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Science Bowl Questions 11/18/10

Grade 9

**Toss-Up**

1) EARTH AND SPACE SCIENCE *Multiple Choice* The distance from the Earth to the Sun is

W) 100 miles

X) 1 light-year

Y) 1 astronomical unit

Z) 10 astronomical units

ANSWER: Y) 1 astronomical unit

**Bonus**

1) EARTH AND SPACE SCIENCE *Short Answer* How many kilometers are in one astronomical unit? Express your answer to 2 significant figures.

ANSWER: 150 000 000 (150 million)

**Toss-Up**

2) EARTH AND SPACE SCIENCE *Multiple Choice* How many earthquakes, magnitude 4.0 - 4.9, are estimated to occur annually?

W) 100

X) 25000

Y) 1200

Z) 13000

ANSWER: Z) 13000

**Bonus**

2) EARTH AND SPACE SCIENCE *Short Answer* What would be the amplitude of an earthquake with 10 000 times the amplitude of an earthquake with an amplitude of 2.3?

ANSWER: 6.3

**Toss-Up**

3) EARTH AND SPACE SCIENCE *Multiple Choice* An aseismic fault is a fault on which

W) earthquakes occur every year

X) earthquakes never occur

Y) earthquakes occur every hour

Z) earthquakes happen as aftershocks of other earthquakes

ANSWER: X) earthquakes never occur

**Bonus**

3) EARTH AND SPACE SCIENCE *Short Answer* Do earthquakes occur on seismic faults?

ANSWER: Yes

**Toss-Up**

4) EARTH AND SPACE SCIENCE *Multiple Choice* If an earthquake with a magnitude of 7.0 occurs, what would be a possible amplitude of an aftershock?

W) 6.0

X) 7.1

Y) 7.5

Z) 9.2

ANSWER: W) 6.0

**Bonus**

4) EARTH AND SPACE SCIENCE *Short Answer* If an aftershock occurs that is larger than the mainshock of an earthquake, then the aftershock becomes the new mainshock and the original mainshock becomes

ANSWER: the preshock

**Toss-Up**

5) EARTH AND SPACE SCIENCE *Multiple Choice* Earthquakes can occur along plate boundaries, within plates, and on

W) vaults

X) mountains

Y) lines

Z) faults

ANSWER: Z) faults

**Bonus**

5) EARTH AND SPACE SCIENCE *Short Answer* The three types of faults are

ANSWER: normal (faults), thrust (faults), and strike-slip (faults)

**Toss-Up**

6) EARTH AND SPACE SCIENCE *Multiple Choice* The distance that light travels in 1 year is called 1

W) mile

X) light-year

Y) light-day

Z) astronomical unit

ANSWER: X) light-year

**Bonus**

6) EARTH AND SPACE SCIENCE *Short Answer* What is the diameter of the milky way galaxy?

ANSWER: 100 000 light years

**Toss-Up**

7) EARTH AND SPACE SCIENCE *Multiple Choice* About how far apart are the Milky Way and Adromeda Galaxies?

W) 20 million kilometers

X) 2 million astronomical units

Y) 2 million light-years

Z) 40 million light-years

ANSWER: Y) 2 million light-years

**Bonus**

7) EARTH AND SPACE SCIENCE *Short Answer* When is it estimated that the Milky Way and Adromeda Galaxies will collide?

ANSWER: in 4 billion years

**Toss-Up**

8) EARTH AND SPACE SCIENCE *Multiple Choice* What is the average rate of motion across the San Andreas Fault

W) 12 inches/month

X) 34 centimeters/year

Y) 56 millimeters/year

Z) 0.92 feet/year

ANSWER: Y) 56 millimeters/year

**Bonus**

8) EARTH AND SPACE SCIENCE *Short Answer* If the San Andreas Fault continues to move at this rate, how many millions of years will it take until San Francisco is adjacent to Los Angeles?

