**Elementary Round 1**

1. Linsey crash-lands on the planet Geometrica. She is rescued by the Algebrians living there, but they demand that she answers a riddle before they will let her go.

Which of the following has the greatest area?

I. circle with a diameter of 10

II. triangle with base 10 and height 10

III. square with side length 10

A. B. C. D. E.

1. The Algebrians let Linsey go, but the Trigonons immediately kidnap her afterwards. They say that they heard that she answered the Algebrians’ riddle and want her to solve one for them too. What is the remainder when 81 is divided by 7?

A. B. C. D. E.

1. Suddenly, the Factoriks come out of nowhere, saving Linsey, and agree to take her to her damaged ship and fix it. Grateful, she agrees to their request of answering a riddle.

What is the greatest common factor of 32, 96, and 160?

A. B. C. D. E.

1. The Factoriks contact Multiplins, who are willing to fix Linsey’s ship in return for one last riddle. Linsey, plain desperate to get off this planet, agrees.

What is the least common multiple of 32, 96, and 160?

A. B. C. D. E.

1. Along the way, Linsey meets the Quatrics, who are obsessed with the number 4. They are especially devoted to their sacred equation: 4 × 4 + 4 ÷ 4 – 4. Solve the Quatrics’ equation.

A. B. C. D. E.

1. Wesley’s ship is trying to escape the pull of a black hole. It moves 2 meters forward, another 4 meters forward, 10 meters backwards, then 3 meters forward. What is the ship’s displacement from its original position?

A. B. C. D. E.

1. To turn on the emergency jets, Wesley presses a hexagonal button. How many sides does a hexagon have?

A. B. C. D. E.

1. Wesley manages to just barely flee and lands on the Moon to recover from the stress. On the moon, he sees a crater in the shape of a circle with a radius of 9 yards. What is the area of this crater?

A. B. yd2 C. D. E.

1. Because Wesley no longer has any fuel, Yimo gives him half of his fuel from his full fuel tank. Wesley uses up two-thirds of this fuel by the time he arrives at Calculia and returns the remainder to Yimo, who has used up half of his own remaining fuel. If Wesley gives Yimo 2 ounces of fuel, how much fuel does Yimo have now?

A. B. C. D. E.

1. Sarah needs to input a sequence of prime numbers into her computer to open a wormhole. Which of the following is **not** a prime number?

A. B. C. D. E.

1. Nelson also needs to input a sequence, but his is a pattern. The first five numbers of his sequence are 1, 4, 7, 10, and 13. What is the sixth number?

A. B. C. D. E.

1. Nelson has 33 computers on his satellite. How many groups of 3 can he divide his computers into?

A. B. C. D. E.

1. Nelson’s spaceship is shaped like a quadrilateral with four sides that are not all the same length. What shape could his spaceship be?

A. B. C. D. E.

1. Wesley and Nelson’s spaceships travel along charted routes that go on forever without intersecting. What are these types of lines called?

A. B. C. D. E.

1. Sarah’s wormhole is falling apart, and she needs to switch to an emergency gear. Problem is, this emergency gear is locked by an equation: . What answer should she input to unlock the emergency gear?

A. B. C. D. E.

1. When Sarah looks outside her ship to observe the inside of the wormhole, she sees a question drifting past the window: *How many times can a circle’s diameter fit in its circumference?* What is the correct answer to this mysterious question?

A. B. C. D. E.

1. To distract herself from her imminent demise by wormhole, Sarah paints a beautiful depiction of Jupiter. If this painted Jupiter is a circle with a diameter of 8 inches, what is the area of the circle?

A. B. C. D. E.

1. At the end of the black hole, Sarah finds a perfect circle filled with light and void. Sarah, being the aspiring mathematician she is, decides to measure the area of the circle for scientific purposes. If the radius of the circle is 20 meters, what is the area of the circle?

A. B. C. D. E.

1. The SS Timberwolf, receiving Sarah’s distress call, immediately heads to her last location to rescue her. Along the way, they take detailed pictures of space to collect data. One of their pictures show 15 galaxies of different shapes and sizes. If the galaxies have, respectively, 12, 50, 36, 7, 50, 45, 28, 86, 67, 25, 93, 16, 38, 67, and 40 solar systems, what is the mean of the number of solar systems the galaxies have?

A. B. C. D. E.

1. On the SS Timberwolf, Katharine is bored and decides to make paper stars. She cuts them out of an outline of a five-pointed star: ☆. If each side’s length is 5 inches, what is the perimeter of the star?

A. B. C. D. E.

1. Katharine, busy making stars, forgets to anchor the SS Timberwolf’s navigation system, causing the ship to drift in a circle with an area of 25π mi2. What is the radius of this circle?

A.  B. C. D. E.

1. Katharine, who is moping after the crew learned about her navigational mistake, decides to go have some ice-cream to cheer up, but is horrified to open the food cabinet and find that Arib has already eaten a third of the astronaut ice-cream bars. She knows they had 75 ice-cream bars at the start of the expedition, and Arib is the only person who ate any. How many astronaut ice-cream bars are left?

A. B. C. D. E.

1. James thinks he spots Sarah’s ship, but realizes that it is only a random neon triangle floating in the middle of nowhere. He calculates the base of this triangle to be 7 ft and the height to be 12 ft. What is the area of this mysterious triangle?

A. B. C. D. E.

1. James finally tracks down Sarah through a set of radiation-sensitive images they’d taken to try to find her wormhole. As he calls a meeting to gather the crew, he notices that one image is rectangular, being 32 inches long by 24 inches wide. What is the area of this image?

A. B. C. D. E.

1. The crew, by measuring the levels of radiation and rate of gravity increase, estimate that Sarah has days left before she is too far gone to be saved. How many days do they have to save Sarah?

A. B. C. D. E.

1. The Earth is confirmed to be spherical, but people today continue to believe that it is flat. If the Earth is a flat square with side length of 4,000 miles, what is the area of this Flat Earth?

A. B. C. D. E.

1. As the SS Timberwolf crew plan to save Sarah, they draw a circle to represent the wormhole. If the radius of this circle is 2 feet, what is its circumference in **inches**?

A. B. C. D. E.

1. The final plan to save Sarah requires the crew to evaluate the expression . What is the answer?

A. B. C. D. E.

1. When Sarah finally wakes up after strange dreams of colorless static and unending space-time folded into a paper flower, she finds herself in a hospital bed with one last expression left on the table next to her: . What is the answer?

A. B. C. D. E.

1. Who is the Hubble Space Telescope named after?

A. B. C. D. E.

1. A long time ago in a galaxy far, far away, intelligent life patiently wait for humans to meet them. While waiting, they try to solve this equation: . What is the value of ?

A. B. C. D. E.

1. After solving the last equation, the intelligent life quickly gets bored, and do some more math. Evaluate this expression: .

A. B. C. D. E.

1. The answer is A. You’re welcome.

A. B. C. D. E.

1. What is the name of the ship that rescued Sarah?

A. B. C. D. E.

1. Who first walked on the Moon?

A. B. C. D. E.