L. N. Coakley Science Department

Specific Heat Capacity Worksheet.

Name:_____ **Date:**_____ **Grade**_____.

Key points to remember:

The specific heat capacity of a substance is the heat required to produce a 1 °C rise in 1 kg.
The heat received or given out = mass x specific heat capacity x temp. chance

$$Q = mc\Delta T$$

$$c = \frac{Q}{m\Delta T}$$

1. How much heat is need it to raise the temperature by 10 °C of 5 kg of a substance of specific heat capacity 300 J/(kg °C)?

Known: **Formula:** **Substitution:**

ΔT =

m =

c =

Unknown:

The amount of heat need it is _____ J.

2. The same amount of heat was given to different masses of three substances A, B and C. The temperature rise in each case is shown in the table. Calculate the specific heat capacity of A, B, and C.

Material	Mass (kg)	Heat given (J)	Temp. rise (°C)
A	1.0	2000	1.0
B	2.0	2000	5.0
C	0.5	2000	4.0

Work out:

Known: **Formula:** **Substitution:**

ΔT_A =

m_A =

Q =

Unknown:

The specific heat capacity of A is _____ J/(kg °C).

Known: **Formula:** **Substitution:**

ΔT_B =

M_B =

Q =

Unknown:

The specific heat capacity of B is _____ J/(kg °C).

Known: **Formula:** **Substitution:**

ΔT_C =

M_C =

Q =

Unknown:

The specific heat capacity of C is _____ J/(kg °C).

3. The table shows how much heat is need it to make the temperature of 1 kg of different substances go up by 1°C.

Substance	Energy in joules
Copper	390
Mercury	140
Silver	240
Steel	450

3.1 Which one of these four substances has the highest specific heat capacity? _____ .

3.2 A microwave oven is used to heat a cold mug of coffee. In a few seconds the temperature of the coffee goes up by 70 °C. Use the following equation $Q = mc\Delta T$ to calculate the energy in joules gained by the coffee. Show clearly how you work out your final answer.

Take the mass of the coffee to be 0.2 kg and the specific heat capacity of the coffee to be 4000 J/(kg °C.

Known: **Formula:** **Substitution:**

ΔT_C =

M_C =

c =

Unknown:

The amount of heat need to heat mug of coffee is _____ J.

4. The jam in a hot pop tart always seems hotter than the pastry. Why?

_____

_____

_____

_____ .