

Week 1 — Data, evidence, and statistics: Wednesday exit ticket

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Name: _____

Date: _____

Instructions

Work through each item below. Write your final response in the space provided. Show enough work that another reader can follow your reasoning.

1. A dataset records every Marvel Cinematic Universe (MCU) film in the Infinity Saga – the 23-film storyline that began with Iron Man (2008) and ended with Avengers: Endgame (2019). For each film the dataset stores: title, release date, length in hours, length in minutes, opening-weekend US gross (in millions of dollars), total US gross (in millions), and total worldwide gross (in millions).

- (a) How many cases are in this dataset, and what is one case?
- (b) How many variables are recorded for each case? List them.
- (c) For each variable, state whether it is categorical or numerical.

2. A 2013 biology study examined how much energy female frogs invest in producing eggs, and whether that investment varies with altitude. The researchers visited 11 breeding ponds across a range of altitudes in the Tibetan Plateau and, for each pond, collected measurements on a number of egg clutches. The data matrix below shows four rows from the dataset of 431 clutches.

Columns (in order): altitude in meters, latitude in degrees, egg size in mm, clutch size, clutch volume in cubic mm, body size of the mother in cm.

Row 1: 3462, 34.82, 1.95, 181.97, 177.83, 3.63. Row 2: 3462, 34.82, 1.95, 269.15, 257.04, 3.63. Row 3: 3462, 34.82, 1.95, 158.49, 151.36, 3.72. Row 4: 2597, 34.05, 2.24, 537.03, 776.25, NA.

- (a) What is one case in this dataset?
- (b) How many variables are recorded per case, and what does NA in the last row mean?

(c) Classify each variable as categorical or numerical. If numerical, state whether it is continuous or discrete.