

Can one week show a trend?

Grades 9–12 · 35–45 minutes. The 15-minute printable handout works as an introduction or a short version. The steps below extend it with the CSV, workbook, and slides. No account, special equipment, or student personal data is needed.

JR, founder of [Telemetry](#), prepared this independent draft with AI assistance. It has not been classroom-tested or reviewed by a teacher. Check its fit for your students before using it. USGS supplies the catalog records but has not reviewed or endorsed the activity.

Question and materials

August 5, 2026 has the most records in this fixed download. What does that support, and what would you need to test a longer-term trend?

Published files: [15-minute student handout](#); [editable teaching slides](#); [USGS CSV](#); [data dictionary](#); [spreadsheet with formulas](#).

Source. CSV downloaded September 25, 2026 from the [USGS ComCat database](#) through its FDSN API: August 1–7, 2026 UTC, reported magnitude ≥ 4.5 , ascending time. This snapshot has 155 distinct event IDs, all marked reviewed at download. Catalog records may change. SHA-256: 6493902079340c728403aa09928826a377dbfb040f78ad51d60f2ad30a7b0acb.

Suggested sequence

1 · Read a row (5 min). A row is one cataloged event, not a person or a day. Locate time, mag, id, and status. The time is UTC; the selection excludes smaller magnitudes and events absent from the catalog.

2 · Count by day (10 min). Use the workbook's Daily counts sheet to group the 155 rows by UTC day. Inspect a COUNTIF formula, then draw seven bars for magnitude ≥ 4.5 . Label the axis as catalog records; compare with slide 3.

3 · Change the filter (8 min). Compare the workbook's 5.0+ column with slide 4. In a copy, change one COUNTIFS criterion from ≥ 5.0 to ≥ 5.5 ; predict whether its count rises or falls. The filtered events are a subset, not earthquakes that disappeared.

4 · Challenge a headline (10 min). For "Earthquakes are getting more common," ask for one observation supported by these rows and one reason seven days cannot establish a long-term trend.

5 · Exit (5 min). Each pair writes a claim with a count, threshold, period, and limit. Do not collect student work or personal data in an external service.

Answers and limits

Checked counts

UTC date	1	2	3	4	5	6	7	Total
Magnitude ≥ 4.5	28	28	12	15	42	14	16	155
Magnitude ≥ 5.0	8	8	3	2	11	3	4	39

Handout question 1. August 5 is the maximum under both rules: 42 records at 4.5+ and 11 at 5.0+. These are counts from this catalog snapshot, not every earthquake that occurred worldwide.

Questions 2 and 3. A selected week cannot show a long-term increase. Raising the threshold to 5.0 filters existing records; it does not change the events that occurred. If students say the earthquakes “disappeared,” point to a row between 4.5 and 5.0 and ask which filter includes it.

Workbook check. The 5.0+ counts for August 1–7 are 2, 2, 0, 1, 3, 0, 0. A higher cutoff can only retain or remove rows from this same file; it cannot add events.

Question 4. Before comparing another year or region, keep the same threshold and magnitude method, intervals of equal length, and comparable geographic coverage. Check detection capability, catalog completeness, time zone, and later revisions too.

What to listen for

Can students explain that the 5.0+ bars are a subset of the 4.5+ bars? If they use the highest day as proof of a trend, ask them to name the period and propose a longer comparison. This probes the selection rule, not just which bar is tallest.

A possible conclusion

“Among USGS worldwide catalog records with reported magnitude ≥ 4.5 from August 1–7, 2026 UTC, August 5 has the most records (42). This one week cannot show whether earthquake frequency is increasing over time.”

Limits of the evidence

The file includes different reported magnitude methods; this activity does not teach conversion between them. Detection and completeness vary with magnitude, place, and time. Reviewed describes the status of this download, not a complete or immutable catalog. These counts do not establish causes, local risk, or damage.

The linked data dictionary explains each column. The activity uses USGS files without sending those records to Telemetry. For corrections, email hi@telemetry.sh without attaching student work or personal data.

Updated page and files: telemetry.sh/learn/earthquake-week.