THE ADVENTURES WITH FRISBEE ROB

The Long Way Down

Adventure 001: Isaac Newton

COMPLETE TEACHER GUIDE SET

GRADE 5

ELAL	Math	Science	Social Studies	PE & Wellness

Wonder in Motion

Alberta K–6 Curriculum · Adventure 001

THE ADVENTURES WITH FRISBEE ROB

The Long Way Down

Adventure 001: Isaac Newton

GRADE 5

ENGLISH LANGUAGE ARTS and LITERATURE

Teacher Guide

Perspective Shift: Evidence Changes the View

GRADE	SUBJECT	TIME
Grade 5	**ELAL**	**2 × 30 minutes**

CENTRAL QUESTION

How does story evidence help us interpret how Rob’s and Newton’s perspectives develop or change?

Wonder in Motion

Lesson at a Glance

Teachers with a continuous 60-minute block may teach both sessions together.

Story connection	Rob begins with a familiar frisbee and a puzzling observation. Newton begins with an unfamiliar object and his own claim about returning to Earth. Their shared observations influence what each notices and how each responds.
ELAL focus	Analyzing character perspectives, selecting and summarizing evidence, considering context, evaluating evidence, and monitoring an interpretation.
Learning intention	We are learning to interpret a character's perspective, trace how it develops, and support our interpretation with relevant evidence from across the text.
Core experience	Across two sessions, students build Perspective Tracks for Rob and Newton, then rehearse, evaluate, refine, and share interpretations supported by evidence.
Flexible use	Session 1 is a complete core lesson and can be used independently. Session 2 continues the same Wonder Lab through rehearsal, evaluation, refinement, sharing, and deeper questioning.
Use after reading	Read Adventure 001 before beginning. Keep the story available for close rereading.
Story context	Isaac Newton was a real historical person. Interpret the fictional character as presented in this Adventure rather than making unsupported claims about the historical person.

Optional Teacher-Spoken Success Indicators

I can describe a character's perspective using accurate language.
I can select evidence showing how a perspective develops.
I can explain why one piece of evidence is stronger than another.
I can revise an interpretation when evidence points in another direction.

How to Use This Guide

THE GUIDE IS A TOOL, NOT A SCRIPT

This guide is designed to support responsive teaching rather than prescribe every word or action.

Session 1 is a complete 30-minute Grade 5 Comprehension lesson and can be taught independently.

Session 2 continues the same perspective analysis and evaluation through rehearsal, refinement, sharing, and questioning. It does not introduce additional curriculum.

Follow productive student thinking and conversation while protecting the central question, selected Comprehension KUSP, perspective analysis, context, evidence selection, evaluation, and self-monitoring, meaningful participation, and approximate lesson timing.

Adjust the amount of text, grouping, response mode, language support, and pacing to meet the needs of the learners in front of you while preserving the comprehension goal.

Keep interpretations grounded in the fictional Adventure. A comic or vivid moment may be relevant evidence, but it should not be used to label the whole character or make unsupported claims about the historical Newton.

The goal of the second session is not to do more. It is to give students enough time to think, try, improve, and communicate what they understand.

Curriculum Alignment

Organizing Idea	Comprehension: Text comprehension is supported by applying varied strategies and processes and by considering both particular contexts and universal themes.
Guiding Question	How does the interpretation of evidence support comprehension of texts?
Learning Outcome	Students analyze information, contexts, and perspectives using a variety of comprehension strategies.
Assessment Focus	Gather formative evidence through perspective analysis, evidence selection, summarizing, evaluating, connection making, and self-monitoring.

Selected KUSP for These Lessons

KUSP element	Selected curriculum learning	What it looks or sounds like
Knowledge	Comprehension strategies for complex texts include predicting, inferring, making connections, summarizing, synthesizing, and evaluating. Evaluating involves making judgments based on textual evidence. Connections with texts can provide evidence, including text to self, text to text, and text to world. Perspectives include attitudes, beliefs, or ways of thinking and are influenced by cultures, experiences, and interests.	Students use more than one strategy to identify a perspective and distinguish evidence from assumption or general background knowledge.
Understanding	Comprehension is enhanced through critical-thinking strategies that support interpretation and	Students explain how evidence and context shape an interpretation, then evaluate whether the evidence is

KUSP element	Selected curriculum learning	What it looks or sounds like
	management of information. Comprehension can be enhanced when connections are supported by summarized evidence. Perspectives revealed in texts enhance comprehension and enrich understandings of the world.	relevant and sufficient.
Skills & Procedures	Use comprehension strategies before, during, and after reading. Evaluate the effectiveness of strategies. Monitor comprehension. Respond by summarizing main ideas and providing supporting evidence from self, other texts, or the world. Explore how varied perspectives influence personal perspectives. Examine how a character's interests, experiences, or perspectives influence thinking, feeling, or acting. Compare perspectives of characters and propose alternatives.	Students build two Perspective Tracks, summarize key evidence, compare interpretations, rehearse a claim with a countercheck, and revise when needed.

Curriculum source: Government of Alberta, English Language Arts and Literature (K–6) Curriculum, Comprehension, pp. 55–57. [View the Alberta program of study]

Teacher Preparation

STANDARD PATHWAY

Use these two 30-minute sessions after students have heard Adventure 001: The Long Way Down.

Session 1: Track the Perspective is the core lesson. Students build parallel Perspective Tracks for Rob and Newton and examine how context and evidence shape interpretation.

Session 2: Evaluate the Perspective continues the same Wonder Lab. Students rehearse a perspective claim, test the relevance and sufficiency of evidence, consider an alternative or limitation, and revise their interpretation.

If only one 30-minute period is available, teach Session 1.

If a continuous 60-minute block is available, teach both sessions with a brief transition or movement break.

Flexible Use of the Guide

Core Pathway | 30 minutes

Teach Session 1: Track the Perspective.

Students experience:

Get Curious → Model → Build → Think It Through

This is a complete Grade 5 Comprehension lesson and provides opportunities to gather formative evidence of the selected KUSP through perspective analysis, evidence selection, summarizing, evaluation, and self-monitoring.

Full Wonder Lab | 2 × 30 minutes

Teach both sessions.

Students experience the complete Wonder Lab cycle:

Model → Build → Rehearse → Share

Session 2 deepens the same learning rather than adding additional curriculum. Students evaluate, refine, and communicate the same perspective analysis rather than adding another curricular target.

It also gives students time to deepen story-based questions through:

Puddle → Pond → Lake → Ocean

Continuous Block | ~60 minutes

If scheduling allows, Sessions 1 and 2 may be taught consecutively.

Take a brief transition after the first Think It Through. Reconnect may be shortened; protect the time needed for evidence evaluation and revision.

Materials

A copy of Adventure 001: The Long Way Down
Whiteboard or chart paper
Two Perspective Tracks labelled Rob and Newton, each with Beginning / Interaction / Ending
Optional evidence cards
Evidence labels: Strong, Useful but Limited, Does Not Support This Claim
Optional strategy cards

Before Students Begin

Mark passages showing Rob’s opening assumptions, changing attention, and final question.

Mark Newton’s unfamiliarity with the frisbee, comparison of the three journeys, “I never stopped,” and final response.

Prepare one plausible but too broad interpretation, such as “Newton knows everything.”

Keep the Perspective Tracks available for Session 2.

Use professional judgment to choose the Session 2 grouping—partners, groups of three, or whole group—that best supports evidence-based discussion and participation.

Historical care
Evidence about Newton's perspective must come from the fictional Adventure. Historical claims about Isaac Newton require a separate reliable source and are not necessary for this core lesson.

Substitutions

Use short teacher-read excerpts, highlighted evidence, perspective word cards, or visual track markers. Reduce the number of evidence pieces while preserving the expectation that students identify a perspective, trace its development, and evaluate whether the evidence is relevant and sufficient.

Useful Vocabulary

Pre-teach essential vocabulary through an explicit vocabulary routine, providing students with opportunities to build meaning, interact with the words, and use them in context before and throughout the lesson.

Comprehension words
perspective • context • evidence • interpretation • relevant • sufficient • summarize • synthesize • evaluate • self-monitor

Analysis words
attitude • belief • assumption • curiosity • unfamiliar • influence • develop • shift • alternative

A perspective is an attitude, belief, or way of thinking about events or information.

Context is the background that shapes how a person, event, idea, or text is understood.

Evidence is relevant when it connects directly to a claim and sufficient when there is enough to support the interpretation.

Supporting Our Diverse Learners

Use these supports proactively while preparing and teaching the two sessions.

Make it accessible	Use two clearly differentiated tracks, short excerpts, and a limited set of perspective words. Focus on one character or one point on the track before comparing across the Adventure.
Support language	Model At first, the character views..., This develops when..., The evidence suggests..., and A limit of this interpretation is.... Provide perspective vocabulary and allow oral rehearsal before extended explanation.
Offer response choices	Accept speaking, arranging evidence, annotating a track, drawing, dictation, communication devices, or assistive technology.
Support participation	Offer roles such as perspective namer, evidence selector, context connector, evaluator, revision reporter, or countercheck partner. Students may contribute one evidence judgment rather than the complete interpretation.

Reduce memory load	Keep the tracks visible and work from marked passages. Limit the number of evidence cards considered at one time and allow students to point to a location instead of recalling exact wording.
Support rehearsal	Allow students to practise a perspective claim orally before adding all supporting evidence. Students may rehearse the same interpretation after an evidence check rather than continually developing new claims.
Preserve the learning	Change the amount of evidence, language scaffold, grouping, or response mode—not the expectation that interpretation be grounded and evaluated. Students still connect perspective with relevant evidence and context.

KUSP Assessment: Evidence to Notice

FORMATIVE ASSESSMENT

Gather evidence through observations and conversations across both sessions.

Session 1 provides sufficient opportunities to gather evidence of the selected KUSP.

Session 2 gives students additional opportunities to demonstrate, refine, and communicate their understanding.

These lessons do not assess the complete learning outcome.

Evidence source	Listen or look for	Possible teacher note
Observation	Listen or look for: Student places evidence at an appropriate point on a Perspective Track, distinguishes development from added plot information, and uses context to interpret the evidence.	"Places the poor-hat moment under Newton's unfamiliar first view rather than treating it as his whole identity."
Conversation	Listen or look for: Student explains how a perspective develops, evaluates whether evidence is relevant or sufficient, and considers a reasonable alternative or limitation.	"Explains that the narrator explicitly signals Rob's changed attention and uses the final Moon question as additional evidence of deepening curiosity."
Class product	Listen or look for: Perspective Tracks show evidence from across the Adventure and support a precise interpretation of development, continuity, or influence.	"Uses opening, interaction, and ending evidence to show that Rob's perspective deepens while avoiding the claim that he now fully understands gravity."

The Two-Session Flow

Session 1 — Track the Perspective | 30 minutes

Time	Section	Student experience
~5 min	**Get Curious**	Student experience Compare Rob’s and Newton’s first views of the same frisbee. Teacher move Establish that perspective is shaped by context, experience, and available information.
~5 min	**Wonder Lab: Model**	Student experience Trace Rob’s perspective and evaluate the strength of selected evidence. Teacher move Distinguish strong evidence from vivid but limited details and model precise perspective language.
~15 min	**Wonder Lab: Build**	Student experience Build parallel Perspective Tracks for Rob and Newton using evidence from the beginning, interaction, and ending. Teacher move Ask whether each clue shows change, deepening, continuity, or simply reveals more of a perspective.
~5 min	**Think It Through**	Student experience Reflect on how context and evidence shape interpretation. Teacher move Require students to explain why their perspective wording fits the evidence and where uncertainty remains.

Session 2 — Evaluate the Perspective | 30 minutes

Time	Section	Student experience
~5 min	**Reconnect**	Student experience Revisit the tracks and reconstruct why key evidence matters. Teacher move Make students explain the function of evidence rather than simply replace a missing card.
~8 min	**Wonder Lab: Rehearse**	Student experience Develop a perspective interpretation with evidence, reasoning, and a countercheck. Teacher move Use flexible grouping and require both relevant evidence and a

Time	Section	Student experience
		reasonable limit or alternative.
~9 min	**Wonder Lab: Share**	Student experience Compare supported interpretations and evaluate the strength of evidence. Teacher move Ask the audience to respond to evidence and reasoning rather than vote on a preferred interpretation.
~3 min	**Think It Through**	Student experience Reflect on perspective development and the comprehension strategies used. Teacher move Return to the central question and distinguish a perspective changing from the reader simply learning more about it.
~5 min	**Keep Wondering**	Student experience Generate and deepen perspective-based questions grounded in the Adventure. Teacher move Keep inquiry focused on the fictional characters and the evidence available in the story.

Session 1 — Track the Perspective

Get Curious | 5 minutes

Display the frisbee.

Compare:

Rob handles and throws it confidently; it is familiar.
Newton studies it, looks through the middle, balances it, and tries it as a hat; it is unfamiliar.

Ask:

- How does each character initially view the same object?
- Which experiences or information influence those views?
- What evidence tells us it is familiar to Rob?
- What evidence tells us it is unfamiliar to Newton?
- Does unfamiliar mean foolish?
- How can humour reveal curiosity rather than lack of intelligence?

Teacher move
Establish a respectful evidence rule: interpretations describe a perspective in context and do not use one comic moment to label an entire character.

Model | 5 minutes

Model Rob's Perspective Track.

Beginning evidence
Rob enjoys throwing the frisbee and asks why it does not fall right away.

Initial interpretation
Rob sees the frisbee as familiar and fun, but its unusual path creates a problem he wants to understand.

Later evidence
After the three journeys, Rob notices the breeze, birds, leaves, and frisbee as though seeing familiar things for the first time.

Developed interpretation
Rob's perspective expands from using the frisbee to closely observing patterns of movement.

Evaluate:

> *"The evidence is strong because the narrator explicitly describes a change in Rob's attention. I should not claim he now fully understands gravity because the ending shows continued uncertainty."*

Teacher move
The model should demonstrate that one strong clue can be useful without representing the character's entire perspective. Evaluate evidence in relation to the exact claim.

