**Energy Transformations and Heat Energy**

**Heat Energy**

**Def :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Heat has 2 variables:**

1- # of particles (how much ex: mass). Less mass allows substance to get hot faster.

2- Degree of agitation (movement) of the particles.

* High agitation = substance has high temperature
* Low agitation = substance has low temperature

**Temperature**

**Def :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Mass is irrelevant for temperature, big or small 37℃is 37℃.

**Heat transfer**

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ex: All buckets below have 7 L of water, but each bucket has a different temperature of water.

 Bucket A Bucket B Bucket C Bucket D



 80 °C 50 °C 25 °C 10 °C

You mix bucket A and C together and B and D together.

Explain what the temperature of the buckets will when you first mix them?

Why does this change in temperature occur?

Which buckets lost heat? Which buckets gained heat?

**Recap:**

Heat depends on: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Temperature depends on: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

You transfer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, but you measure \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. You cannot transfer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Energy Types**

|  |  |  |
| --- | --- | --- |
| Type of energy | Definition | Examples |
| Chemical |  | candle wax, energy stored in food |
| Electric |  | Power plants and generators |
| Sound |  | Sound and music |
| Kinetic |  | Kicking ball |
| Potential |  | A rock on a hill |
| Mechanic |  | Swing starting to move |
| Thermal |  | Sun, fire and heating element |
| Radiation |  | Sun, microwave and light bulb |
| Wind |  | Wind turbines |
| Elastic |  | Spring and stretched elastic |
| Hydraulic |  | Waterfall and river |
| Nuclear |  | Sun and nuclear power plant |

**Energy transfer and transformation**

**Energy transfer:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Energy transformation:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Give three examples that cause this race car to accelerate