

Materials winter quiz

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1. What is the coldest possible temperature in the universe?
 - a. Universal Zero
 - b. -273 K
 - c. Absolute Zero
 - d. 0°C
2. The coldest temperature ever recorded at ground level on Earth is -89.2 degrees C, measured at the Soviet Vostok Station in Antarctica on 21st July 1983. Why couldn't they measure this temperature with a standard mercury thermometer?
 - a. They hadn't been invented yet
 - b. The mercury was frozen
 - c. The thermometer was buried under too much snow
 - d. It was too dangerous to go outside and measure it by eye
3. Snowflakes are famously said to have six sides. What is the origin of this six-sided symmetry?
 - a. The formation of water molecules as they freeze
 - b. Probability
 - c. The very cold atmospheric temperatures
 - d. All the other shapes melt before they hit the ground
4. In order not to slip on the ice, it's important to wear grippy shoes. Put these materials in order of their coefficient of friction on ice from lowest to highest
 - a. Steel
 - b. Wood
 - c. Brass
 - d. Rubber

(Answer: Brass, Steel, Wood, Rubber, c, a, b, d)

5. Temperature is the measure of the average what kind of energy of the moving particles in a substance?
 - a. Potential energy
 - b. Chemical energy
 - c. Heat energy
 - d. Kinetic energy
6. While rummaging around in your freezer for some ice cream this winter, you come across four strange objects. On closer inspection, they're made of four different materials; copper, glass, ice and stone. When you pick them up, which one feels coldest?
 - a. Copper

- b. Glass
 - c. Ice
 - d. Stone
7. If you're wanting to choose an energy-saving winter light decorations, what sort of lights should you use?
- a. LEDs
 - b. Incandescent bulbs
 - c. Candles
 - d. Oil lamps
8. Your display is made up of green, red and blue LEDs. Put these in order of wavelength, from lowest to highest.
(Answer: Blue, green, red)
9. You go on a wintery walk and find some pinecones lying on the ground. You want to make these into a festive wreath, but they're all closed up. How can you get the pinecones to open out?
- a. Use a knife to prise them apart
 - b. Place them on a radiator
 - c. Soak them in the sink
 - d. Ask them nicely
10. What Christmas decoration was once made from tungsten, and is now more likely to be made from indium gallium nitride, aluminium gallium indium phosphide and aluminium gallium arsenide?
- a. Tinsel
 - b. Fairy lights
 - c. Battery-powered robot figurines
 - d. Brightly coloured jumpers
11. Candles are a popular winter decoration, but what force of physics causes melted wax to travel up the wick?
- a. Gravitational forces
 - b. Pressure
 - c. Capillary forces
 - d. Heat differentials
12. Fireworks are popular over the wintertime. How is the colour blue produced in fireworks?
- a. Sodium compounds
 - b. Strontium compounds
 - c. Copper compounds
 - d. Aluminium compounds