not stay on. This is a series a circuit with only one conductive path. Since the circuit is not complete, electricity will not flow and both bulbs A and B will remain off.

Or

Words to that effect

Points	Marking Guidelines
1	For mentioning that they do not agree with statement and that bulb A does not remain on.
1	For mentioning circuit is a series circuit
1	For mentioning that series circuit does not have a complete path (no wire between A and B)
1	For mentioning electricity does not flow and concluding both bulbs will remain off.