Name:
Class:

Science Mastery

P4.1 Mastery Quiz: Matter

Section A

1. In which state of matter do particles have the greatest internal energy? [1]

   Tick (✓) **one** box.

   A. Solid ☐

   B. Liquid ☐

   C. Gas ☐

2. Which state(s) of matter can be compressed? [1]

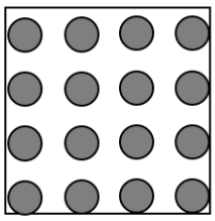
   Tick (✓) **one** box.

   A. Only solids ☐

   B. Liquids and gases ☐

   C. Only gases ☐

3. The diagram shows a particle diagram that a student has drawn to represent the particles in a gas.

   Which explains a problem with the student's diagram?

   Tick (✓) **one** box.

   A. The particles in a gas are randomly arranged rather than in a regular pattern ☐

   B. Gases do not contain many particles, so there should be fewer circles ☐

   C. The particles of a gas should be drawn as white circles ☐

Name:
Class:

Science Mastery

4. Gas pressure is caused… [1]

Tick (✓) **one** box.

A. by collisions of particles with each other. ☐

B. by collisions of particles with the walls of a container. ☐

C. only when particles in a gas are moving. ☐

5. Which statement is correct about energy of particles when substances are heated? [1]

Tick (✓) **one** box.

A. Kinetic energy always increases ☐

B. Potential energy always increases ☐

C. Internal energy always increases ☐

6. A student wanted to determine the density of an irregularly shaped piece of rock.

The method they used is shown below.

1. Fill a measuring cylinder with water
2. Add the rock to the cylinder
3. Measure the volume of water on the cylinder
4. Use this volume and the mass to calculate density.

Choose why this method will not allow density to be determined. [1]

Tick (✓) **one** box.

A. A beaker should be used to more accurately measure volume ☐

B. The measuring cylinder should not be filled because water will spill out ☐

C. The length, width and height of the rock must be measured ☐

Name:
Class:

Science Mastery

7. Select the unit that could be used to describe density.

Tick (✓) **one** box.

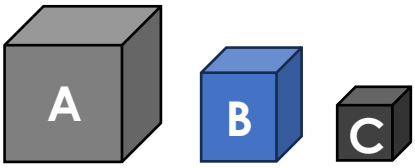
A. m^3/kg ☐

B. $kg\ m^3$ ☐

C. m/kg ☐

D. kg/m^3 ☐

8. The cubes below all have the same mass.



Which of the cubes has the highest density?

Tick (✓) **one** box.

A. A ☐

B. All cubes have the same density ☐

C. C ☐

9. There is 1 kg of oxygen in a sealed container.

The temperature of the oxygen is increased from 18 °C to 100 °C.

Choose the best description of the effect of the temperature change. [1]

Tick (✓) **one** box.

A. Oxygen becomes a gas at the boiling point of 100 °C ☐

B. Particles of oxygen move more quickly causing a higher pressure ☐

C. Particles of oxygen have a lower thermal energy as the temperature has increased ☐

Name:
Class:

Science Mastery

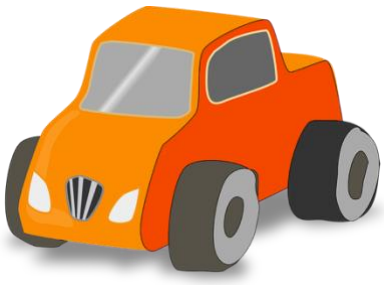
Section B

1. A student measured the volume and mass of a material. The results are shown below.

   Mass = 18 g
   Volume = 45 cm^3

   Calculate the density of this material. Include units. [3]

2. Describe a method that could be used to determine the density of this toy. [6]



3. Compare the arrangement of particles in solids and liquids. [4]