**Physics Revision: Energy Loss and**

Mastery Matrix Points

|  |
| --- |
| Describe ways to reduce unwanted energy transfers |
| Link energy loss to insulation and thermal conductivity |
| Use and rearrange both equations for calculating efficiency |
| Describe ways to increase the efficiency of an energy transfer |

Key Knowledge

Ways to reduce unwanted energy transfers:

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Definitions:

Thermal conductivity

Efficiency

The higher the thermal conductivity of a material the \_\_\_\_\_\_\_ the rate of

energy transfer by conduction.

Two factors that affect how quickly a building cools down

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Equations:

Efficiency

How to change from

a decimal to a percentage:

a percentage to a decimal:

|  |  |  |
| --- | --- | --- |
| *Name* | *Symbol* | *Units* |
|  |  | Watts (W) |
|  |  | Joules (J) |

**Efficiency**

Understanding and Explaining

1. **Explain how the design of a takeaway cup could be changed so that it reduces the unwanted transfer of heat to the surroundings.**
2. **Explain how changes that could be made to a bike to reduce the unwanted transfer of heat through friction.**
3. **Show how to rearrange the efficiency equation for useful energy output.**
4. **Show how to rearrange the efficiency equation for total energy input.**
5. **Show how to rearrange the efficiency equation for total power input.**
6. **Show how to rearrange the efficiency equation for useful power output.**
7. **Describe how you could increase the efficiency of an electric kettle (reduce the wasted heat and sound energy that goes into the surroundings).**