

Name _____ Classroom _____ Number _____

Specific Heat Capacity

$$\text{Energy} = \text{Mass} \times \text{Specific Heat Capacity} \times \text{Change in temperature}$$

$$1000\text{g} = 1\text{kg}$$

$$Q = mc \Delta t$$

1. How much **energy** is needed to raise the temperature of 2 kg of copper from 0°C to 10°C. The specific heat capacity of copper is 380J/kg°C.

Formula $Q = mc\Delta t$

Q =	
M =	
C =	
$\Delta t =$	

We get

Q =

Therefore, the amount of heat which increases the temperature of copper at 0°C, to 10°C with a mass of 2 kg, is J.

2. A hot water bottle is filled with 0.8kg of water at 80°C. During the night it cools to 30°C. The specific heat capacity of water is 4200J/kg°C. How much **energy** has it given out?

Formula $Q = mc\Delta t$

Q =	
M =	
C =	
$\Delta t =$	

We get

Q =

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$$\text{Energy} = \text{Mass} \times \text{Specific Heat Capacity} \times \text{Change in temperature}$$

Therefore, the amount of heat which decreases the temperature of water at 80°C, to 30°C with a

mass of 0.8 kg, is

J.

3. How much **energy** is needed to heat 2kg of cooking oil with a specific heat capacity of 2000J/kg°C from 20°C to 120°C?

Formula $Q = mc\Delta t$

Q =	<input type="text"/>
M =	<input type="text"/>
C =	<input type="text"/>
$\Delta t =$	<input type="text"/>

We get

Q =

Ans

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Energy = Mass x Specific Heat Capacity x Change in temperature

4. Andy has a bath and uses 1500g of water heated from 10°C to 40°C and with a specific heat capacity of 4200J/kg°C. How much **energy** does he use?

Formula $Q = mc\Delta t$

Q =
M =
C =
 Δt =

We get

Q =

Ans

-
5. An electric kettle supplies 20,000J of energy to heat 0.5kg of water. What is the **temperature change**? The specific heat capacity of water is 4200J/kg°C.

Formula $Q = mc\Delta t$

Q =
M =
C =
 Δt =

We get

=

Ans

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$$\text{Energy} = \text{Mass} \times \text{Specific Heat Capacity} \times \text{Change in temperature}$$

6. A piece of lead with a specific heat capacity of $126\text{J/kg}^\circ\text{C}$ is given 5000J of energy to heat it from 20°C to 250°C . What was the **mass** of the piece of lead?

Formula $Q = mc\Delta t$

Q =	<input type="text"/>
M =	<input type="text"/>
C =	<input type="text"/>
$\Delta t =$	<input type="text"/>

We get

=

Ans

7. A 2 kg metal cylinder is supplied with 1600J of energy to heat it from 5°C to 13°C . What is the **specific heat capacity** of the metal?

Formula $Q = mc\Delta t$

Q =	<input type="text"/>
M =	<input type="text"/>
C =	<input type="text"/>
$\Delta t =$	<input type="text"/>

We get

=

Ans

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$$\text{Energy} = \text{Mass} \times \text{Specific Heat Capacity} \times \text{Change in temperature}$$

8. 201,600J is supplied to 600g of water with a specific heat capacity of 4200J/kg°C. What is the change in temperature?

Formula $Q = mc\Delta t$

Q =	201600 J
M =	
C =	
$\Delta t =$	

We get

=

Ans

9. **CHALLENGE!** Becky has a shower and uses 20,000g of water with a specific heat capacity of 4200J/kg°C. When the water is supplied with 336,000J of energy, it heats up to 50°C. What was the starting temperature of the water?

Formula $Q = mc\Delta t$

Q =	
M =	
C =	
$\Delta t =$	

We get

=

Ans