Build | 15 minutes

Build both tracks.

ROB

Beginning
The frisbee is familiar.
Rob recognizes a gap between what he expects gravity to do and what he observes.

Interaction
He asks, "Even this?"
Comparing three paths shifts his attention from outcome to how movement happens.
His conversation with Newton validates continued questioning.

Ending
He applies the idea to the Moon.
He leaves without a complete answer.
His perspective on ordinary motion has deepened.

NEWTON

Beginning
The frisbee is unfamiliar.
He explores it through close observation and playful testing.
He begins with "Everything returns to Earth."

Interaction
The frisbee's curved return and leaf's drifting path complicate a simple comparison with the apple. He reframes the observation: all returned, but each followed a different path.

Ending
"I never stopped" presents questioning as ongoing.
His smile and silence may indicate respect, thoughtfulness, uncertainty, or a desire for Rob to continue thinking.

Evaluate evidence as:

Strong
Useful but Limited
Does Not Support This Claim

FACILITATION PROMPTS

- What perspective word accurately describes this moment?
- How might experience influence the character's view?
- Which clue shows development rather than simply plot?
- Is this evidence relevant?
- Do we have enough evidence?
- What alternative interpretation could fit the final silence?
- What evidence would help choose between alternatives?

Teacher move
During Build, ask students to explain whether each new clue changes the perspective, deepens it, confirms it, or simply makes it more visible. Avoid forcing every track into a dramatic change narrative.

Think It Through | 5 minutes

- How did context shape Rob's opening perspective?
- How did Newton's unfamiliarity create a different view?
- Which evidence most clearly shows Rob developing?
- Does Newton's perspective change, deepen, or become more visible?
- What evidence supports your wording?
- How do the characters influence one another?

Sample Response Guidance

Possible response
"Rob begins by seeing the frisbee as familiar and fun, but after comparing the three journeys he starts paying closer attention to ordinary movement. The narrator directly describes that change in attention."
"Newton's perspective on the frisbee develops from unfamiliar curiosity to a more thoughtful comparison of how the apple, frisbee, and leaf return. The hat joke is useful evidence of unfamiliarity, but it does not define him."
"Newton's final silence could show thoughtfulness, uncertainty, or a choice to leave Rob with the

Possible response
question. The evidence supports more than one interpretation, so I would not state one as certain.”

Look for precise perspective language, summarized evidence from more than one point in the Adventure, and recognition of what the evidence does and does not establish.

Session 1 Closing

Tell students:
“Today we tracked how perspective is revealed and developed through evidence. We also noticed that one funny or dramatic detail should not become our entire interpretation of a character.”

> *“Next time, we’ll test our perspective claims, compare evidence, and revise when the story points in another direction.”*

If Session 1 is the only lesson being taught, finish by asking:
“What is one piece of evidence that best helps you understand Rob’s or Newton’s perspective, and why?”

Session 2 — Evaluate the Perspective

Reconnect | 5 minutes

Return to the tracks.

Remove one piece of evidence from each.

Ask students to identify what is missing and explain why the evidence matters.

Then ask:

- Which evidence is strongest on each track?
- Which piece is useful but limited?
- Which claim would become weaker without a particular clue?

Teacher move
Reconnect should reactivate why each piece of evidence matters. Ask students to distinguish “I remember this happened” from “This helps support the perspective because...”.

Rehearse | 8 minutes

Pairs choose Rob or Newton.

Use this sequence:

Claim
Describe the perspective.

Development
Explain how it deepens, shifts, or influences action.

Evidence
Summarize two clues from different parts.

Reasoning
Explain how the clues support the interpretation.

Countercheck
Name an alternative or a limit.

Partner B asks:

- Is that evidence relevant?
- Is there enough evidence?
- Does another clue complicate the claim?
- Are you describing the fictional character rather than making a historical claim?

Students revise if needed.

FACILITATION PROMPTS

- What is the perspective claim?
- Which evidence is strongest?
- Is the evidence relevant to the exact claim?
- Do we have enough evidence?
- What alternative or limitation should the speaker consider?
- What could be revised before sharing?

Teacher move
Use partners, groups of three, or whole-group rehearsal based on readiness. The goal is a clearer, better-supported interpretation—not a longer one.

Share | 9 minutes

Invite pairs to share an interpretation and strongest evidence.

Audience identifies:

the perspective claim
evidence of development
the strongest support
one reasonable limit or alternative

Compare Rob and Newton.

Ask:

- Which part of the claim is most strongly supported?
- How did context shape the initial view?
- What does the interaction add?
- Does the ending resolve or deepen the perspective?
- How did evaluation improve the interpretation?

Teacher move
During Share, ask the audience to identify the evidence that carries the most weight and the language that appropriately limits the claim.

Think It Through | 3 minutes

- What is the difference between a perspective changing and the reader simply learning more about it?
- How did evidence help us decide?
- Which strategy most strengthened comprehension?

Teacher move

Return to the central question and ask which strategy—rereading, summarizing, comparing, or evaluating—most improved the interpretation.

Keep Wondering | ~5 minutes

Questions can focus on one detail, connect several details, or invite deeper thinking across the Adventure.

PUDDLE

A question that can usually be explored by returning to one clear story detail.

- What does Rob initially notice about the frisbee?
- What does Newton do when the frisbee is unfamiliar to him?
- What words describe Rob's attention later in the Adventure?

POND

A question that connects a few story details.

- How do Rob's and Newton's first reactions to the frisbee differ?
- What evidence shows that Rob's perspective begins to deepen?
- What clues can support different interpretations of Newton's silence?

LAKE

A question that requires thinking across several parts of the Adventure.

- How do Rob and Newton influence one another's thinking?
- How does Rob's perspective at the end differ from his perspective at the beginning?
- Does Newton's perspective change, deepen, or simply become more visible across the Adventure?

OCEAN

A deeper story-based question that may support more than one thoughtful, defensible answer.

- Whose perspective changes most during the Adventure, and what evidence supports your interpretation?
- How would the meaning of the Adventure change if we experienced the same events entirely from Newton's point of view?
- What does the Adventure suggest about how another person's perspective can change what we notice?

Invite Student Questions

Ask:
"What are you still wondering about this Adventure?"

Invite students to generate story-based questions. Choose several and ask:
"Does this feel like a Puddle, Pond, Lake, or Ocean question?"
There does not need to be one perfect classification.

FACILITATION PROMPTS

- Is your question about one perspective or a comparison?
- Which evidence from the beginning, interaction, or ending would help?
- Could the same clue support more than one interpretation?
- What historical or personal assumptions should we avoid adding?
- How could we deepen the question by asking how perspective develops across the Adventure?

Teacher move
A deeper question does not need to move into another subject or introduce information students have not encountered. Depth comes from noticing, connecting, interpreting, and wondering more deeply about the story itself.

Close with one student-generated question that the class would like to keep wondering about.

> *"Every adventure begins with a question. Keep wondering."*

Likely Misconceptions and Helpful Responses

If students...	Try this teacher response
If students treat perspective as a simple emotion:	"An emotion may be part of it. What way of thinking, belief, assumption, or interest shapes the response?"
If students label Newton as foolish because of the hat joke:	"What other evidence shows how he examines the object?"
If students assume every new detail proves character change:	"Did the perspective change, or did the text reveal more of it?"
If students choose vivid but irrelevant evidence:	"How does this clue support the exact perspective claim?"
If students make historical claims from the fictional Adventure:	"What can we say about the character in this story?"
If students treat all evidence as equally strong:	"Which clue most directly supports your claim, and which is only useful but limited?"
If students assume one interpretation must defeat all alternatives:	"Could another interpretation account for the same evidence? What would distinguish them?"

If students...	Try this teacher response
If students move beyond the Adventure during Keep Wondering:	“What perspective or story evidence can anchor the question?”

Use the Evidence Next

If a student names traits rather than perspective:
Ask what the character believes, notices, assumes, values, or expects.

If a student selects one clue:
Ask for another point showing continuity, development, or change.

If a student overstates change:
Offer develops, deepens, shifts, becomes visible, and influences.

If a student ignores context:
Compare Rob’s familiarity with the frisbee and Newton’s unfamiliarity.

If a student has evidence but cannot evaluate it:
Use Strong / Useful but Limited / Does Not Support This Claim.

If a student evaluates evidence independently:
Invite a competing interpretation or ask what evidence would weaken the current claim.

If a student generates mostly Puddle questions:
Ask them to compare perspectives across two or more story moments.

If a student communicates through a visual track:
Treat accurate evidence placement and relationships as substantive assessment evidence and invite an accessible explanation of one connection.

Optional ELAL Extensions

Use these only when they naturally support classroom learning. They are not required parts of the two-session experience.

Evidence Ranking

Choose one perspective claim from the lesson. Students rank selected clues from strongest to weakest support and justify the order. Discuss how a vivid detail can be memorable without being the most relevant evidence.

Alternative Interpretation

Develop two plausible readings of Newton’s final silence. Students identify the evidence each interpretation uses, where the evidence overlaps, and what remains uncertain. The goal is not to force one final answer.

Perspective Comparison

Compare Rob's perspective at the beginning, after the three journeys, and at the ending. Students identify what changes, what remains consistent, and which evidence most clearly signals development.

Context Check

Choose one character moment and list only the context supplied by the Adventure. Students identify which interpretations that context supports and which claims would require information the story does not provide. This keeps the extension fully grounded in the text.

Every adventure begins with a question.
Keep wondering.

THE ADVENTURES WITH FRISBEE ROB

The Long Way Down

Adventure 001: Isaac Newton

GRADE 5

MATHEMATICS

Teacher Guide

Same Area, Different Boundary

GRADE	SUBJECT	TIME
Grade 5	Mathematics	2 × 30 minutes

CENTRAL QUESTION

How can rectangles have the same area while having different perimeters?

Wonder in Motion

Lesson at a Glance

Story connection	The Long Way Down repeatedly invites students to notice relationships that are simultaneously alike and different. The apple, frisbee, and leaf all return, but their journeys differ. Grade 5 students investigate a mathematical relationship with the same flavour: rectangles can contain equal area while having different boundaries.
Math focus	Standard units of area, rectangle area, perimeter, equal-area rectangles, factor pairs, comparing perimeters, and recognizing that among rectangles with the same area, the square has the least perimeter.
Learning intention	We are learning to create and compare rectangles with equal area and explain how and why their perimeters can differ.
Core experience	Across two 30-minute sessions, students build multiple rectangular Journey Zones with a fixed area, calculate and compare perimeters, organize results, identify patterns as dimensions become more balanced, rehearse claims about least perimeter, and share evidence supporting the square relationship.
Flexible use	Session 1 is a complete core lesson and can be used independently. Session 2 continues the same Wonder Lab by giving students additional time to rehearse, refine, share, and deepen their mathematical thinking. Teachers with a continuous 60-minute block may teach both sessions together.
Use after reading	Read Adventure 001: The Long Way Down before beginning. The story reading is separate from the Mathematics sessions.
Story context	Isaac Newton was a real historical person. Rob's visit, their conversation, and the events they experience together are imaginative parts of the story.
Important mathematical distinction	The Journey Zones are mathematical models inspired by the Adventure's "same but different" comparison. They do not represent actual areas occupied by the story objects or their flight paths.

Optional Teacher-Spoken Success Indicators

- I can express rectangle area using an appropriate square unit.
- I can determine the perimeter of a rectangle.
- I can create different rectangles with the same area.
- I can explain why equal-area rectangles can have different perimeters.
- I can use evidence to describe the rectangle with the least perimeter for a given area.

How to Use This Guide

THE GUIDE IS A TOOL, NOT A SCRIPT

This guide is designed to support responsive teaching rather than prescribe every word or action.

Session 1 is a complete 30-minute Grade 5 Measurement lesson and can be taught independently.

Session 2 continues the same learning through rehearsal, refinement, sharing, and questioning. It does not introduce additional curriculum.

Follow productive student thinking and conversation while protecting the central question, selected Measurement KUSP, meaningful participation, and approximate lesson timing.

Adjust the target area, number of factor pairs, amount of computation, grouping, response modes, and pacing to meet the needs of the learners in front of you.

Do not allow the lesson to become primarily arithmetic practice. The mathematical focus is the relationship among fixed area, changing dimensions, and changing perimeter.

The goal of the second session is not to do more.

It is to give students enough time to model, calculate, compare, identify patterns, test claims, improve explanations, and communicate what they understand.

Curriculum Alignment

Organizing Idea	Measurement: Attributes such as length, area, volume, and angle are quantified by measurement.
Guiding Question	In what ways can area be communicated?
Learning Outcome	Students estimate and calculate area, using standard units.
Assessment Focus	Gather formative evidence of selected Grade 5 Measurement KUSP through students' use of standard area units, calculation of rectangle area, comparison of perimeters among equal-area rectangles, and explanations of the least-perimeter relationship. Session 1 provides sufficient opportunities to gather evidence of the selected KUSP. Session 2 offers additional opportunities for students to demonstrate and communicate their understanding. These lessons do not assess the complete learning outcome.

Selected KUSP for These Lessons

KUSP element	Selected curriculum learning	What it looks or sounds like
Knowledge	Area is expressed in standard units derived from standard units of length,	Students use appropriate square units and recognize that the same target

KUSP element	Selected curriculum learning	What it looks or sounds like
	including square centimetres, square metres, and square kilometres. A square centimetre is an area equivalent to the area of a square measuring 1 centimetre by 1 centimetre. A square metre is an area equivalent to the area of a square measuring 1 metre by 1 metre. A square kilometre is an area equivalent to the area of a square measuring 1 kilometre by 1 kilometre. Among all rectangles with the same area, the square has the least perimeter.	area may be represented by rectangles with different dimensions.
Understanding	Area can be expressed in various units according to context and desired precision. Rectangles with the same area can have different perimeters.	Students explain that preserving the area does not require preserving the boundary length and distinguish the attributes being measured.
Skills & Procedures	Relate a centimetre to a square centimetre. Relate a metre to a square metre. Relate a square centimetre to a square metre. Express the relationship between square centimetres, square metres, and square kilometres. Justify the choice of square centimetres, square metres, or square kilometres as appropriate units to express various areas. Estimate an area by comparing to a benchmark of a square centimetre or square metre. Express the area of a rectangle, using standard units, given the lengths of its sides. Compare the perimeters of various rectangles with the same area. Describe the rectangle with the least perimeter for a given area. Solve problems involving perimeter	Students construct or represent equal-area rectangles, calculate area and perimeter, organize the results, identify the least-perimeter arrangement, and support a generalization with evidence.

