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**1** In early universe, after the quarks had been hadronized in protons and neutrons, the neutrons combined with protons to produce helium nuclei. So after that event, the universe consisted of essentially only hydrogen and helium nuclei, which were subsequently recombined with electrons to produce neutral hydrogen and helium atoms. The mass ratios of hydrogen and helium were roughly 75% and 25%, respectively. At that time, what has been the ratio of the number of neutrons to the number of protons?

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**2** A yard is a unit of length equal to 0.9144 meter. A yard is equal to 3 feet and a foot is equal to 12 inches. A mile is equal to 5280 feet. How many yards is a mile?

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**3** The general chemical formula of saturated chain hydrocarbons is  $C_n H_{2n+2}$ . The mass numbers of carbon and hydrogen are 12 and 1, respectively. What is the mass ratio of carbon to hydrogen in heavy saturated chain hydrocarbons?

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**4** The density of liquid water is about 1000 times the density of water vapor in the room temperature and pressure. What is the ratio of the mean distance between to neighboring molecules in the water vapor to the same quantity in liquid water?

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**5** The body mass index (BMI) of a person is defined as the ratio of her (his) mass in kg, divided by the square of her (his) height in m. For someone of the mass 45 kg and the height 170 cm, what is the value of BMI?

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**6** Good luck

Please write the answers in boxes and return only the answer sheet.

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**1**

$$\frac{1}{7}$$

**2**

1760

**3**

6

**4**

10

**5**

15.6