13 In a large container in an oil refinery, three oils of different densities are mixed. No chemical activity occurs.

The mixture consists of

1200 kg of oil of density 1100 kg m^{-3},

1500 kg of oil of density 860 kg m^{-3},

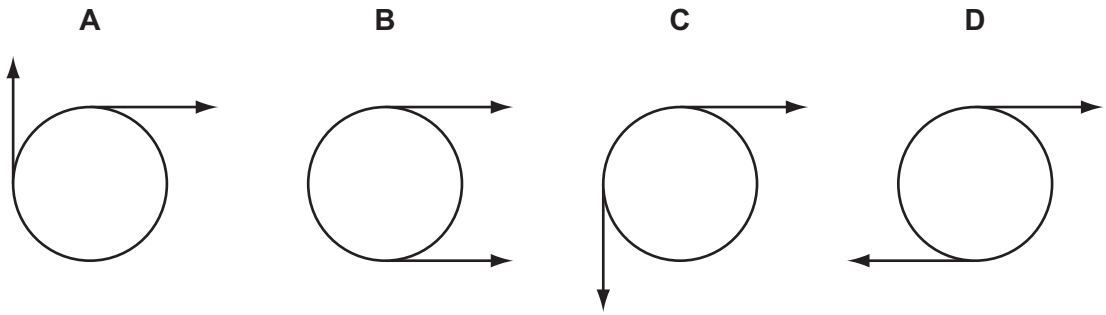
4000 kg of oil of density 910 kg m^{-3}.

What is the density of the mixture?

A 927 kg m^{-3} **B** 957 kg m^{-3} **C** 1010 kg m^{-3} **D** 1080 kg m^{-3}

14 Two coplanar forces act on the rim of a wheel. The forces are equal in magnitude.

Which arrangement of forces provides only a couple?



15 The density of air on the Earth decreases almost linearly with height from 1.22 kg m^{-3} at sea level to 0.74 kg m^{-3} at an altitude of 5000 m.

Atmospheric pressure at the Earth's surface on a particular day is 100 000 Pa. The value of g between the Earth's surface and an altitude of 5000 m can be considered to have a constant value of 9.7 m s^{-2}.

What will be the atmospheric pressure at an altitude of 5000 m?

A 36 000 Pa **B** 48 000 Pa **C** 52 000 Pa **D** 59 000 Pa

16 A parachutist is falling at constant (terminal) velocity.

Which statement is **not** correct?

A Gravitational potential energy is converted into kinetic energy of the air.

B Gravitational potential energy is converted into kinetic energy of the parachutist.

C Gravitational potential energy is converted into thermal energy of the air.

D Gravitational potential energy is converted into thermal energy of the parachutist.