KUSP element	Selected curriculum learning	What it looks or sounds like
	and area of rectangles.	

Curriculum source: Government of Alberta, Mathematics (K–6) Curriculum, Measurement. [View the Alberta program of study](#)

Teacher Preparation

STANDARD PATHWAY

Use these two 30-minute sessions after students have heard Adventure 001: The Long Way Down.

Session 1: Same Area is the core lesson. Students reconnect with the Adventure's comparison theme, distinguish area from perimeter, model a fixed area with several rectangular arrangements, calculate perimeters, and build a class data table.

Session 2: Different Perimeter continues the same Wonder Lab. Students revisit the data, rehearse an evidence-based claim, respond to a mathematical challenge, share and refine explanations, and explore questions of different depths about area and boundary.

If only one 30-minute period is available, teach Session 1.

If a continuous 60-minute block is available, teach both sessions with a brief transition or movement break.

Flexible Use of the Guide

Core Pathway | 30 minutes

Teach Session 1: Same Area.

Students experience:

Get Curious → Model → Build → Think It Through

This is a complete Grade 5 Measurement lesson.

Full Wonder Lab | 2 × 30 minutes

Teach both sessions.

Students experience:

Model → Build → Rehearse → Share

Session 2 deepens the same learning rather than adding additional curriculum.

It also provides time for:

Puddle → Pond → Lake → Ocean

Continuous Block | ~60 minutes

If scheduling allows, teach both sessions consecutively with a brief transition or movement break.

Materials

- A copy of Adventure 001
- Grid paper
- Rulers
- Optional square tiles
- Whiteboard, chalkboard, or chart paper and marker
- Journey Zone recording chart with:
  - Dimensions
  - Area
  - Perimeter
  - What We Notice
- Choose a target area with multiple whole-number factor pairs
- Recommended target: 36 cm^2
- Optional pre-drawn rectangles for students who need reduced construction demands
- Optional second target area for extension or confirmation

Before Students Begin

Prepare or anticipate the whole-number rectangles for a target area of 36 cm^2:

1 × 36

2 × 18

3 × 12

4 × 9

6 × 6

Using a perfect-square target makes the square relationship visible within the investigation.

Prepare one example showing the difference between:

36 cm^2 of area

24 cm of perimeter

Prepare an area/perimeter visual reminder if students have previously confused the attributes.

Keep the class table available for Session 2.

- Use professional judgment to choose the Session 2 grouping—partners, groups of three, or whole group—that best supports student participation. Early in the year, whole-group practice may help students establish the routine, build confidence, and understand what successful participation looks and sounds like.

Decide whether students will generate all rectangles collaboratively or divide factor pairs among groups.

Substitutions

Use digital grids, reusable whiteboard grids, preprinted rectangles, or square tiles where construction demands create a barrier.

Useful Vocabulary

Pre-teach essential vocabulary through an explicit vocabulary routine, providing students with opportunities to build meaning, interact with the words, and use them in context before and throughout the lesson.

Mathematics words:

area • perimeter • rectangle • square • dimensions • square centimetre • square metre • square kilometre • boundary • factor pair • equal area • least • benchmark

Story words:

apple • frisbee • leaf • compare • same • different • path • return

Area measures the amount of two-dimensional space inside a region.

Perimeter measures the total length around the boundary of a shape.

Dimensions describe measurements such as a rectangle's side lengths.

A factor pair is two whole numbers whose product is a given number.

Supporting Our Diverse Learners

Use these supports proactively while preparing and teaching the two sessions.

Make it accessible	Begin with grid models or physical square tiles before relying entirely on numerical calculations.
Support language	Model: Both rectangles have an area of…
Their perimeters are different because…	
As the side lengths become closer together…	The square has the least perimeter because our evidence shows…
Offer response choices	Accept building, drawing, calculating, annotating tables, oral explanation, dictation, communication devices, or assistive technology.
Support participation	Offer roles such as rectangle builder, area checker, perimeter calculator, data recorder, pattern finder, challenger, or reporter.
Reduce memory load	Keep a visual distinction visible: Area = space inside = square units. Perimeter = distance around = units of length.
Support rehearsal	Allow pairs to make a claim, receive a challenge question, and revise the

	same explanation before sharing.
Preserve the learning	Change the target area, number of factor pairs, numerical complexity, or response mode—not the relationship between equal area and changing perimeter.

KUSP Assessment: Evidence to Notice

FORMATIVE ASSESSMENT

Gather evidence through observations and conversations across both sessions.

Session 1 provides sufficient opportunities to gather evidence of the selected KUSP.

Session 2 gives students additional opportunities to demonstrate and communicate their understanding.

Evidence source	Listen or look for	Possible teacher note
Observation	Student preserves the target area while generating or interpreting rectangles with different dimensions.	"Generates 3 × 12, 4 × 9, and 6 × 6 as rectangles with area 36 cm^2."
Conversation	Student distinguishes area from perimeter and explains why equal area does not guarantee equal perimeter.	"Explains that all dimensions multiply to 36 but their boundary sums differ."
Product	Student table accurately records dimensions, equal area, differing perimeters, and identifies the least-perimeter rectangle.	"Identifies 6 × 6 as the 36 cm^2 rectangle with perimeter 24 cm, the least in the table."

The Two-Session Flow

Session 1 — Same Area | 30 minutes

Time	Section	Student experience	Teacher move
~5 min	**Get Curious**	Compare equal-area rectangles visually and predict which may have longer boundaries.	Surface the distinction between inside space and boundary.
~5 min	**Wonder Lab: Model**	Calculate area and perimeter for one rectangle and compare with another equal-area rectangle.	Make the two measured attributes and their units explicit.
~15 min	**Wonder Lab: Build**	Generate rectangular arrangements for one target area	Organize results so the emerging pattern becomes visible.

Time	Section	Student experience	Teacher move
		and calculate their perimeters.	
~5 min	**Think It Through**	Explain how area can remain constant while perimeter changes.	Connect factor pairs, dimensions, and boundary length.

Session 2 — Different Perimeter | 30 minutes

Time	Section	Student experience	Teacher move
~5 min	**Reconnect**	Predict the least-perimeter rectangle from dimensions before revealing calculations.	Reactivate the observed pattern.
~8 min	**Wonder Lab: Rehearse**	Prepare and revise an evidence-based claim about least perimeter.	Require calculations and comparison with another rectangle.
~9 min	**Wonder Lab: Share**	Share claims, compare evidence, and build a class generalization.	Support the curriculum relationship between the square and least perimeter.
~3 min	**Think It Through**	Reflect on why area alone does not determine perimeter.	Return to the central question.
~5 min	**Keep Wondering**	Generate and deepen questions about area, perimeter, dimensions, and optimization.	Use Puddle–Pond–Lake–Ocean.

Session 1 — Same Area

Get Curious | ~5 minutes

Display three rectangles representing the same target area.

For example:

1 × 36

3 × 12

6 × 6

Ask:

- Which looks as though it covers the most space?
- Which looks as though it has the longest boundary?
- Could all three have the same area?
- If their areas are the same, what could still be different?

- What does area measure?
- What does perimeter measure?
- How could we prove our ideas instead of relying on appearance?

Invite predictions.

> **TEACHER MOVE**
>
> Listen specifically for students treating area and perimeter as interchangeable.
>
> Do not immediately correct every misconception; use them to create a need for measurement.

2. Wonder Lab

Model | ~5 minutes

Choose a 4 cm × 9 cm rectangle.

Determine the area:

4 cm × 9 cm = 36 cm^2.

Trace the boundary.

Determine the perimeter:

4 cm + 9 cm + 4 cm + 9 cm = 26 cm.

Ask:

- "Why does the area use square centimetres?"
- "Why does the perimeter use centimetres?"

Compare with a 6 cm × 6 cm square.

Area:

36 cm^2.

Perimeter:

24 cm.

Think aloud:

> *"The amount of space inside stayed the same."*
>
> *"The boundary length changed."*

FACILITATION PROMPTS

- Which attribute are we measuring first?
- What unit should area use?
- Which attribute does perimeter describe?
- What unit should perimeter use?
- What stayed constant?
- What changed?
- How do the dimensions affect area?
- How do they affect perimeter?

- Which rectangle has the smaller boundary?

TEACHER MOVE

Keep meaning ahead of formula.

Students should be able to point to the interior region and boundary corresponding to each calculation.

Build | ~15 minutes

Give the class the target area of 36 cm^2.

Ask students to determine possible whole-number rectangle dimensions.

Build a class table.

1 × 36

Area = 36 cm^2

Perimeter = 74 cm

2 × 18

Area = 36 cm^2

Perimeter = 40 cm

3 × 12

Area = 36 cm^2

Perimeter = 30 cm

4 × 9

Area = 36 cm^2

Perimeter = 26 cm

6 × 6

Area = 36 cm^2

Perimeter = 24 cm

Use grid paper or tiles to verify selected arrangements.

Ask students to order rectangles from greatest to least perimeter.

Then examine the dimensions.

Ask:

> *"What happens to the perimeter as the two side lengths become closer in value?"*

FACILITATION PROMPTS

- How do factor pairs help us find possible rectangles?
- How do we know the area stays 36 cm^2?

- What changes from row to row in the table?
- What happens to perimeter as the dimensions become more balanced?
- Which rectangle is most long and narrow?
- Which rectangle is a square?
- Which has the least perimeter?
- What pattern does the table suggest?
- Would appearance alone have shown us this pattern?
- Why must we name the attribute we are comparing?

TEACHER MOVE

Allow the pattern to emerge from the table before explicitly restating the square relationship.

Think It Through | ~5 minutes

Keep the table visible.

Ask:

- How can rectangles with the same area have different perimeters?
- What mathematical relationship stayed constant?
- What calculation changed?
- What happened to perimeter as dimensions became closer?
- Which rectangle had the least perimeter?
- What is special about its side lengths?
- Why do area and perimeter require different units?
- Can knowing area alone tell us the rectangle's dimensions?
- Can knowing area alone tell us perimeter?

Sample Response Guidance

Possible response
"All the side-length pairs multiply to 36, so the area stays 36 cm^2."
"The perimeters change because the lengths around the outside change."
"The 6 × 6 square has the least perimeter."
"Area measures inside. Perimeter measures around."
"Knowing 36 cm^2 does not tell us which rectangle it is." Look for understanding of the relationship, not merely correct calculations.

Session 1 Closing

Tell students:

> *“Rob and Newton discovered three journeys that shared something while still being different. Our rectangles did the same thing: they shared the same area, but their boundaries were different.”*
>
> *“Next time, you will use the evidence to defend a mathematical claim about which arrangement uses the least boundary.”*

If Session 1 is taught alone, finish with:

> *“What pattern do you notice between a rectangle’s dimensions and its perimeter when area stays fixed?”*

Session 2 — Different Perimeter

Reconnect | ~5 minutes

Display the dimensions from the previous session without the perimeter column.

Ask:

- Which rectangle do you predict has the greatest perimeter?
- Which do you predict has the least?
- What pattern from yesterday supports your prediction?
- Which rectangle is a square?
- Why might that matter?

Reveal the perimeter column and verify.

TEACHER MOVE

Ask students to reason from structure before using calculation as confirmation.

2. Wonder Lab

Rehearse | ~8 minutes

Students work in partners.

They prepare a claim:

> *“For rectangles with an area of 36 cm^2, the rectangle with the least perimeter is ________ because...”*

Their explanation must include:

- dimensions
- area
- perimeter
- comparison with at least one other rectangle
- a statement about the pattern

Partner B asks one challenge question:

- How do you know the area stayed fixed?
- Which rectangle provides your comparison?
- What happens as the side lengths become closer together?
- Is your statement supported by all the data?
- What can you claim beyond the 36 cm^2 example?

Partner A revises.

Switch roles if time permits.

FACILITATION PROMPTS

- What evidence supports your claim?
- Which calculations matter?
- What pattern appears in the table?
- What is special about the square?
- Which comparison makes your explanation strongest?
- Are you claiming more than the evidence supports?
- How can you make the reasoning clearer?

TEACHER MOVE

The curriculum identifies the general relationship.

The instructional goal is for students to understand and communicate why the class evidence is consistent with that relationship.

Share | ~9 minutes

Invite several pairs to share.

Build a class statement:

> *"Among rectangles with the same area, the square has the least perimeter."*

Ask:

- What evidence from our 36 cm^2 investigation supports this?
- Which rectangle had the next-lowest perimeter?
- What pattern appeared as side lengths became closer?
- What would we predict for a target area such as 64 cm^2?
- Which dimensions would form the square?
- What do we predict about its perimeter compared with other equal-area rectangles?

If time allows, test one or two 64 cm^2 arrangements.

FACILITATION PROMPTS

- Which evidence is most convincing?
- Does one rectangle prove the whole relationship?
- How does the complete pattern help?
- Why is the square a special rectangle in this investigation?
- How could another target area strengthen our understanding?
- What remains the same if we change the target area?

TEACHER MOVE

Share is about building an evidence-supported generalization, not memorizing a statement detached from the investigation.

Think It Through | ~3 minutes

Ask:

- Why is knowing area alone not enough to know perimeter?
- What pattern helped us predict least perimeter?
- Why must mathematicians specify the attribute being measured?
- How did organizing our measurements in a table help?

Return briefly to the central question:

How can rectangles have the same area while having different perimeters?

