1. What is the specific heat capacity of water in J/kg°C?
   * A) 4200
   * B) 8400
   * C) 2100
   * D) 16800
   * Answer: A
2. How much energy is needed to raise the temperature of 500 g of iron from 20°C to 100°C? The specific heat capacity of iron is 450 J/kg°C.
   * A) 9000 J
   * B) 18000 J
   * C) 22500 J
   * D) 45000 J
   * Answer: B
3. How much energy is released when 2 kg of steam at 100°C condenses to water at the same temperature? The specific latent heat of vaporization of water is 2260 kJ/kg.
   * A) 4520 J
   * B) 4520 kJ
   * C) 9040 J
   * D) 9040 kJ
   * Answer: B
4. How much mass of ice at 0°C is needed to cool 1.5 L of water from 25°C to 10°C? The specific heat capacity of water is 4200 J/kg°C and the specific latent heat of fusion of ice is 334 kJ/kg.
   * A) 0.15 kg
   * B) 0.3 kg
   * C) 0.45 kg
   * D) 0.6 kg
   * Answer: C
5. What is the change in temperature of 300 g of copper when 1200 J of energy is transferred to it? The specific heat capacity of copper is 390 J/kg°C.
   * A) 0.4°C
   * B) 1.0°C
   * C) 1.6°C
   * D) 4.0°C
   * Answer: C
6. How much energy is needed to melt 100 g of ice at 0°C and raise its temperature to 50°C? The specific heat capacity of water is 4200 J/kg°C and the specific latent heat of fusion of ice is 334 kJ/kg.
   * A) 25.1 kJ
   * B) 33.4 kJ
   * C) 58.5 kJ
   * D) 91.9 kJ
   * Answer: D
7. How much energy is released when 250 g of water at 80°C cools down to 20°C? The specific heat capacity of water is 4200 J/kg°C.
   * A) 315 kJ
   * B) 630 kJ
   * C) 1260 kJ
   * D) 2520 kJ
   * Answer: B
8. How much mass of water at 100°C is needed to boil 500 g of water at 20°C? The specific heat capacity of water is 4200 J/kg°C and the specific latent heat of vaporization of water is 2260 kJ/kg.
   * A) 0.05 kg
   * B) 0.1 kg
   * C) 0.2 kg
   * D) 0.4 kg
   * Answer: B
9. What is the specific heat capacity of aluminium in J/kg°C?
   * A) 900
   * B) 1800
   * C) 2700
   * D) 3600
   * Answer: A
10. How much energy is needed to raise the temperature of 1 kg of lead from 10°C to 50°C? The specific heat capacity of lead is 130 J/kg°C.
    * A) 520 J
    * B) 1040 J
    * C) 5200 J
    * D) 10400 J
    * Answer: C

I hope these questions help you practice the specific heat capacity equation. 😊

1. A 0.5 kg block of ice at 0°C is heated until it melts completely. The specific latent heat of fusion of ice is 334 kJ/kg. How much energy is needed to melt the ice?
   * A) 16.7 kJ
   * B) 167 kJ
   * C) *1670 kJ*
   * D) 16700 kJ
2. A 2 kg block of iron at 100°C is cooled until it solidifies. The specific latent heat of solidification of iron is 247 kJ/kg. How much energy is released when the iron solidifies?
   * A) 247 kJ
   * B) *494 kJ*
   * C) 988 kJ
   * D) 1976 kJ
3. A 1.5 kg kettle of water at 100°C is boiled until it evaporates completely. The specific latent heat of vaporization of water is 2260 kJ/kg. How much energy is needed to boil the water?
   * A) 2260 kJ
   * B) 3390 kJ
   * C) *33900 kJ*
   * D) 50850 kJ
4. A 0.8 kg bottle of liquid nitrogen at -196°C is warmed until it becomes a gas. The specific latent heat of vaporization of nitrogen is 199 kJ/kg. How much energy is needed to vaporize the nitrogen?
   * A) *159.2 kJ*
   * B) 199 kJ
   * C) 398 kJ
   * D) 796 kJ
5. A 3 kg pot of molten lead at 327°C is poured into a mould and cooled until it solidifies. The specific latent heat of solidification of lead is 24.5 kJ/kg. How much energy is released when the lead solidifies?
   * A) 24.5 kJ
   * B) 73.5 kJ
   * C) *73.5 kJ*
   * D) 220.5 kJ
6. A 0.4 kg piece of butter at 20°C is melted in a microwave oven. The specific latent heat of fusion of butter is 167 kJ/kg. How much energy is needed to melt the butter?
   * A) 16.7 kJ
   * B) *66.8 kJ*
   * C) 167 kJ
   * D) 668 kJ
7. A 1.2 kg balloon of helium gas at 20°C is compressed until it becomes a liquid. The specific latent heat of liquefaction of helium is 20.8 kJ/kg. How much energy is released when the helium liquefies?
   * A) *24.96 kJ*
   * B) 41.6 kJ
   * C) 83.2 kJ
   * D) 166.4 kJ
8. A 2.5 kg bag of frozen peas at -18°C is heated in a saucepan until it becomes a soup. The specific latent heat of fusion of peas is 334 kJ/kg. How much energy is needed to melt the peas?
   * A) 334 kJ
   * B) 835 kJ
   * C) *1670 kJ*
   * D) 4180 kJ
9. A 4 kg block of copper at 1085°C is cooled until it solidifies. The specific latent heat of solidification of copper is 205 kJ/kg. How much energy is released when the copper solidifies?
   * A) 205 kJ
   * B) 410 kJ
   * C) 820 kJ
   * D) *820 kJ*
10. A 0.6 kg can of soda at 5°C is cooled in a freezer until it becomes a slush. The specific latent heat of fusion of soda is 334 kJ/kg. How much energy is released when the soda freezes?
    * A) 33.4 kJ
    * B) *200.4 kJ*
    * C) 334 kJ
    * D) 2004 kJ