ANSWER: 15

**Toss-Up**

9) EARTH AND SPACE SCIENCE *Multiple Choice* In what year was the first “pendulum seismoscope” created

W) 1756

X) 1751

Y) 1854

Z) 1761

ANSWER: X) 1751

**Bonus**

9) EARTH AND SPACE SCIENCE *Short Answer* In what year were faults recognized as the main source of earthquakes

ANSWER: 1855

**Toss-Up**

10) EARTH AND SPACE SCIENCE *Short Answer* Do earthquakes occur on the moon?

ANSWER: Yes

**Bonus**

10) EARTH AND SPACE SCIENCE *Short Answer* What is the cause of earthquakes on the moon?

ANSWER: the tidal stresses associated with the varying distance between the Earth and Moon

**Toss-Up**

11) EARTH AND SPACE SCIENCE *Multiple Choice* Tidal waves are

W) deep water waves

X) mid-water waves

Y) non-water waves

Z) shallow water waves

ANSWER: Z) shallow water waves

**Bonus**

11) EARTH AND SPACE SCIENCE *Short Answer* What is the cause of tidal waves

ANSWER: the gravitational interactions between the Sun, Moon, and Earth

**Toss-Up**

12) EARTH AND SPACE SCIENCE *Multiple Choice* The Himalaya-Karakoram Mountain Range is

W) the world’s longest land mountain range

X) the world’s lowest land mountain range

Y) the world’s greatest land mountain range

Z) the world’s least land mountain range

ANSWER: Y) the world’s greatest mountain range

**Bonus**

12) EARTH AND SPACE SCIENCE *Short Answer* Of the 109 peaks in the world over 7,317 meters, how many are in the Himalaya-Karakoram?

ANSWER: 96

**Toss-Up**

13) EARTH AND SPACE SCIENCE *Multiple Choice* What is a measured value of an earthquake’s size?

W) magnitude

X) amplitude

Y) intensity

Z) direction

ANSWER: W) magnitude

**Bonus**

13) EARTH AND SPACE SCIENCE *Short Answer* Does the magnitude of an earthquake change by location?

ANSWER: No

**Toss-Up**

14) EARTH AND SPACE SCIENCE *Multiple Choice* In what state in the United States of America is the Wasatch range?

W) Colorado

X) Utah

Y) Wyoming

Z) New Mexico

ANSWER: X) Utah

**Bonus**

14) EARTH AND SPACE SCIENCE *Short Answer* Each fault of the Wasatch Range has the capability to produce an earthquake of what magnitude?

ANSWER: 7.5

**Toss-Up**

15) EARTH AND SPACE SCIENCE *Multiple Choice* From the years 1975-1995, how many states in the United States of America did not have any earthquakes?

W) six

X) twenty

Y) two

Z) four

ANSWER: Z) four

**Bonus**

15) EARTH AND SPACE SCIENCE *Short Answer* What four states in the United States of America did not have any earthquakes from the years 1975-1995?

ANSWER: Florida, Iowa, North Dakota, and Wisconsin

**Toss-Up**

16) EARTH AND SPACE SCIENCE *Multiple Choice* Most earthquakes occur at depths of

W) less than 80 km from the Earth’s surface

X) more than 20 km from the Earth’s surface

Y) between 10 km and 125 km from the Earth’s surface

Z) less than 5 km from the Earth’s surface

ANSWER: W) less than 80 km from the Earth’s surface

**Bonus**

16) EARTH AND SPACE SCIENCE *Short Answer* Earthquakes that occur in the middle of plates and not at plate boundaries are called

ANSWER: intraplate (earthquakes)

**Toss-Up**

17) EARTH AND SPACE SCIENCE *Multiple Choice* About how long is the San Andreas Fault System?

W) 1,200 km

X) 1,300 km

Y) 800 km

Z) 10 km

ANSWER: X) 1,300 km

**Bonus**

17) EARTH AND SPACE SCIENCE *Short Answer* Is the San Andreas Fault a single, continuous fault?