Keep Wondering | ~5 minutes

PUDDLE

A small question about one measurement.

Examples:

- What is the area of this Journey Zone?
- What is its perimeter?
- Which 36 cm^2 rectangle has the least perimeter?

POND

A question connecting area and perimeter.

Examples:

- How can two rectangles have equal area but different perimeters?
- What happens to perimeter as the side lengths become closer together?
- Why are area and perimeter expressed with different kinds of units?

LAKE

A question requiring patterns across several rectangles.

Examples:

- How many whole-number rectangles can represent a given area?
- What pattern connects dimensions with perimeter when area remains constant?
- Why does knowing the area not tell us the exact dimensions?

OCEAN

A deep mathematical question about the relationship.

Examples:

- Why does a square have the least perimeter among rectangles with the same area?
- How can “same amount of space” and “different boundary” both be true?

- What does this investigation reveal about why mathematicians must identify exactly which attribute is being measured?

The purpose is not to label questions for the sake of labelling them.

The framework helps students notice that a mathematical question can move from calculation to relationships, patterns, and generalization.

Invite Student Questions

Ask:

- “What are you still wondering about equal-area Journey Zones as a mathematician?”
- Accept questions connected to area, perimeter, dimensions, square units, factor pairs, or optimization.

Choose several questions and discuss:

> *“Does this feel like a Puddle, Pond, Lake, or Ocean question?”*

FACILITATION PROMPTS

- Would we need one rectangle or several to investigate this?
- Does your question hold area constant?
- Are you asking about the inside space, boundary, or their relationship?
- What evidence could we collect?
- Can this Puddle become a Pond?
- What pattern could make it a Lake?
- What general relationship could make it an Ocean?

TEACHER MOVE

Keep questions anchored to the mathematical relationship in the Adventure-inspired investigation.

Close with one student-generated question worth preserving.

“Every adventure begins with a question. Keep wondering.”

Likely Misconceptions and Helpful Responses

If students...	Try this teacher response
If students add side lengths to determine area:	“What attribute does adding around the boundary measure?”
If students multiply side lengths to determine perimeter:	“Are we measuring around the outside or inside the region?”
If students use cm^2 for perimeter:	“Which kind of unit measures a length?”
If students use cm for area:	“What kind of unit covers a two-dimensional region?”
If students assume same area means same	“What other factor pair has the same product?”

If students...	Try this teacher response
shape:	
If students assume same area means same perimeter:	“What does our table show?”
If students assume the square has greatest perimeter because it appears broad:	“Which attribute are we comparing? What does the calculation show?”
If students overgeneralize from one rectangle:	“What additional equal-area rectangles support or challenge the pattern?”

Use the Evidence Next

- If a student confuses area and perimeter, return to physically covering versus tracing.
- If a student struggles to generate rectangles, provide factor pairs while preserving the comparison task.
- If calculations are inaccurate, verify with grids or physical models.
- If a student sees the pattern but cannot explain it, compare two successive dimension pairs.
- If a student understands the square relationship, test a prediction using another perfect-square area.
- If a student reasons fluently, reverse the problem by fixing perimeter and exploring area as an extension.
- If a student generates mainly Puddle questions, ask them to hold area constant and investigate what else can vary.
- If a student demonstrates strong reasoning verbally but makes a computational slip, separate conceptual evidence from calculation accuracy when planning the next step.

Optional Mathematics Extensions

Fixed Fence

Reverse the investigation.

Give students a fixed perimeter and ask them to create different rectangles and compare their areas.

Area Unit Choice

Decide whether cm^2, m^2, or km^2 would be most useful for areas such as a frisbee face, classroom floor, park, or very large region.

Students justify rather than merely match.

Factor-Pair Hunt

Choose several target areas.

Students predict how many whole-number rectangular arrangements may be possible and then test.

Journey Zone Design

Design three equal-area exhibit zones for an apple, frisbee, and leaf display.

Each must have different dimensions.

Students calculate and compare the perimeter required around each.

Every adventure begins with a question.
Keep wondering.

THE ADVENTURES WITH FRISBEE ROB

The Long Way Down

Adventure 001: Isaac Newton

GRADE 5

PHYSICAL EDUCATION & WELLNESS

Teacher Guide

Physical Education & Wellness

GRADE	SUBJECT	TIME
Grade 5	Physical Education & Wellness	2 × 30 minutes

CENTRAL QUESTION

How can combining and adapting movement skills into patterns support success with a frisbee?

Wonder in Motion

Teacher Guide

Link the Moves

Lesson at a Glance

Story Connection	A frisbee throw may appear to be one isolated action when Rob performs it in The Long Way Down. In active frisbee play, however, movements often connect. A player may: move, turn, throw, change direction, run, receive, and recover. Grade 5 students begin thinking in terms of **movement patterns**—combinations and sequences of movement skills that can support success across physical activities. The Adventure provides the recognizable frisbee action. Grade 5 asks students to look at what comes: before, after and between, and individual skills. A throw can become part of a larger pattern. A catch or receiving attempt can be preceded by movement. A turn can connect locomotor movement with object manipulation. Students begin asking: • **What is the sequence?** • **What happens first, next, and last?** • **How does one movement connect with another?** • **Can the pattern be repeated?** • **What could I adapt while keeping the pattern recognizable?**
Physical Education & Wellness Focus	Combining locomotor, non-locomotor, and object-manipulation skills into movement patterns, considering sequencing and repetition, and adapting movement elements to enhance those patterns. Students use the Grade 5 FlightPlan to build and perform simple frisbee movement patterns. Examples may include patterns such as: • **run → throw** • **run → receive** • **walk → turn → throw** • **move → turn → receive** • The FlightPlan determines the exact physical task and sequence used during the lesson. • The instructional emphasis is not on creating the longest or most complicated sequence. • A well-understood two- or three-part pattern provides stronger curriculum evidence than an elaborate challenge with many poorly connected actions.
Learning Intention	**We are learning to combine movement skills into patterns, repeat those**

	patterns, and adapt them to improve movement.
Core Experience	Across two 30-minute sessions, students complete the companion **Grade 5 Adventures FlightPlan in Frisbee Playbook**.

Session 1 — Build the Pattern

Get Curious → Wonder Lab: Model → Wonder Lab: Build → Think It Through

Students identify movement sequences, combine two or three movement skills, and practise repeating a recognizable pattern.

Session 2 — Improve the Pattern

Reconnect → Wonder Lab: Rehearse → Wonder Lab: Share → Think It Through → Keep Wondering

Students return to a familiar movement pattern, adapt one movement element while preserving the sequence, repeat the pattern, and explain what changed.

- facilitation prompts
- teacher moves
- misconceptions
- next instructional steps
- reflection
- Adventure-based inquiry

Flexible Use

Session 1 independently provides sufficient opportunities to gather selected KUSP evidence.

Session 2 adds:

- adaptation
- refinement
- comparison
- communication

Teachers with a continuous 60-minute block may teach both sessions together.

If students need more time to establish the base pattern, protect that repetition before introducing adaptation.

Use After Reading

Read Adventure 001 before beginning.

The story reading is separate from the two Physical Education & Wellness sessions.

Story Context

Isaac Newton was a real historical person.

Rob’s visit, their conversation, and the events of the Adventure are imaginative.

Important Physical Education & Wellness Distinction

Grade 5 is no longer focused primarily on one isolated movement skill.

The selected curriculum asks students to **combine skills into patterns**.

A stronger throw alone does not demonstrate the core learning.

Students should begin recognizing:

- the order of movements
- how one movement transitions into another
- whether the sequence can be repeated
- whether the pattern remains recognizable
- how a movement element can be adapted while preserving the underlying pattern

A student may demonstrate strong pattern learning even when one component is imperfect.

For example:

run → turn → receiving attempt

can still provide evidence of sequencing even if the frisbee is ultimately collected rather than caught cleanly.

Do not let difficulty with one object-manipulation skill erase evidence of the larger movement pattern.

The curricular focus is:

combine → sequence → repeat → adapt

not:

perform every component perfectly

Do not make the sequence so complicated that students lose the pattern itself.

Optional Teacher-Spoken Success Indicators

I can identify a movement pattern.

I can combine movement skills into a sequence.

I can perform the movements in an intentional order.

I can repeat a movement pattern.

I can explain why the order matters.

I can adapt a movement element while keeping the pattern recognizable.

I can explain how the pattern or adaptation supports success.

Frisbee Playbook FlightPlan

The FlightPlan Is the Physical Lesson

This Teacher Guide is designed to be used with the companion **Grade 5 Adventures FlightPlan in Frisbee Playbook**.

Open the FlightPlan before teaching these PE sessions.

A FlightPlan is a ready-to-use PE lesson sequence showing what students physically do, in what order, and for how long.

For this Adventure, the Grade 5 FlightPlan contains both 30-minute sessions.

The FlightPlan provides the practical information needed to run the physical lesson, including:

- session and activity sequence
- phase and activity timing
- educator notes
- Drill instructions
- coaching cues
- frisbee and equipment information
- grouping and activity-specific setup
- modifications where applicable

When a Drill appears in the FlightPlan, select **Details** when you need its complete instructions, coaching cues, equipment information, or additional resources.

Grade 5 FlightPlan

Direct access

https://frisbeeplaybook.com/flightplan/newton/grade-5

Or navigate:
Frisbee Playbook → Build → Adventures with Frisbee Rob → The Long Way Down → Grade 5

Keep the FlightPlan open on a phone, tablet, or computer during class, or select **Print** before teaching.

Standard and Quick Launch

Use **Standard** to view the complete two-session experience.

When only one short block is available, select **Quick Launch**.

For the Newton Adventures FlightPlans, Quick Launch contains the four activities from Session 1:

Get Curious → Model → Build → Think It Through

Quick Launch displays the activities intentionally selected as the essential short-block pathway.

It does not automatically shorten every activity.

How the Two Resources Work Together

FlightPlan = what students physically do.

Teacher Guide = what the teacher is looking for and why it matters.

The FlightPlan is required to deliver the physical portion of these lessons.

This Teacher Guide is designed to be used alongside the FlightPlan, not instead of it.

The public Adventures FlightPlan focuses primarily on lesson delivery.

Curriculum interpretation, assessment evidence, learner supports, misconceptions, reflection, and deeper questioning remain in this Teacher Guide.

How to Use This Guide

THE GUIDE IS A TOOL, NOT A SCRIPT

Before teaching, open the Grade 5 Adventures FlightPlan and review both sessions.

During class: use Frisbee Playbook to run the movement patterns and use this Teacher Guide to understand the sequencing, adaptation, and curriculum evidence.

The FlightPlan contains the specific pattern mechanics, movement distances, equipment, partner arrangements, repetitions, and frisbee cues.

This Teacher Guide intentionally does not reproduce those mechanics.

Session 1 provides enough evidence of students combining, sequencing, and repeating movement skills.

Session 2 continues the same curriculum by asking students to adapt a movement element within a familiar pattern.

Give students enough repetition to understand the **base pattern before asking them to change it**.

If students do not yet know the pattern, adaptation simply creates more confusion.

Keep the number of components manageable.

Two or three connected movements are enough.

Use visual sequence cards when appropriate.

Do not increase speed before students understand the sequence.

Do not reward increasingly complicated patterns simply because they look impressive.

Repeated structure matters more than novelty.

The goal of the second session is not to do more. It is to give students enough time to think, try, improve, and communicate what they understand.

Curriculum Alignment

Organizing Idea	**Movement Skill Development:** Developing physical literacy through movement and active living supports well-being across a lifespan.
Guiding Question	**How can diverse movement patterns contribute to success across physical activities?**
Learning Outcome	**Students demonstrate and adapt various movement patterns to enhance skill development.**
Assessment Focus	Gather formative evidence through students’:

	• performance • sequencing • repetition • transition between movements • adaptation • explanations of movement patterns Look for students who: • combine movement skills into a pattern • identify the sequence • perform patterns using equipment • repeat the pattern • consider how sequencing affects performance • adapt movement elements • preserve the underlying sequence while adapting • explain how the pattern or adaptation supports success Session 1 provides sufficient selected KUSP evidence. Session 2 adds refinement and adaptation. These lessons do not assess the complete Learning Outcome.

Selected KUSP for These Lessons

KUSP element	Selected curriculum learning	What it looks or sounds like
Knowledge	**Selected Curriculum Learning** Movement patterns can include: • locomotor movement • non-locomotor movement • object manipulation Patterns are sequences of movements. Movement can occur in two-part sequences, such as: • run and catch • run and throw • toss and hit Movement can occur in three-part sequences, such as: • run, turn, and catch • walk, turn, and throw • hop, skip, and jump Movement patterns can be improved by adapting elements of movement, such as:	Students identify a movement pattern as an **ordered combination of movement skills**, rather than several unrelated actions. They recognize that locomotor, non-locomotor, and object-manipulation movements can connect within one sequence. They may say: • "My pattern was move and throw." • "I ran, turned, and tried to receive." • "I had to turn before I sent." • "The order mattered." Students also begin recognizing the role of the transition between movements. A pattern is not only a list of separate skills. The movements need to connect.

KUSP element	Selected curriculum learning	What it looks or sounds like
	• sending and receiving while changing direction and speed • throwing objects at different levels • adjusting speed or changing direction to avoid individuals or objects	
Understanding	**Selected Curriculum Learning** Movement patterns are combinations of movement skills. Patterns can be a planned set of movements that support success across a variety of physical activities. Patterns can be customized to enhance proficiency of movement. Patterns can be improved by adjusting elements of movement.	Students understand that a pattern can be planned, performed, repeated, and adapted. while retaining its underlying purpose. They notice that: • sequence matters • transitions matter • repetition matters • an adapted pattern can still be the same recognizable pattern Students may explain: • "I changed the direction, but I kept the same three movements." • "I kept move–turn–throw, but I changed the speed." • "The pattern worked better when the movements connected." They begin recognizing that adaptation does not mean replacing the entire sequence.
Skills & Procedures	**Selected Curriculum Learning** Combine movement skills to perform movement patterns in a variety of physical activities. Perform movement patterns using various types of equipment, individually and with others. Consider sequencing and repetition of movement patterns when engaging in locomotor, non-locomotor, and object-manipulation activities. Adapt elements of movement to enhance movement patterns.	Students perform and repeat an ordered frisbee movement pattern. They identify the sequence. They maintain the order across repetitions. They then deliberately modify a selected movement element while preserving the pattern. Students may adapt: • direction • speed • level • spacing • another FlightPlan-relevant element They can explain: what stayed the

KUSP element	Selected curriculum learning	What it looks or sounds like
		same and what changed.

