

Basketball and Cosmic Phenomena

Basketball · Answer Key · 15 Questions

1. The standard NBA basketball has a circumference of approximately 29.5 inches. If an object with this exact circumference were orbiting the Sun at the distance of Mercury, what is the approximate orbital period of Mercury in Earth days?

- A) 88 days**
- B) 112 days
- C) 225 days
- D) 365 days

2. A regulation basketball rim is 10 feet above the floor. If you were to launch a basketball from the surface of the Moon with the same initial velocity used for a standard free throw on Earth, approximately how much higher would the ball travel compared to its Earth trajectory due to the difference in surface gravity?

- A) 2 times higher
- B) 6 times higher**
- C) 10 times higher
- D) 16 times higher

3. The NBA shot clock was introduced in 1954 to speed up the game. If the shot clock duration (24 seconds) represented the rotation period of a planet in our solar system, which planet would it most closely approximate?

- A) Mars**
- B) Jupiter
- C) Saturn
- D) Neptune

4. If a basketball were placed at the center of a scale model where the Sun is the size of a standard basketball, which of the following planets would be represented by a grain of sand located approximately 26 meters away?

- A) Mercury
- B) Venus
- C) Earth**
- D) Mars

5. The total mass of a regulation NBA basketball is approximately 624 grams.

Approximately how many basketballs would equal the mass of the dwarf planet Ceres?

A) 1.5×10^{21}

B) 1.5×10^{24}

C) 1.5×10^{27}

D) 1.5×10^{30}

6. Professional basketball courts are 94 feet long. If this distance represented an Astronomical Unit (AU), how many basketball courts would it take to span the distance from the Sun to the Kuiper Belt (approximately 50 AU)?

A) 940 courts

B) 4,700 courts

C) 5,000 courts

D) 9,400 courts

7. What is the approximate escape velocity required for a basketball to leave the gravitational pull of the Moon, expressed in km/s?

A) 1.38 km/s

B) 2.38 km/s

C) 11.2 km/s

D) 22.4 km/s

8. If the 10-foot height of a basketball rim were used to measure the scale of the Solar System where 1 foot equals 100 million kilometers, which planet's orbital distance from the Sun would be represented by the rim height?

A) Mercury

B) Venus

C) Earth

D) Mars

9. The speed of a basketball during a fast break can reach 20 mph. Expressed in km/s, how does this compare to the orbital speed of the Earth around the Sun (approx 30 km/s)?

A) It is about 1/3000th the speed

B) It is about 1/1000th the speed

C) It is about 1/500th the speed

D) It is about 1/100th the speed

10. Basketballs are filled with compressed air. If a basketball were exposed to the vacuum of space, which physical law explains why the internal pressure would cause the ball to expand or potentially rupture?

- A) Kepler's Second Law
- B) Boyle's Law**
- C) Stefan-Boltzmann Law
- D) Hubble's Law

11. The diameter of a basketball is approximately 9.5 inches. If this diameter represented the Sun, how many basketballs would you need to line up edge-to-edge to match the Sun's diameter (approx 1.39 million km)?

- A) 5.7 billion**
- B) 57 billion
- C) 570 billion
- D) 5.7 trillion

12. Which astronomical body has a diameter closest to 100 times the diameter of a standard basketball?

- A) The Moon
- B) A large asteroid
- C) A small moon of Saturn**
- D) The planet Mercury

13. In basketball, the 'arc' of a shot is affected by gravity. On which of the following planets would a basketball's trajectory be most 'flat' compared to Earth, assuming the same launch velocity and angle?

- A) Mars
- B) Venus
- C) Jupiter**
- D) Saturn

14. The official color of a basketball is 'NBA orange'. Which planet in our solar system is most commonly associated with a similar orange-red hue due to iron oxide surface dust?

- A) Venus
- B) Mars**
- C) Jupiter
- D) Saturn

15. The distance from the Earth to the Moon is approximately 384,400 km. If you stacked basketballs (approx 0.24 meters in diameter) to reach the Moon, roughly how many would you need?

A) 1.6 billion

B) 160 million

C) 16 million

D) 1.6 million