3 Devil Round

Estimate to the nearest integer (unless specificed otherwise) the following values:

Problem 3.1. Total time (in minutes) it would take to watch all of Leonardo DiCaprio's movies.

Answer. 5621. □

Problem 3.2. Square root of the 10312020th prime number.

Answer. 13615. □

Problem 3.3. Geometric mean of the total gross of the top 20 grossing horror movies in 2020.

Answer. 1914754. □

Problem 3.4. Age (in years) of the oldest structure still in operation at Duke University.

Answer. 128. The oldest structure still in operation at Duke University is Epworth House, which opened in 1892. □

Problem 3.5. Let $V = 100$. You flip a fair coin 20 times. For each flip, if you flip a heads, then you add 20 to V, and if you flip a tails, then V becomes $\frac{1}{V}$. For example, after flipping a heads then a tails, V is $\frac{1}{120}$. Calculate the expected value of V at the end of 20 flips to three decimal places.

Answer. 40.524. □

Problem 3.6. Number of 3-pointers Zion Williamson made during his time with Duke.

Answer. 24. □

Problem 3.7. Distance, in miles, from Duke University (Durham, NC) to Duke Kunshan University (Suzhou, China), if one was to travel by foot through the Bering Strait (located between Alaska and Russia). Assume you must walk on land and that there are no travel restrictions.

Answer. 8917. □

Problem 3.8. The number of digits past the decimal point after which the digits "2020" first appear consecutively in the decimal expansion of π.

Answer. 7377. □

Problem 3.9. Total number of employees at Duke University.

Answer. 42479. ☐

Problem 3.10. Total number of downloads of the game Among Us.

Answer. 74000000. ☐