Curriculum source: Government of Alberta, Physical Education and Wellness (K–6) Curriculum, Movement Skill Development, pp. 40–41. View the Alberta program of study

Teacher Preparation

STANDARD PATHWAY

Use these sessions after students have heard Adventure 001.

Before teaching, open the Grade 5 Adventures FlightPlan:
https://frisbeeplaybook.com/flightplan/newton/grade-5

Review both sessions and the relevant Drill details.

Session 1 — Build the Pattern

Students identify, perform, and repeat two- and three-part frisbee movement patterns.

The instructional focus is:

- **What is the sequence?**
- **How do the movements connect?**
- **Can the pattern be repeated?**

Session 2 — Improve the Pattern

Students repeat a familiar pattern and adapt one movement element.

The instructional focus is:

preserve the pattern → adapt one element → repeat → notice the effect

If only one 30-minute period is available, teach Session 1 or use Quick Launch.

If a continuous 60-minute block is available, teach both sessions with a brief transition.

Flexible Use of the Guide

Core Pathway | 30 minutes

Open the Grade 5 Adventures FlightPlan and teach Session 1:

Get Curious → Model → Build → Think It Through

The FlightPlan provides the physical movement-pattern experience.

This Teacher Guide provides the curriculum, sequencing, observation, questioning, and assessment lens.

Session 1 independently provides sufficient selected KUSP evidence opportunities.

Full Wonder Lab | 2 × 30 minutes

Teach both sessions through the companion FlightPlan:

Model → Build → Rehearse → Share

Session 2 deepens the movement pattern through **adaptation**, rather than adding unrelated skills.

The learning progression remains:

combine → sequence → repeat → adapt → explain

Students also deepen Adventure-based inquiry through:

Puddle → Pond → Lake → Ocean

Continuous Block | ~60 minutes

Teach both sessions consecutively with a brief transition.

Reconnect may be shortened when the first session remains fresh.

Protect repeated practice **before adaptation**.

Do not turn the continuous block into a longer or more complicated challenge simply because more time is available.

Students need enough time to understand the base sequence, repeat it, notice the transitions, adapt one element, compare the result, and communicate what changed.

Materials

Required

Companion Grade 5 Adventures FlightPlan in Frisbee Playbook

Adventure 001

The FlightPlan identifies the frisbees, markers, equipment, physical spacing, grouping, and delivery requirements for the lesson.

Optional Teacher Guide Supports

Sequence cards such as:

- RUN
- WALK
- MOVE
- TURN
- THROW
- RECEIVE
- CATCH
- CHANGE DIRECTION
- Optional arrows for showing sequence
- These are instructional supports.

They are not additional FlightPlan activities.

Before Students Begin

Open the Grade 5 FlightPlan.

Review:

- Session 1 and Session 2
- Standard and Quick Launch
- **Frisbee Movement Patterns** Drill details
- **Movement Detective** Drill details
- the base movement pattern
- activity timings
- physical spacing
- equipment
- educator notes
- coaching cues
- Use professional judgment to choose the Session 2 grouping—partners, groups of three, or whole group—that best supports student participation. Early in the year, whole-group practice may help students establish the routine, build confidence, and understand what successful participation looks and sounds like.
- activity-specific modifications

Identify the base movement pattern students will build.

Choose two- or three-part patterns that are developmentally realistic.

The exact physical pattern is carried by Frisbee Playbook.

Prepare the recurring prompts:

- **What is the sequence?**
- **What happens first, next, and last?**
- **Where is the transition?**
- **What part of the pattern could you adapt?**

Keep the sequence visually available during early practice if needed.

Do not increase speed before students understand the pattern.

Do not introduce adaptation before students can perform a recognizable base sequence.

Useful Vocabulary

Pre-teach essential vocabulary through an explicit vocabulary routine, providing students with opportunities to build meaning, interact with the words, and use them in context before and throughout the lesson.

Physical Education & Wellness Words

movement pattern • sequence • locomotor • non-locomotor • object manipulation • repetition • adapt • proficiency • transition • combination

Story Words

Rob • Newton • frisbee • Adventure • throw • movement • question

A **movement pattern** is a combination of movement skills.

A **sequence** is an ordered set of movements.

A **combination** joins movement skills together.

A **transition** is the movement or connection between parts of the pattern.

Repetition means performing the pattern again.

To adapt means to change something to better fit a need or situation.

Proficiency describes increasingly capable and effective movement.

Supporting Our Diverse Learners

Make It Accessible	Use the FlightPlan's activity modifications as the primary source for adapting the physical experience. Begin with a two-part pattern when a three-part pattern creates unnecessary cognitive or physical demand. Add a third movement only when students understand the sequence. Use visual sequence cards. Reduce movement distance or intensity when necessary. If object-control difficulty masks pattern learning, preserve the sequence while modifying the receiving expectation. A student can still demonstrate:
move → turn → receiving attempt	even if the frisbee is ultimately collected afterward.
Support Language	Use frames such as: • "First I ______." • "Then I ______." • "Last I ______." • "Our pattern is ______." • "The transition is between ______ and ______." • "I adapted ______." • "I kept ______ the same." • "The change helped because ______." Pair sequencing language with physical demonstration. Students may physically perform the pattern before explaining it.
Offer Response Choices	Accept: physical demonstration, sequencing cards, simple diagrams, oral explanation, gesture, AAC, partner-supported communication, and video-supported reflection where available.

	A student may arrange movement cards to show the sequence when verbal expression is difficult.
Support Participation	Meaningful roles may include mover, pattern observer, sequence checker, transition detective, feedback partner, card arranger, and reporter. Use Frisbee Playbook as the primary source for physical grouping and activity organization.
Reduce Memory Load	Display the base sequence. Keep the pattern consistent across early repetitions. Avoid adding several adaptations simultaneously. If students forget the sequence, simplify before asking them to move faster. A student who cannot remember the pattern cannot meaningfully adapt it.
Support Rehearsal	Repeat the same pattern multiple times before adaptation. Allow students to rehearse one transition separately if that is where the sequence breaks down. Encourage students to recognize: first, next, and last. before emphasizing speed or fluency.
Preserve the Learning	Modify: movement intensity, catching expectation, locomotor mode, distance, equipment, and participation role. Do not remove: • sequencing • combination • repetition • pattern thinking • deliberate adaptation **Change the access pathway—not the learning goal.**

KUSP Assessment: Evidence to Notice

FORMATIVE ASSESSMENT

Gather evidence naturally while students complete the Grade 5 FlightPlan.

Avoid assessing only the final throw or catch.

Session 1 provides sufficient opportunities to gather evidence of combining, sequencing, and repeating movement skills.

Session 2 adds evidence of deliberate adaptation.

Evidence source	Listen or look for	Possible teacher note
Observation	Student performs movement components in a recognizable order.	“Completes move–turn–throw sequence in the intended order and

Evidence source	Listen or look for	Possible teacher note
	Student combines locomotor and object-manipulation skills. Student connects movements rather than performing unrelated actions. Student repeats the pattern. Student maintains the sequence across repetitions. Student adapts an element without losing the underlying pattern.	repeats it consistently." Or: "Maintains move–turn–receive pattern after changing direction." Or: • "Preserves the three-part sequence while adjusting speed."
Conversation	Student names the sequence. Student identifies what happens first, next, and last. Student explains why order matters. Student identifies a transition. Student identifies the adapted movement element. Student explains what remained the same.	"Says, 'I needed to turn before the throw so I was facing the right way.'" Or: • "Explains, 'I changed the speed, but I kept the same movement order.'"
Product / Class Product	• Optional sequence diagrams can provide supporting evidence. • Students may: arrange movement cards, draw arrows, record a simple pattern, identify a transition, and show the adaptation. • Physical performance remains essential evidence.	

The Two-Session Flow

Session 1 — Build the Pattern | 30 minutes

Time	Section	Student experience	Teacher move
~5 min	**Get Curious**	Complete **Get Curious** in the Grade 5 Adventures FlightPlan. Students reconnect with Rob's frisbee movement and begin noticing what could happen before and after one individual action.	Shift student attention from one isolated movement to a sequence. Use the FlightPlan for the physical experience. Use this Guide to establish the pattern lens: • **What comes first?**

Time	Section	Student experience	Teacher move
			• **What comes next?** • **What comes last?**
~5 min	**Wonder Lab: Model**	**FlightPlan activity: Frisbee Movement Patterns** Observe a two-part and then a three-part movement pattern.	Make the sequence and transitions visible. Keep the demonstrations slow enough for students to identify the component movements. Do not emphasize speed before students understand pattern structure.
~15 min	**Wonder Lab: Build**	**FlightPlan activity: Frisbee Movement Patterns** Complete the Build experience. Students practise and repeat selected two- or three-part movement patterns.	Watch for sequence, combination, transition, and repetition. rather than judging only the final frisbee result. If a catch or receive attempt is unsuccessful, preserve attention on the larger pattern.
~5 min	**Think It Through**	Explain what makes several movements a pattern and why the order matters.	Connect the physical experience with the central question. Reinforce the difference between a planned sequence and several random movements.

Session 2 — Improve the Pattern | 30 minutes

Time	Section	Student experience	Teacher move
~5 min	**Reconnect**	Complete **Reconnect** in the Grade 5 FlightPlan. Students reconstruct a familiar movement pattern physically or with sequence cards.	Reactivate: • order • sequence • transition • before introducing adaptation.
~8 min	**Wonder Lab: Rehearse**	**FlightPlan activity: Frisbee Movement Patterns** Repeat a familiar movement pattern, then deliberately adapt one movement element.	Ensure that the adaptation **enhances or changes the way the pattern is performed without destroying the pattern itself**. Ask: • What are you preserving?

Time	Section	Student experience	Teacher move
			• What are you changing? • Does the sequence remain recognizable?
~9 min	**Wonder Lab: Share**	**FlightPlan activity: Movement Detective** Students demonstrate a movement pattern and its adapted version while classmates observe.	Movement Detectives identify: • the sequence • the adapted element • what stayed the same • the effect of the adaptation Share should make pattern thinking visible.
~3 min	**Think It Through**	Explain how movement patterns and adaptation supported success.	Return to the central question. Connect repetition and adaptation with increasingly proficient movement.
~5 min	**Keep Wondering**	Complete the FlightPlan Keep Wondering transition, then use the Puddle–Pond–Lake–Ocean prompts in this Teacher Guide.	Keep questions grounded in: • movement sequence • patterns around Rob's frisbee actions • transitions • adaptation Do not shift the inquiry into unrelated frisbee physics.

Session 1 — Build the Pattern

Get Curious | ~5 minutes

Open the Grade 5 Adventures FlightPlan and run Get Curious.

Use the FlightPlan for the physical directions.

Ask students to think about one familiar frisbee action.

Then ask:

- **"What might Rob need to do before that movement?"**
- **"What might happen after it?"**

Build the idea of a sequence.

For example:

MOVE → TURN → THROW

Ask:

> ***"If we perform the same movements in a completely different order, does the pattern still serve the same purpose?"***

Introduce:

MOVEMENT PATTERN

Explain:

> ***"A movement pattern combines movement skills in a sequence."***

Introduce the central question:

How can combining and adapting movement skills into patterns support success with a frisbee?

FACILITATION PROMPTS

- What happens first?
- What comes next?
- What happens last?
- Which movement moves the whole body?
- Which movement manipulates the frisbee?
- Where does one movement connect with another?
- Does changing the order change the pattern?
- Could the same movements have a different purpose in another order?

TEACHER MOVE

Shift the lens from isolated skill quality to **how movements connect**.

Do not turn Get Curious into a terminology lecture.

The purpose is to make students wonder about the movements surrounding the obvious frisbee action.

2. Wonder Lab

Model | ~5 minutes

Open the FlightPlan and run Frisbee Movement Patterns — Model.

The FlightPlan provides the physical task, instructions, timing, and coaching cues.

Use this Guide to make pattern structure visible.

Ask:

- "What are the parts?"
- "What order did you see?"
- "What happened first?"
- "What happened next?"
- "What happened last?"
- "Where did one movement connect with another?"

If useful, compare a two-part pattern with a three-part pattern.

If useful, perform the same components in an inappropriate order.

Ask:

> ***"Did changing the order change how the pattern worked?"***

FACILITATION PROMPTS

- How many parts are in the pattern?
- Which skills are combined?
- Where is the locomotor movement?
- Where is the object-manipulation movement?
- Where is the transition?
- What happens if the order changes?
- Can the pattern be repeated?
- Does the pattern need to be fast to be successful?

TEACHER MOVE

Make the **structure visible before increasing speed or complexity**.

A slow, clear movement pattern is stronger learning evidence than a fast sequence the student cannot identify or repeat.

Build | ~15 minutes

Open the FlightPlan and run Frisbee Movement Patterns — Build.

Use Frisbee Playbook for activity instructions, movement sequence, spacing, equipment, partner organization, repetitions, timing, coaching cues, and activity-specific modifications.

Use this Guide for observation and questioning.

Circulate and ask:

- "What is your pattern?"
- "Can you show me the sequence?"
- "What happens first?"
- "What happens next?"
- "What happens last?"
- "Can you repeat it in the same order?"
- "Where is the transition?"
- "What happens if one movement is late?"

If students struggle with the receive or catch component, preserve the pattern focus.

A pattern such as:

move → turn → receiving attempt

still demonstrates combination and sequencing even if the frisbee is collected afterward.

