Reading Melt Fractions at One Temperature

Base your answers on the information provided and your knowledge of chemistry. Use the 2025 Chemistry Reference Tables as needed.

A display begins with two 10 g solid samples at their respective melting points. Both melting points are 30 °C. The model holds a sample at 30 °C while it is partly melted and treats all heat supplied during that time as melting energy. The two solids require different energy per gram to melt.

Sample	Energy needed to melt 1 g (J)	Energy supplied so far (J)
P	20	120
Q	40	120

1 Which sample can melt more mass with the energy supplied so far?

(1) P only

(2) Q only

(3) Both melt the same mass.

(4) The shared temperature prevents a comparison.

2 Calculate the melted mass of each sample and compare the fractions melted. [1]

Answer and work

3 A student says the equal temperature readings show that the samples are at the same stage of melting. Evaluate the claim using the masses. [1]

Answer and work

The display now adds more energy only to Q. It wants Q to match P’s current melted fraction without melting the whole sample.

4 Find the additional energy Q needs to reach the target. [1]

Answer and work