I hope you find these questions helpful. Good luck with your GCSE! 😊

Sure, I can rewrite the question above and say the answer at the bottom of each question. Here are the new questions with the answers:

1. A 0.5 kg block of ice at 0°C is heated until it melts completely. The specific latent heat of fusion of ice is 334 kJ/kg. How much energy is needed to melt the ice?
   * Answer: E = mass x L = 0.5 x 334 = 167 kJ
2. A 2 kg block of iron at 100°C is cooled until it solidifies. The specific latent heat of solidification of iron is 247 kJ/kg. How much energy is released when the iron solidifies?
   * Answer: E = mass x L = 2 x 247 = 494 kJ
3. A 1.5 kg kettle of water at 100°C is boiled until it evaporates completely. The specific latent heat of vaporization of water is 2260 kJ/kg. How much energy is needed to boil the water?
   * Answer: E = mass x L = 1.5 x 2260 = 33900 kJ
4. A 0.8 kg bottle of liquid nitrogen at -196°C is warmed until it becomes a gas. The specific latent heat of vaporization of nitrogen is 199 kJ/kg. How much energy is needed to vaporize the nitrogen?
   * Answer: E = mass x L = 0.8 x 199 = 159.2 kJ
5. A 3 kg pot of molten lead at 327°C is poured into a mould and cooled until it solidifies. The specific latent heat of solidification of lead is 24.5 kJ/kg. How much energy is released when the lead solidifies?
   * Answer: E = mass x L = 3 x 24.5 = 73.5 kJ
6. A 0.4 kg piece of butter at 20°C is melted in a microwave oven. The specific latent heat of fusion of butter is 167 kJ/kg. How much energy is needed to melt the butter?
   * Answer: E = mass x L = 0.4 x 167 = 66.8 kJ
7. A 1.2 kg balloon of helium gas at 20°C is compressed until it becomes a liquid. The specific latent heat of liquefaction of helium is 20.8 kJ/kg. How much energy is released when the helium liquefies?
   * Answer: E = mass x L = 1.2 x 20.8 = 24.96 kJ
8. A 2.5 kg bag of frozen peas at -18°C is heated in a saucepan until it becomes a soup. The specific latent heat of fusion of peas is 334 kJ/kg. How much energy is needed to melt the peas?
   * Answer: E = mass x L = 2.5 x 334 = 1670 kJ
9. A 4 kg block of copper at 1085°C is cooled until it solidifies. The specific latent heat of solidification of copper is 205 kJ/kg. How much energy is released when the copper solidifies?
   * Answer: E = mass x L = 4 x 205 = 820 kJ
10. A 0.6 kg can of soda at 5°C is cooled in a freezer until it becomes a slush. The specific latent heat of fusion of soda is 334 kJ/kg. How much energy is released when the soda freezes?
    * Answer: E = mass x L = 0.6 x 334 = 200.4 kJ

I hope you find these questions helpful. Good luck with your GCSE! 😊

Sure, I can rewrite the questions so that students have to rearrange the equation E = mass x L. Here are the new questions:

1. How much mass of ice at 0°C is needed to absorb 1670 kJ of energy when it melts completely? The specific latent heat of fusion of ice is 334 kJ/kg.
   * Answer: mass = E / L = 1670 / 334 = 5 kg
2. How much mass of iron at 100°C is needed to release 494 kJ of energy when it solidifies? The specific latent heat of solidification of iron is 247 kJ/kg.
   * Answer: mass = E / L = 494 / 247 = 2 kg
3. How much mass of water at 100°C is needed to absorb 33900 kJ of energy when it boils completely? The specific latent heat of vaporization of water is 2260 kJ/kg.
   * Answer: mass = E / L = 33900 / 2260 = 15 kg
4. How much mass of liquid nitrogen at -196°C is needed to absorb 159.2 kJ of energy when it vaporizes? The specific latent heat of vaporization of nitrogen is 199 kJ/kg.
   * Answer: mass = E / L = 159.2 / 199 = 0.8 kg
5. How much mass of molten lead at 327°C is needed to release 73.5 kJ of energy when it solidifies? The specific latent heat of solidification of lead is 24.5 kJ/kg.
   * Answer: mass = E / L = 73.5 / 24.5 = 3 kg
6. How much mass of butter at 20°C is needed to absorb 66.8 kJ of energy when it melts? The specific latent heat of fusion of butter is 167 kJ/kg.
   * Answer: mass = E / L = 66.8 / 167 = 0.4 kg
7. How much mass of helium gas at 20°C is needed to release 24.96 kJ of energy when it liquefies? The specific latent heat of liquefaction of helium is 20.8 kJ/kg.
   * Answer: mass = E / L = 24.96 / 20.8 = 1.2 kg
8. How much mass of frozen peas at -18°C is needed to absorb 1670 kJ of energy when it melts? The specific latent heat of fusion of peas is 334 kJ/kg.
   * Answer: mass = E / L = 1670 / 334 = 5 kg
9. How much mass of copper at 1085°C is needed to release 820 kJ of energy when it solidifies? The specific latent heat of solidification of copper is 205 kJ/kg.
   * Answer: mass = E / L = 820 / 205 = 4 kg
10. How much mass of soda at 5°C is needed to release 200.4 kJ of energy when it freezes? The specific latent heat of fusion of soda is 334 kJ/kg.
    * Answer: mass = E / L = 200.4 / 334 = 0.6 kg

I hope you find these questions helpful. Good luck with your GCSE! 😊