FACILITATION PROMPTS

- Could you simplify the pattern?
- Which movement connects the other movements?
- Does direction matter?
- Does speed affect the pattern?

- What part of the sequence feels smooth?
- Where does the pattern break down?
- How does repetition help?
- Can you repeat the same sequence without adding another movement?
- What happens when you rush before the sequence is familiar?

TEACHER MOVE

Repeated structure matters more than novelty.

Do not reward increasingly complicated patterns simply because they look impressive.

When a student wants to add another movement, ask:

“Does the new movement help the pattern, or only make it longer?”

Think It Through | ~5 minutes

Run Think It Through from the FlightPlan, then deepen the reflection using the prompts below as appropriate.

Ask:

- “What makes several movements a pattern?”
- “Why does sequence matter?”
- “What is the difference between a pattern and several random movements?”
- “How did repetition help?”
- “What happened at the transitions?”
- “How can a planned movement pattern support success?”
- “Could the same movement skills form a different pattern if their order changed?”

Return to:

How can combining and adapting movement skills into patterns support success with a frisbee?

Sample Response Guidance

Possible response:
“My pattern was move and receive.”
“I walked, turned, and then threw.”
“The order mattered because I needed to turn before sending.”
“Repeating helped the movements connect.”
“The pattern helped me know what to do next.”
“I could still show the pattern even when I didn’t catch it.” Look for:

Possible response:

combination + sequence + repetition
rather than isolated skill performance.

Session 1 Closing

Tell students:

- "Movement skills can work together."
- "When we combine them in an order, they form a movement pattern."
- "Patterns can be planned and repeated."
- "The way movements connect matters."
- "Next time, we'll adapt a familiar pattern and see how the change affects it."

If Session 1 is taught alone, ask:

> ***"Show or describe your movement pattern in order."***

Session 2 — Improve the Pattern

Reconnect | ~5 minutes

Open the Grade 5 FlightPlan and run Reconnect.

Use the physical sequence or optional movement cards to reconstruct a familiar pattern.

Ask:

- "What comes first?"
- "What comes next?"
- "What comes last?"

Then ask:

> ***"What is the difference between remembering three movements and performing them as one connected pattern?"***

TEACHER MOVE

Reconnect both: sequence and transition and Students should know the base pattern before they begin changing it.

If the sequence remains unclear, protect time for rehearsal rather than rushing to adaptation.

2. Wonder Lab

Rehearse | ~8 minutes

Open the FlightPlan and run Frisbee Movement Patterns — Rehearse.

Students first repeat the familiar base pattern.

Then they deliberately adapt one movement element.

Possible element categories may include direction, speed, level, and spacing.

Use the exact physical options provided in the FlightPlan.

Ask:

- “What pattern are you keeping?”
- “What element are you adapting?”
- “Does the sequence remain the same?”
- “How does the adaptation affect the transition?”

FACILITATION PROMPTS

- What are you preserving?
- What are you changing?
- Did the pattern remain recognizable?
- Did the adaptation make the pattern more effective?
- What did repetition reveal?
- Would another adaptation work?
- Did you change the sequence or only an element within it?
- Which transition was most affected?

TEACHER MOVE

Adapt the pattern without losing the pattern.

If students lose the sequence during adaptation, return briefly to the base version.

Adaptation should deepen the movement learning, not create confusion.

Share | ~9 minutes

Open the FlightPlan and run Movement Detective — Share.

Students demonstrate: the base pattern and the adapted version and Movement Detectives observe.

Ask students or pairs to identify: the sequence, the adaptation, and the effect.

Observers identify the component movements in order.

FACILITATION PROMPTS

- What was the pattern?
- What happened first?
- What happened next?
- What happened last?
- What changed?
- What stayed the same?
- How did the adaptation affect the pattern?
- Did the pattern remain recognizable?
- Could another student adapt the same pattern differently?
- Could this pattern appear in another physical activity?
- Would it look exactly the same there?

TEACHER MOVE

Share makes **pattern thinking visible**.

Begin opening the idea that movement patterns can transfer across physical activities while keeping the core lesson centred on frisbee.

Do not rank demonstrations by athletic difficulty.

A clear, repeatable, explainable pattern provides strong Grade 5 evidence.

Think It Through | ~3 minutes

Run Think It Through from the FlightPlan.

Ask:

- "How can patterns support successful movement?"
- "What did adaptation change?"
- "What did you preserve?"
- "How did repetition help?"
- "Why does the order of movement matter?"
- "What makes a pattern different from a group of unrelated movements?"

Return to the central question.

Keep Wondering | ~5 minutes

The FlightPlan transitions students into Keep Wondering.

Use the questions below to deepen the inquiry.

PUDDLE

- What movement happens before Rob throws?
- What movement might happen after?
- Can you identify two movements in sequence?
- Where can you notice a turn, move, throw, or receiving action?

POND

- How do two movements connect during Rob's frisbee action?
- Why might order matter?
- What could happen if Rob changed the sequence?
- Where might one movement transition into another?

LAKE

- How could Rob build a three-part movement pattern around one frisbee throw?
- How might changing speed or direction improve his pattern?
- Where else might a similar move–turn–throw pattern appear?
- How might Rob adapt one part of a movement pattern without changing its basic sequence?

OCEAN

- Why can a similar movement pattern transfer across different physical activities?
- How might Rob know when to preserve a familiar pattern and when to customize it?

- Why can smooth transitions between movement skills matter as much as the individual skills themselves?
- How can a movement pattern stay recognizable even when part of it is adapted?

Invite Student Questions

Ask:

> ***"What are you still wondering about the movement patterns Rob uses in the Adventure?"***

FACILITATION PROMPTS

- What is the movement sequence?
- Can your question connect two or three movements?
- What part of the Adventure made you wonder?
- What might happen if the order changed?
- Could the pattern appear somewhere else?
- How could Rob adapt one element while keeping the pattern?
- Can we turn a Puddle question into a question about how movements connect?
- Could two different patterns support the same frisbee purpose?

TEACHER MOVE

A deeper question does not need to move into another subject or introduce information students have not encountered.

Depth comes from:

noticing

sequencing

connecting

comparing

interpreting

wondering more deeply about the story itself

Keep patterns anchored in movement visible or reasonably inferable from Rob's actions.

If students drift toward explaining why the frisbee flies, redirect:

"What are you wondering about the movements Rob combines around the throw?"

Close with one student-generated question worth preserving.

Likely Misconceptions and Helpful Responses

- **If students think any repeated movement is automatically a pattern**

Try:

- **"What is the sequence of combined movement skills?"**
- **If students focus only on speed**

Try:

- **"Can you show the sequence slowly first?"**

- **If a pattern becomes too complicated**

Try:

- **“Which two movements form the core pattern?”**
- **If students lose the sequence while adapting**

Try:

- **“What part are we keeping the same?”**
- **If students think adaptation means replacing the entire pattern**

Try:

- **“Which movement element can change while the sequence remains recognizable?”**
- **If catching difficulty prevents apparent pattern success**

Try:

- **“Can we preserve the move–turn–receive sequence even if the frisbee is collected afterward?”**
- **If students assume transfer means movements are identical across activities**

Try:

- **“Could a similar pattern appear but need a different adaptation?”**
- **If students think longer patterns are automatically better**

Try:

> ***“Does the extra movement support the pattern, or only make it longer?”***

If students...	Try this teacher response
If students think one movement skill is a movement pattern	Try: • **“What movement could combine with it?”**

Use the Evidence Next

If a student can perform a pattern but cannot identify the sequence

Use movement cards or ask:

- “What happened first?”
- “What happened next?”
- “What happened last?”
- **If a student identifies the sequence but cannot repeat it**
- Simplify to two components.

If two-part patterns are secure

Introduce or return to a three-part pattern when appropriate.

If sequencing is secure

Ask the student to adapt one movement element.

If a student adapts effectively

Ask:

- **"Why did the change enhance the pattern?"**
- **If catching difficulty masks pattern understanding**

Use an accessible receiving condition while preserving the sequence.

If a student performs each skill separately but the transitions are weak

Ask:

- **"Where does one movement connect to the next?"**
- Rehearse that transition.

If a student begins identifying transfer to another activity

Ask:

- **"What would remain similar, and what would need to change?"**
- **If a student changes the sequence when asked to adapt an element**

Clarify:

- **"Which part of the pattern are we preserving?"**
- **If a student generates mainly Puddle questions**

Ask:

> ***"What comes immediately before and after the movement you noticed?"***

Optional Physical Education & Wellness Extensions

These extensions are optional.

They do not replace the core Grade 5 Adventures FlightPlan.

Two-Part Pattern Lab

Students choose two compatible movement skills and arrange them into an ordered frisbee-related pattern.

Repeat the pattern several times.

Ask:

- "What happens first?"
- "What happens second?"
- "Why does that order work?"
- "Can you repeat the pattern?"

Keep the pattern simple enough that students can focus on sequence and connection.

Three-Part Challenge

Add one meaningful movement to a familiar two-part pattern.

Ask:

- "What new movement did you add?"

- “Where does it belong in the sequence?”
- “Does the new movement support the pattern or simply make it longer?”
- “What transition changed?”

The goal is purposeful combination, not complexity for its own sake.

Pattern Transfer

Identify a familiar movement pattern in another physical activity.

Compare:

- What is similar?
- What would need to change?
- What movement elements might need to be adapted?
- Does the pattern have the same purpose?

Help students recognize that transfer does not mean performing movements identically across activities.

Rob’s Sequence

Return to an Adventure moment involving Rob and the frisbee.

Map a plausible movement sequence around the action.

Identify locomotor, non-locomotor, and object-manipulation components where appropriate.

Ask:

- “What might Rob do first?”
- “What happens next?”
- “What movement follows?”
- “Where is the transition?”
- “How could Rob adapt one part while keeping the sequence recognizable?”

Keep the inquiry anchored in movement patterns visible or reasonably inferable from the Adventure.

> *Every adventure begins with a question.*
> *Keep wondering.*

THE ADVENTURES WITH FRISBEE ROB

The Long Way Down

Adventure 001: Isaac Newton

GRADE 5

SCIENCE

Teacher Guide

Up, Down, Through the Air

GRADE	SUBJECT	TIME
Grade 5	Science	2 × 30 minutes

CENTRAL QUESTION

How do lift and weight act as opposing forces on an object in flight?

Wonder in Motion

Lesson at a Glance

Story connection	Rob's frisbee does something visibly different from Newton's apple: after Rob throws it, the frisbee travels through the air before returning toward the ground. Grade 5 students now have curriculum language for investigating part of that contrast through opposing forces acting during flight.
Science focus	Lift, weight, gravity, opposing forces, observation of objects in flight, representing forces with diagrams, distinguishing force direction from flight pathway, and using scientific models to explain observations.
Learning intention	We are learning to identify lift and weight as opposing forces, represent their directions in a force diagram, and explain how they influence objects in flight.
Core experience	Across two 30-minute sessions, students observe one or more simple flying objects and build force diagrams representing lift upward and weight downward. They collaboratively create a Flight Forces Board, rehearse explanations connecting the diagram with observations, compare models, and share evidence-based reasoning.
Flexible use	Session 1 is a complete core lesson and can be used independently. Session 2 continues the same Wonder Lab by giving students additional time to observe, model, rehearse, explain, share, and deepen their scientific thinking. Teachers with a continuous 60-minute block may teach both sessions together.
Use after reading	Read Adventure 001: The Long Way Down before beginning. The story reading is separate from the two Science sessions.
Story context	Isaac Newton was a real historical person. Rob's visit, their conversation, and the events they experience together are imaginative parts of the story.
Important scientific distinction	The Grade 5 curriculum identifies two opposing-force pairs involved in flight: thrust and drag, and lift and weight. This lesson intentionally selects **lift and weight** as the formal KUSP focus because the Adventure's contrast between the frisbee travelling through the air and objects returning toward Earth provides a particularly strong story connection. Students may know or mention thrust and drag. Those ideas can be acknowledged without expanding the formal assessment focus. A force arrow represents the direction of a force. It does **not** represent the visible curved pathway of the frisbee.

Optional Teacher-Spoken Success Indicators

I can identify lift and weight.

I can show the direction of lift and weight on a force diagram.

I can explain why lift and weight are opposing forces.

I can connect an observation of flight with a scientific force model.

How to Use This Guide

THE GUIDE IS A TOOL, NOT A SCRIPT

This guide is designed to support responsive teaching rather than prescribe every word or action.

Session 1 is a complete 30-minute Grade 5 Energy lesson and can be taught independently.

Session 2 continues the same learning through rehearsal, refinement, sharing, and questioning. It does not introduce additional curriculum.

Follow productive student thinking and conversation while protecting the central question, selected Energy KUSP, meaningful participation, and approximate lesson timing.

Adjust the flying object, observation method, grouping, diagram supports, response modes, and pacing to meet the needs of the learners in front of you.

Keep the force model qualitative. Students are not measuring the magnitude of lift or weight during these lessons.

Do not infer exact force balance from whether an object appears to rise, glide, or descend in one classroom demonstration. The curriculum relationship being represented is that lift acts upward and weight acts downward.

The goal of the second session is not to do more.

It is to give students enough time to observe, model, compare, revise, and communicate their scientific understanding.

Curriculum Alignment

Organizing Idea	Energy: Understandings of the physical world are deepened by investigating matter and energy.
Guiding Question	How are forces similar and different in water and air?
Learning Outcome	Students investigate and compare how forces affect living things and objects in water and air.
Assessment Focus	Gather formative evidence of selected Grade 5 Energy KUSP through students’ observations of objects in flight, force diagrams showing lift and weight, and explanations of how those opposing forces act. Session 1 provides sufficient opportunities to gather evidence of the selected KUSP. Session 2 offers additional opportunities for students to demonstrate and communicate their understanding. These lessons do not assess the complete learning outcome.