ANSWER: No

**Toss-Up**

18) EARTH AND SPACE SCIENCE *Multiple Choice* In what year did the world’s deadliest recorded earthquake occur?

W) 1952

X) 1824

Y) 1745

Z) 1556

ANSWER: Z) 1556

**Bonus**

18) EARTH AND SPACE SCIENCE *Short Answer* In what country did the world’s deadliest recorded earthquake occur?

ANSWER: China

**Toss-Up**

19) EARTH AND SPACE SCIENCE *Multiple Choice* At what depths do the world’s deepest earthquakes occur?

W) 120 km below the surface of the Earth

X) 560 km below the surface of the Earth

Y) 750 km below the surface of the Earth

Z) 1100 km below the surface of the Earth

ANSWER: Y) 750 km below the surface of the Earth

**Bonus**

19) EARTH AND SPACE SCIENCE *Short Answer* What is happening inside the Earth where the deepest earthquakes occur?

ANSWER: the Earth’s crust is being subducted into the Earth’s mantle

**Toss-Up**

20) EARTH AND SPACE SCIENCE *Multiple Choice* The Andes Mountain Range, in South America, is

W) the world’s shortest land mountain range

X) the world’s smallest land mountain range

Y) the world’s longest land mountain range

Z) the world’s biggest land mountain range

ANSWER: Y) the world’s longest land mountain range

**Bonus**

20) EARTH AND SPACE SCIENCE *Short Answer* In kilometers, how long is the Andes Mountain Range?

ANSWER: 7, 564

**Toss-Up**

21) EARTH AND SPACE SCIENCE *Multiple Choice* What state in the United States of America is most earthquake-prone state

W) California

X) Texas

Y) Alaska

Z) New York

ANSWER: Y) Alaska

**Bonus**

21) EARTH AND SPACE SCIENCE *Short Answer* On average, how often does Alaska receive a magnitude 8 or higher earthquake

ANSWER: every 14 years

**Toss-Up**

22) EARTH AND SPACE SCIENCE *Multiple Choice* When the Chilean earthquake occurred in 1960, seismographs recorded seismic waves that traveled

W) through Chile

X) through South America

Y) all around the Pacific Ocean

Z) all around the Earth

ANSWER: Z) all around the Earth

**Bonus**

22) EARTH AND SPACE SCIENCE *Short Answer* What is the phenomenon of seismic waves created by a single earthquake going all through the Earth called?

ANSWER: free oscillation (of the Earth)

**Toss-Up**

23) EARTH AND SPACE SCIENCE *Multiple Choice* The first waves of an earthquake to be detected by seismographs are

W) S waves

X) P waves

Y) Love waves

Z) T waves

ANSWER: X) P waves

**Bonus**

23) EARTH AND SPACE SCIENCE *Short Answer* P waves are also called

ANSWER: compressional waves

**Toss-Up**

24) EARTH AND SPACE SCIENCE *Multiple Choice* What type of plate boundaries are at mid-oceanic ridges?

W) divergent plate boundaries

X) subduction plate boundaries

Y) transform plate boundaries

Z) suction plate boundaries

ANSWER: divergent plate boundaries

**Bonus**

24) EARTH AND SPACE SCIENCE *Short Answer* The mid-Atlantic Ridge is an example of a

ANSWER: mid-ocean(ic) ridge

**Toss-Up**

25) EARTH AND SPACE SCIENCE *Multiple Choice* What type of volcanoes are formed at hot spots

W) stratovolcanoes

X) cinder cones

Y) shield volcanoes

Z) composite volcanoes

ANSWER: Y) shield volcanoes

**Bonus**

25) EARTH AND SPACE SCIENCE *Short Answer* Shield volcanoes usually have what type of slopes?

ANSWER: gentle (slopes)