Energy OE PSLE QN

1a	[C] The greater the height of drop, the greater/deeper the depth of dent.[1] [E/R] <u>More</u> gravitational potential energy converted to <u>more</u> kinetic energy [1/2] and more energy is **<u>transferred</u>** to the sand [1/2]	*Energy can be converted from one form to another **Energy can be transferred ***Energy cannot be 'used up'
1b	[C] The objects have <u>more</u> gravitational potential energy that will be converted to <u>more</u> kinetic energy [1/2] [E/R] and <u>more energy</u> is transferred to someone's head upon contact/impact will cause injury [1/2]	subtle comparison question Comparatives must be used
2a	Elastic potential energy → kinetic energy + gravitational potential energy	
2b	The **greater** the distance the rubber band was pulled back, the **greater** the height moved by the block.	Relationship qn
3a	Gravitational potential → kinetic	
3b	Advantage: Able to produce **more electrical energy/electricity** Explanation: Higher height means water has a **<u>more</u> gravitational potential energy** than will convert to **<u>more</u> kinetic energy** when released and produce **<u>more</u> electrical energy.**	
4a	Chemical potential energy → heat + light	
4b	Poor conductor of heat	
5a	Elastic potential energy → kinetic + sound/heat	
5b	[C] Turn the roller more. [E/R] **<u>More</u> elastic potential energy** is stored in the rubber band which is **converted to <u>more</u> kinetic energy**	
6a	electrical → light + heat	
6b	[C] to ensure all his experiments have the **same starting temperature** [E/R] to ensure a **fair test**	
6c	[C] R. **Increase in temperature in 10 min is the least** [E/R] **least electricity/electrical energy** needed by the air-con to cool his room	
7a	Chemical potential energy → electrical energy → kinetic + sound	

7b	[C] **Mass/weight of the train decreases** [E/R] lesser energy is converted to heat energy caused by friction between the train and the track so more chemical potential energy (from batteries) is converted to more kinetic energy OR [E/R] Lesser energy is needed to overcome frictional force for the train to move so more chemical potential energy (from batteries) is converted to more kinetic energy	*Friction is affected by mass/weight of object and type of material **Lesser the mass/weight, the lesser the friction an object experiences ***friction produces heat (energy)
7c	[C] The train has **lesser kinetic energy** from G to H as compared to before [E/R] **some of the kinetic energy is converted to gravitational potential energy** as the train moves upwards	*Kinetic energy is energy an object has when it <u>moves</u>. **If it is **not moving, then it has zero kinetic energy.** ***Kinetic energy increases as the speed of an object increases.
8a	Light energy → heat energy → kinetic energy	
8b	[C] Faster [E/R] More light energy is converted to more kinetic energy	
8c	**<u>All</u>** its kinetic energy has been converted to heat (and sound energy) (when it overcomes air resistance/friction as it rotates through the air)	*To explain why the vane **stopped (zero movement means KE is zero)*** **Friction produces heat/heat energy*
9a	[C] Car still has kinetic energy at L [E/R] as not all its energy has been converted to sound and heat energy (from the result of overcoming friction between wheels and floor)	
9b	i) Pump more air inside/ inflate the balloon more at the start ii) add lubricant (such as oil) to the floor/wheels	
10a	Rocket still has some kinetic energy at G so it will continue to move to H [1] At H, all its kinetic energy has been converted to gravitational potential energy so it stopped. [1/2]And since its gravitational force (weight) is acting downwards, it will fall l downwards [1/2]	

10b	[C] Air has no definite shape so when it is forced/push out of balloon, the balloon will also change its shape and direction of escaped air continuously. [E/R] the force changes the direction of the balloon (moving object)	
11a	Shorter. A shorter distance means **lesser kinetic energy being converted to lesser heat energy** [1] (in the form of friction) as it slides down the plank surface. So block moving along shorter plank **has greater KE, moves with faster speed [1]** and takes a shorter time to reach ground.	
11b	i) Graph M	
	ii) Weight/mass of block and Material of plank/block	Only material/texture and weight of an object affects friction

done by Mr D