Selected KUSP for These Lessons

KUSP element	Selected curriculum learning	What it looks or sounds like
Knowledge	Lift and weight are opposing forces. Lift is an upward force that acts to overcome the weight of a living thing or an object and hold it in the air. Weight is a force that is caused by gravity and that acts on a living thing or an object in a downward direction. Forces can affect the flight of living things and objects in various ways, including speed horizontal and vertical movement altitude straight and level flight	Students identify lift as acting upward and weight as acting downward and distinguish those force directions from the visible movement pathway of the flying object.
Understanding	Flight of living things and objects is influenced by opposing forces.	Students recognize that flight is influenced by multiple forces and explain that two forces can act in opposite directions on the same flying object.
Skills & Procedures	Diagram opposing forces that act on living things or objects in flight. Explain the effects of lift and weight on the flight of living things and objects. Observe living things and objects in flight.	Students observe a flight, construct a labelled force diagram showing lift upward and weight downward, and use the model to explain the opposing relationship.

Curriculum source: Government of Alberta, Science (K–6) Curriculum, Energy, p. 40. *View the Alberta program of study*

Teacher Preparation

STANDARD PATHWAY

Use these two 30-minute sessions after students have heard Adventure 001: The Long Way Down.

Session 1: Build the Force Diagram is the core lesson. Students reconnect with the frisbee's flight, distinguish observation from force modelling, see lift and weight represented, and collaboratively build and interpret several force diagrams.

Session 2: Explain the Flight continues the same Wonder Lab. Students return to the Flight Forces Board, rehearse a force-model explanation with a partner, refine the distinction between force arrows and flight pathways, share diagrams, compare flying objects, and explore questions of different depths about flight in the Adventure.

If only one 30-minute period is available, teach Session 1.

If a continuous 60-minute block is available, the two sessions can be taught together with a brief transition or movement break between them.

Flexible Use of the Guide

Core Pathway | 30 minutes

Teach Session 1: Build the Force Diagram.

Students experience:

Get Curious → Model → Build → Think It Through

This is a complete Grade 5 Energy lesson and provides opportunities to gather formative evidence of the selected KUSP.

Full Wonder Lab | 2 × 30 minutes

Teach both sessions.

Students experience the complete Wonder Lab cycle:

Model → Build → Rehearse → Share

Session 2 deepens the same learning rather than adding additional curriculum.

It also provides time for students to reflect on and question the Science of the Adventure through:

Puddle → Pond → Lake → Ocean

Continuous Block | ~60 minutes

If scheduling allows, Sessions 1 and 2 may be taught consecutively.

Take a brief movement or transition break after the first Think It Through before beginning Reconnect.

Materials

A copy of Adventure 001: The Long Way Down

A frisbee for teacher demonstration or another observable flying object

Optional paper glider or another simple classroom flying device

Whiteboard, chalkboard, or chart paper and marker

Large outline or image of a generic flying object

Large arrow cards

Flight Forces Board with:

- WHAT DID WE OBSERVE?
- WHAT DOES THE FORCE MODEL SHOW?

LIFT

WEIGHT

WHAT DOES THE MODEL HELP US EXPLAIN?

Student paper, mini-whiteboards, or force-diagram templates

Optional two line styles or colours already available to distinguish pathway from force arrows

Before Students Begin

Prepare one or two brief, clear flight observations.

The lesson is not a throwing-skills activity and does not require students to compare flight distance.

Prepare a large flying-object diagram with enough space above and below the object for force arrows.

Do not add the lift and weight arrows before students discuss the curriculum definitions.

Prepare one intentionally inaccurate diagram for Session 2, such as:

both arrows pointing upward

lift arrow following the visible flight path

weight arrow pointing sideways

Decide how the class will distinguish the **flight pathway** from the **force arrows**.

- Use professional judgment to choose the Session 2 grouping—partners, groups of three, or whole group—that best supports student participation. Early in the year, whole-group practice may help students establish the routine, build confidence, and understand what successful participation looks and sounds like.

Keep the Flight Forces Board and completed diagrams available for Session 2.

Substitutions

Use a paper glider, another available flying object, teacher-provided video of a simple flight, sequential images, or a digital representation when live observation is impractical.

Students do not need to throw a frisbee themselves to demonstrate the selected KUSP.

Useful Vocabulary

Pre-teach essential vocabulary through an explicit vocabulary routine, providing students with opportunities to build meaning, interact with the words, and use them in context before and throughout the lesson.

Science words:

force • opposing • lift • weight • gravity • flight • altitude • horizontal • vertical • diagram • model • evidence

Story words:

frisbee • apple • glide • fall • return • orchard • Moon • observe • question

Lift is an upward force that acts to overcome the weight of a living thing or object and hold it in the air.

Weight is a force caused by gravity that acts on a living thing or object in a downward direction.

Opposing forces act in opposite directions.

A force diagram is a model that represents forces using labelled arrows.

A model is a representation used to help explain or think about something.

A flight pathway shows where an object moves; it is not the same as a force arrow.

Supporting Our Diverse Learners

Use these supports proactively while preparing and teaching the two sessions.

Make it accessible	Use a large object diagram and large arrow cards before asking students to draw independently. Repeat or replay the same flight observation as needed.
Support language	Model sentence frames such as: Lift acts ______. Weight acts ______. These forces oppose because ______. Our observation showed ______. The force diagram shows ______. The pathway and force arrows are different because ______.
Offer response choices	Accept arrow placement, labelled diagrams, physical gesture, oral explanation, written explanation, matching force cards, communication devices, or assistive technology.
Support participation	Offer roles such as flight observer, diagram builder, lift-arrow placer, weight-arrow placer, pathway tracer, model checker, evidence recorder, or science reporter.
Reduce memory load	Keep the curriculum relationships visible after students establish them: Lift ↑
Weight ↓	Keep Pathway and Force Diagram visibly separated.
Support rehearsal	Allow students to revise the same force diagram after feedback rather than continually producing new diagrams. Let students physically place arrows before explaining the relationship verbally.
Preserve the learning	Change the flying object, drawing demand, vocabulary support, grouping, or response mode—not the scientific goal.

	Students still observe flight, represent lift and weight, and explain their opposing directions.

KUSP Assessment: Evidence to Notice

FORMATIVE ASSESSMENT

Gather evidence through observations and conversations across both sessions.

Session 1 provides sufficient opportunities to gather evidence of the selected KUSP.

Session 2 gives students additional opportunities to demonstrate and communicate their understanding.

Evidence source	Listen or look for	Possible teacher note
Observation	Student attends to vertical aspects of flight and appropriately places or identifies lift and weight in the force model.	"Places lift upward and weight downward without using the curved pathway as the lift arrow."
Conversation	Student explains why lift and weight are opposing forces and distinguishes force direction from movement direction.	"Explains that the frisbee may move forward while lift still acts upward and weight acts downward."
Product	Student force diagram contains a flying object with appropriately labelled upward lift and downward weight arrows.	"Creates a clear force model and separately draws the observed flight pathway."

The Two-Session Flow

Session 1 — Build the Force Diagram | 30 minutes

Time	Section	Student experience	Teacher move
~5 min	**Get Curious**	Reconnect with the frisbee's journey and compare its time in the air with the apple's downward movement.	Create a need for a force model without attempting to explain every aspect of flight.
~5 min	**Wonder Lab: Model**	Observe one flight and see lift and weight represented on a force diagram.	Make the difference between force arrows and the visible pathway explicit.
~15 min	**Wonder Lab: Build**	Collaboratively observe flights, construct diagrams, diagnose	Keep students focused on the curriculum definitions and

Time	Section	Student experience	Teacher move
		representations, and build the Flight Forces Board.	opposing directions.
~5 min	**Think It Through**	Explain why lift and weight oppose and what the model can and cannot represent.	Connect the diagram to the understanding that flight is influenced by opposing forces.

Session 2 — Explain the Flight | 30 minutes

Time	Section	Student experience	Teacher move
~5 min	**Reconnect**	Revisit force diagrams and diagnose inaccurate representations.	Ask students to identify what each arrow represents before correcting its direction.
~8 min	**Wonder Lab: Rehearse**	Work with a partner to explain and improve one flight-force diagram.	Prompt students to connect curriculum definitions, observations, and model features.
~9 min	**Wonder Lab: Share**	Present force diagrams and compare models for different flying objects.	Focus audience attention on what stays consistent and what can differ.
~3 min	**Think It Through**	Reflect on how a scientific model can reveal forces that cannot be seen directly.	Return to the central question.
~5 min	**Keep Wondering**	Generate and explore questions of different depths about flight and forces in the Adventure.	Use Puddle–Pond–Lake–Ocean language to deepen story-based scientific wondering.

Session 1 — Build the Force Diagram

Get Curious | ~5 minutes

Reconnect students to the Adventure.

Ask:

- "What did Rob notice about his frisbee at the beginning?"
- Students may recall that it did not simply drop immediately.

Ask:

- "What did Newton and Rob notice when they compared the apple, frisbee, and leaf?"
- Invite observations about different journeys.
- Focus on the frisbee.

Ask:

- "What makes an object in flight an interesting Science problem?"
- "What might be acting on it even when we cannot see the forces themselves?"

Introduce the Grade 5 challenge:

> *"Today we are going to observe flight and use a scientific model to represent two opposing forces: lift and weight."*

TEACHER MOVE

Do not ask students to infer all aerodynamic forces from the story.

Use the story to establish curiosity and the classroom force model to establish the Grade 5 science.

2. Wonder Lab

Model | ~5 minutes

Conduct a short flight demonstration or show the prepared observation.

Ask students first to describe only what they observed.

For example:

The object moved forward.

It stayed in the air for a time.

Its altitude changed.

It eventually returned toward the ground.

Now display the flying-object outline.

Introduce or revisit the curriculum definition of weight.

Ask:

- "Which direction does weight act?"
- Place a downward arrow labelled Weight.
- Introduce lift.

Ask:

- "Which direction does lift act?"
- Place an upward arrow labelled Lift.

Ask:

- "Why are these called opposing forces?"
- Then draw or trace the visible flight pathway separately.

Ask:

> *"Is this curved pathway the same thing as the lift arrow?"*

Think aloud:

> *"The pathway tells me where the object travelled."*
>
> *"The arrows represent forces acting on the object."*

FACILITATION PROMPTS

- Which direction does weight act?
- What causes weight?
- Which direction does lift act?
- Why are the forces opposing?
- What does the curved line show?
- What does the upward arrow show?
- Can the frisbee move forward while lift acts upward?
- What information comes from observation?
- What information comes from our force model?

TEACHER MOVE

Protect the distinction between **force direction** and **movement pathway**.

This is one of the most important conceptual moves in the lesson.

Build | ~15 minutes

Create the Flight Forces Board.

Conduct or revisit another flight observation.

Begin with direct observation.

Record:

- What did the object do?
- How did its altitude change?
- What did its pathway look like?

Then create the force model.

Students help place:

Lift ↑

Weight ↓

Ask students to explain the direction of each arrow from the curriculum definitions.

Next compare a second flying object if available, such as a paper glider.

Ask:

- Did the two flights look identical?
- Did both objects still have weight acting downward?
- Can both be represented with lift acting upward during flight?
- What information differs between the observations?
- What information remains consistent in the selected force model?

Show an intentionally inaccurate diagram.

Invite students to become Force Diagram Detectives.

Possible errors:

both arrows down

lift arrow drawn along the forward pathway

weight arrow sideways

Ask students to diagnose and revise.

FACILITATION PROMPTS

- What did we directly observe?
- Where should the lift arrow point?
- Where should the weight arrow point?
- What makes these forces opposing?
- Does the object’s forward movement change the direction of weight?
- Does the flight pathway have to match the lift arrow?
- How are these two flights different?
- What remains consistent in their force models?
- What is wrong with this diagram?
- What evidence or definition helps us correct it?

TEACHER MOVE

Do not use arrow length to imply measured force magnitude unless that convention has already been intentionally introduced elsewhere.

The selected KUSP requires the opposing forces to be diagrammed; exact force measurements are not part of this lesson.

Think It Through | ~5 minutes

Step back from the Flight Forces Board.

Ask:

- What causes weight?
- Which direction does weight act?
- What is lift?
- Which direction does lift act?
- Why are lift and weight called opposing forces?
- How is a force diagram different from a drawing of the flight pathway?
- How can two flying objects have very different-looking paths but still have lift and weight represented in the same directions?
- What can the model help us understand?
- What does the model not show?

Return to the central question:

How do lift and weight act as opposing forces on an object in flight?

Sample Response Guidance

Possible response:
"Weight is caused by gravity and acts downward."
"Lift acts upward."
"They oppose because they act in opposite directions."
"The pathway shows where the frisbee moved. The arrows show forces."
• "Two flights can look different even though both force diagrams have lift up and weight down." • Look for understanding of the model rather than the ability to reproduce two memorized arrows only.

Session 1 Closing

Tell students:

> *"Rob sees the frisbee travel through the air and return. Today Grade 5 Science gave us a new way to think about that journey."*
>
> *"We used a model to represent two forces we cannot see directly: lift and weight."*
>
> *"Next time, you will use your force diagram to explain the relationship clearly enough for someone else to understand it."*

If Session 1 is the only lesson being taught, finish by asking:

> *"What is one thing the force diagram tells us that simply watching the flight does not?"*

Session 2 — Explain the Flight

Reconnect | ~5 minutes

Display three diagrams.

Diagram A:

Lift upward, Weight downward.

Diagram B:

Both arrows upward.

Diagram C:

A curved flight path labelled Lift.

Ask:

- Which diagram best represents the selected forces?
- What is incorrect in the other two?
- What does each arrow represent?
- Which line represents movement instead?

Then reconstruct the correct diagram collaboratively.

TEACHER MOVE

Ask students to explain each correction rather than simply moving the arrows for them.

2. Wonder Lab

Rehearse | ~8 minutes

Students work with partners.

Each pair receives or creates one flying-object diagram.

