

Reading Dinosaur Evidence

A guided lesson in geological time, numerical scale and the difference between observation and interpretation.

Suggested age	10-14 years, with teacher support
Suggested duration	45-60 minutes for pages 2-4; optional page 5 adds 20-30 minutes
Before you start	Decimal subtraction; percentages with scaffolding or a calculator

Learning objectives

1. Order the three periods and calculate their approximate durations.
2. Compare reference body lengths and explain why length is not mass.
3. Distinguish a fossil observation, an interpretation and a limitation.
4. Support a short claim with an identifiable museum or research source.

Preparation and pacing

Print this pack plus the Timeline and Size Chart, or project them. Plan 5 minutes to introduce evidence, 12 for time, 15 for scale, 13 for evidence writing and 5 for discussion. Adjust to the class; these are planning suggestions, not tested outcomes.

Pages 2-4 work offline with the two charts. Page 5 needs a web connection or teacher-prepared source extracts. The packet is a teaching supplement and does not claim curriculum alignment or independent specialist review.

Sources / continue reading

[Extinct Atlas: downloads and teaching notes](#)

[ICS chart, June 2026](#) | [NHM Dino Directory](#)

Build a Dinosaur Timeline

Use the printable Timeline. Dates are in Ma: millions of years ago.

1A Put the periods in order

Write 1 (oldest), 2 and 3 beside: Cretaceous; Triassic; Jurassic.

1B Calculate duration

Subtract each younger boundary age from the older boundary age. Show your calculation for all three periods. Which lasted longest?

1C Could these dinosaurs meet?

Stegosaurus lived in the Late Jurassic; T. rex lived in the Late Cretaceous. Explain why they could not meet, using the period order rather than a movie scene.

Sources / continue reading

[ICS chart, June 2026](#) | [NHM: Stegosaurus](#) | [NHM: Tyrannosaurus](#)

Measure the Uncertainty

Use the printable Size Chart. Treat values as references, not exact limits.

2A Compare two dinosaurs

Choose two reference lengths. Calculate the difference in metres and as a percentage of the smaller value: $(\text{larger} - \text{smaller}) / \text{smaller} \times 100$. You may use a calculator.

2B Length is not mass

Why could a long, slender animal weigh less than a shorter animal with a broad body? Name one other kind of information needed to estimate mass.

2C Write an honest caption

Rewrite: 'Spinosaurus was exactly 14 metres long.' Include the source, an approximation and one limitation.

Sources / continue reading

[NHM: Spinosaurus](#) | [NHM: Tyrannosaurus](#) | [NHM: Triceratops](#)

Other values: use the linked names on the companion Size Chart.

From Fossil to Claim

Museum and research examples, paraphrased for discussion. An observation does not settle every interpretation.

Observation	Possible interpretation	Limitation
Tooth marks occur on fossil bone. [1]	Another animal bit the bone.	Marks alone may not distinguish hunting from scavenging.
Small grooves occur on Stegosaurus plates. [2]	Blood vessels may have occupied the grooves.	The original function of the plates remains debated.
Bone fragments occur in some coprolites. [3]	The producer had consumed bone.	Identifying the producer can be difficult.

3A Write an evidence paragraph

Choose one row. Write a claim, name the observation and source that support it, then explain one thing the observation cannot establish.

Sources / continue reading

[1] [NHM: Tyrannosaurus](#)
[2] [NHM: Stegosaurus](#)
[3] [Chin et al. 1998: coprolite study \(abstract\)](#)

Build a Species Evidence Card

Start with Stegosaurus specimen Sophie, or another source chosen by your teacher. Record 'not found' when information is absent; do not guess.

Scientific name	
Geological period / source	
Country / locality of discovery	
Specimen or collection number	
One size estimate / uncertainty	
Museum record or paper URL	
Observation / interpretation	
What is still uncertain?	

Source check: is the number about this individual or a general species estimate? Is the page a collection record, research paper or summary? A source link is evidence to examine, not an institutional endorsement of this worksheet.

Sources / continue reading

[NHM collection: PV R 36730](#)

[Maidment et al. \(2015\), DOI: 10.1371/journal.pone.0138352](#)

[NHM: Sophie Q&A](#); | [Extinct Atlas: specimen-linked starting points](#)

Answer Guide and Sources

Accept other defensible answers with a clear method, source and limitation.

1A-1B Triassic, Jurassic, Cretaceous. $251.9 - 201.4 = 50.5$ million years; $201.4 - 143.1 = 58.3$ million years; $143.1 - 66.0 = 77.1$ million years. The Cretaceous is longest. These use rounded boundaries. [1]

1C Stegosaurus lived in the Late Jurassic, long before Late Cretaceous T. rex. Their known fossil ages do not overlap. [2, 3]

2A Example: T. rex 12 m and Triceratops 9 m. Difference = 3 m; $3 / 9 \times 100 = \text{about } 33.3\%$. Use the smaller value as the denominator. [3, 4]

2B-2C Mass also depends on body volume and tissue density. Caption: 'The NHM directory gives Spinosaurus a reference length of about 14 m; incomplete skeletons make total length an estimate.' [5]

3A Some coprolites contain bone fragments, supporting the inference that their producer consumed bone. This does not by itself identify the species that produced them. [6]

Extension Sophie: Stegosaurus stenops; Late Jurassic, Morrison Formation, Wyoming, USA; NHMUK PV R 36730. Published length is about 5.5-6 m for this individual, not a genus-wide maximum. Incomplete skeletal maturity supports a not-fully-grown interpretation; exact age at death is unknown. [7, 8]

Assessment: look for a correct comparison, named source, observation/interpretation distinction and a stated limitation. Do not reward false precision.

Sources / continue reading

[1] [ICS 2026/06](#) | [2] [NHM Stegosaurus](#) | [3] [NHM T. rex](#)
[4] [NHM Triceratops](#) | [5] [NHM Spinosaurus](#) | [6] [Chin et al. 1998 \(abstract\)](#)
[7] [NHM PV R 36730](#); [Maidment et al. 2015 \(PLOS ONE\)](#) | [8] [NHM Sophie Q&A](#)