Partner A explains:

> *“This object is in flight.”*
>
> *“Lift acts...”*
>
> *“Weight acts...”*
>
> *“They are opposing because...”*
>
> *“Our observation showed...”*
>
> *“The model helps us understand...”*

Partner B checks:

- Are both forces labelled?
- Are the directions correct?
- Did the speaker distinguish the force diagram from the pathway?
- Did the speaker identify which information came from observation and which came from the model?
- Could the explanation be clearer?

Partner A revises.

Switch roles.

FACILITATION PROMPTS

- Which arrow represents lift?
- Which arrow represents weight?
- What does opposing mean?
- What did you actually observe during the flight?
- What does the model add?
- Does the force arrow show where the object travels?
- What could you improve in the explanation?

TEACHER MOVE

Rehearsal should deepen the connection between representation and reasoning.

Simply redrawing the same arrows without explanation is not enough.

Share | ~9 minutes

Invite several pairs to share.

Include models for different flying objects when available.

After each share, ask:

- What stayed consistent in the force model?
- What differed in the observed flight?
- Which part of the explanation came from the curriculum definition?
- Which part came from observation?
- Why can the same two force names appear in diagrams for objects with different flights?

Return briefly to Rob's frisbee.

Ask:

- "What does this model help us think about in the Adventure?"
- "What does it not tell us about the entire flight?"

FACILITATION PROMPTS

- Were both forces represented?
- Were the directions accurate?
- What evidence came from observation?
- How was this flight different from the previous one?
- Did that change the directions of lift and weight?
- What does the model simplify?
- Why are simplified models useful?

> **TEACHER MOVE**
>
> A scientific model is deliberately selective.
>
> Students should not interpret the selected two-force diagram as a claim that no other forces can influence flight.

Think It Through | ~3 minutes

Ask:

- What can a force diagram communicate that watching the flight alone cannot?
- Why do scientists use models for forces they cannot see directly?
- Why must we keep a flight pathway separate from a force arrow?

Return to the central question.

Keep Wondering | ~5 minutes

PUDDLE

A small question about one force detail.

Examples:

- Which direction does lift act?
- Which direction does weight act?

- What causes weight?

POND

A question connecting several force ideas.

Examples:

- Why are lift and weight opposing forces?
- How does a force diagram differ from a drawing of the frisbee's flight path?
- What observation from Rob's frisbee makes flight an interesting Science question?

LAKE

A question requiring connections across observations and models.

Examples:

- How can two flying objects have the same named forces but different flight pathways?
- Why might observing flight alone not tell us everything about the forces acting?
- How can a force diagram help organize an explanation of something we cannot see?

OCEAN

A deep scientific question about models and flight.

Examples:

- How can invisible forces influence a visible journey through the air?
- Why should scientists distinguish a model of forces from the actual pathway an object follows?
- How does the Grade 5 force model deepen Rob's original question without answering every question about frisbee flight?

The goal is not to produce the most technical question.

Depth comes from connecting observation, model, force relationships, and uncertainty.

Invite Student Questions

Ask:

- "What are you still wondering about the forces acting during the frisbee's flight in this Adventure?"
- Accept questions about flight, lift, weight, gravity, altitude, or the relationship between forces.

FACILITATION PROMPTS

- Is your question about an observation or a force model?
- Would watching another flight answer it?
- Would we need another kind of evidence?
- Does the selected lift-and-weight model answer the whole question?
- What part of the Adventure made you wonder that?
- Can this Puddle become a Pond?
- What relationship could make it a Lake?

TEACHER MOVE

Keep the formal assessment focused on lift and weight.

If students ask about thrust or drag, acknowledge that these are also Grade 5 flight forces in the Alberta curriculum, but they are not required additions to this selected Wonder Lab.

Close with one student-generated question worth preserving.

"Every adventure begins with a question. Keep wondering."

Likely Misconceptions and Helpful Responses

If students...	Try this teacher response
If students draw lift along the flight pathway:	Try: "Is that line showing where the object moved or the direction of a force?"
If students use weight to mean only an everyday measure of heaviness:	Try: "In this Science curriculum, what causes the force called weight?"
If students think lift acts only when an object visibly rises:	Try: "Lift is an upward force. Does the visible movement depend on only one force?"
If students think opposing forces must cancel perfectly:	Try: "Opposing means they act in opposite directions. Does that word by itself tell us their exact magnitudes?"
If students use arrow length as measured force strength:	Try: "Did we measure the magnitude of these forces? What information can our diagram support?"
If students think the selected diagram explains every detail of frisbee flight:	Try: "What forces did we choose to model? What information have we intentionally left out?"
If students confuse Rob's initial throw with lift:	Try: "Which selected force is defined as acting upward during flight?"
If students think the apple and frisbee should use identical flight models:	Try: "What object are we specifically observing as being in flight?"
If students think an Ocean question requires an aircraft or space travel:	Try: "Ocean means deep reasoning. A question about one

If students...	Try this teacher response
	frisbee can still be an Ocean question.”

Use the Evidence Next

If a student reverses lift and weight:

Return to the official definitions and physically place the arrows.

If a student knows the directions but cannot explain opposing:

Ask them to describe the relationship between upward and downward.

If a student draws the flight path instead of forces:

Separate Pathway and Force Diagram into two boxes.

If a student constructs an accurate diagram:

Ask them to explain what each arrow represents.

If a student explains one flying object accurately:

Compare the diagram with another flying object.

If a student treats the model as complete reality:

Ask what the model includes and what it leaves out.

If a student asks about thrust or drag:

Preserve the question or use it as an optional extension rather than changing the selected assessment.

If a student generates primarily Puddle questions:

Invite them to compare observation with model.

If a student communicates strongly through a diagram:

Treat the labelled force representation as substantive assessment evidence.

Optional Science Extensions

Use these only when they naturally support classroom learning. They are not required parts of the two-session experience.

FORCE DIAGRAM DETECTIVE

Provide several intentionally inaccurate diagrams.

Students identify and correct:

reversed lift and weight

pathway labelled as a force

missing labels

forces pointing in the same direction

Each correction must include an explanation.

TWO FLYING OBJECTS

Observe two flying objects.

Compare their visible flights.

Then create selected lift-and-weight force diagrams for both.

Ask:

- What differs in the observations?
- What remains consistent in our selected force model?

THRUST AND DRAG CONNECTION

If the class is already working with the wider Grade 5 Energy outcome, introduce the second curriculum pair:

thrust and drag

Compare their directions with lift and weight.

Keep this optional so it does not change the core assessment focus.

OBSERVATION OR MODEL?

Make two columns:

WHAT WE OBSERVED

WHAT THE MODEL REPRESENTS

Sort statements such as:

The frisbee curved downward.

Weight acts downward.

The object travelled forward.

Lift acts upward.

Discuss why scientific explanations often combine direct observation with models.

Every adventure begins with a question.
Keep wondering.

THE ADVENTURES WITH FRISBEE ROB

The Long Way Down

Adventure 001: Isaac Newton

GRADE 5

SOCIAL STUDIES

Teacher Guide

Before Newton: Ideas Have Histories

GRADE	SUBJECT	TIME
Grade 5	**Social Studies**	**2 × 30 minutes**

CENTRAL QUESTION

How can innovations from ancient civilizations remain relevant in later societies and today?

Wonder in Motion

Lesson at a Glance

Story connection	*The Long Way Down* introduces students to a famous thinker from the past. Grade 5 asks students to look even farther back. Newton lived long after ancient civilizations. Mathematics, science, writing, architecture, calendars, systems of decision making, and other innovations had histories stretching back thousands of years before him. The Adventure therefore becomes a doorway into a larger historical question: **What came before?**
Social Studies focus	Legacies of ancient civilizations, evolution of innovations, mathematics and science as one innovation category, social scientists who study evidence, primary and secondary sources, and the way interpretations of the past can change when new evidence or technology becomes available.
Learning intention	We are learning to explain how innovations from ancient civilizations can continue as legacies and how evidence helps people build and revise interpretations of the past.
Core experience	Across two 30-minute sessions, students collaboratively build an Ancient-to-Today Legacy Board. They trace several broad innovation categories from ancient origins toward later relevance without claiming unsupported direct lines, examine the difference between primary and secondary sources, consider how social scientists study evidence, rehearse evidence-based legacy explanations, and share how historical interpretations can change.
Flexible use	Session 1 is a complete core lesson and can be used independently. Session 2 continues the same Wonder Lab by giving students additional time to classify, connect, rehearse, explain, share, and deepen their Social Studies thinking. Teachers with a continuous 60-minute block may teach both sessions together.
Use after reading	Read Adventure 001: *The Long Way Down* before beginning. The story reading is separate from the two Social Studies sessions.
Story context	Isaac Newton was a real historical person. Rob's visit and their conversation are imaginative.
Important Social Studies distinction	Newton was **not** part of an ancient civilization. The lesson does not claim that a specific ancient innovation directly caused a particular Newtonian idea unless appropriate historical evidence is supplied. The Adventure prompts students to ask what came before Newton. The Grade 5 learning then examines the broader curriculum idea that contemporary innovations have evolved from innovations originating in

	ancient civilizations.

Optional Teacher-Spoken Success Indicators

I can explain what a historical legacy is.

I can identify an innovation category connected with ancient civilizations.

I can distinguish a primary source from a secondary source.

I can explain why evidence is needed before making a historical connection.

How to Use This Guide

THE GUIDE IS A TOOL, NOT A SCRIPT

This guide is designed to support responsive teaching rather than prescribe every word or action.

Session 1 is a complete 30-minute Grade 5 Time and Place lesson and can be taught independently.

Session 2 continues the same learning through rehearsal, refinement, source comparison, sharing, and questioning. It does not introduce additional curriculum.

Follow productive historical thinking while protecting the central question, selected Time and Place KUSP, evidence-based reasoning, meaningful participation, and approximate lesson timing.

Use only a manageable number of innovation categories.

Including **mathematics and science** creates the strongest connection with Newton, but students do not need to investigate every category listed in the curriculum.

Treat phrases such as “evolved from” carefully. A continuing legacy does not mean a modern innovation is identical to its ancient form.

Do not invent a direct historical chain simply to make the Newton connection stronger.

The goal of the second session is not to do more.

It is to give students enough time to examine evidence, test historical connections, improve explanations, and communicate their understanding.

Curriculum Alignment

Organizing Idea	Time and Place: Exploring the dynamic relationships between people, place, and time supports understanding of perspectives and events to make meaning of the world.
Guiding Question	In what ways might the ancient world have relevance today?
Learning Outcome	Students examine ancient civilizations.

Assessment Focus	Gather formative evidence of selected Grade 5 Time and Place KUSP through students' explanations of continuing legacies of ancient innovation, their distinction between primary and secondary sources, and their recognition that interpretations of the past can change with new evidence and technology. Session 1 provides sufficient opportunities to gather evidence of the selected KUSP. Session 2 offers additional opportunities for students to demonstrate and communicate their understanding. These lessons do not assess the complete learning outcome.

Selected KUSP for These Lessons

KUSP element	Selected curriculum learning	What it looks or sounds like
Knowledge	Innovations in contemporary societies have evolved from innovations originating in ancient civilizations, for example, writing systems agriculture architecture calendars trade, currency, and economics literature and philosophy mathematics and science systems of decision making rights and freedoms Social scientists (historians, archaeologists, anthropologists, geographers) study evidence of ancient civilizations to learn about the past. Interpretations of the past can evolve based on new evidence and technology.	Students identify selected innovation categories and recognize that modern forms may have long histories of change. Students explain that historical claims require evidence and identify several kinds of social scientists who study the past.
Understanding	Legacies of ancient civilizations continue.	Students explain that ideas, practices, or innovations connected with ancient civilizations can remain relevant through later development without remaining unchanged.
Skills & Procedures	Examine the evolution of innovations from ancient civilizations. Compare the work of historians,	Students construct a limited historical legacy claim, identify appropriate source types, compare evidence, and

KUSP element	Selected curriculum learning	What it looks or sounds like
	archaeologists, anthropologists, and geographers. Distinguish between primary and secondary sources. Compare information provided by primary and secondary sources. Imagine ways that advancements in technology could change interpretations of history.	recognize when a stronger claim would require additional evidence.

Curriculum source: Government of Alberta, Social Studies (K–6) Curriculum, Time and Place. [*View the Alberta program of study*]

Teacher Preparation

STANDARD PATHWAY

Use these two 30-minute sessions after students have heard Adventure 001: *The Long Way Down*.

Session 1: **Trace the Legacy** is the core lesson. Students use Newton to ask "What came before?", examine broad ancient innovation categories, see one legacy pathway modelled, and collaboratively build an Ancient-to-Today Legacy Board while distinguishing legacy from unchanged copying.

Session 2: **Test the Evidence** continues the same Wonder Lab. Students return to the Legacy Board, classify and compare primary and secondary sources, rehearse one evidence-based legacy explanation, refine unsupported claims, share reasoning, and explore questions of different depths about how people know what they know about the ancient past.

If only one 30-minute period is available, teach Session 1.

If a continuous 60-minute block is available, teach both sessions together with a brief transition or movement break.

Flexible Use of the Guide

Core Pathway | 30 minutes

Teach Session 1: **Trace the Legacy**.

Students experience:

Get Curious → Model → Build → Think It Through

This is a complete Grade 5 Time and Place lesson and provides opportunities to gather formative evidence of the selected KUSP.

Full Wonder Lab | 2 × 30 minutes

Teach both sessions.

Students experience:

Model → Build → Rehearse → Share

Session 2 deepens the same learning rather than adding additional curriculum.

It also provides time for:

Puddle → Pond → Lake → Ocean

Continuous Block | ~60 minutes

Teach both sessions consecutively with a brief transition after the first Think It Through.

Materials

A copy of Adventure 001: *The Long Way Down*

Whiteboard, chalkboard, or chart paper and marker

An Ancient-to-Today Legacy Board with:

ANCIENT INNOVATION CATEGORY

- WHAT CONTINUES OR EVOLVES?
- WHAT EVIDENCE WOULD HELP?
- HOW STRONG IS OUR CLAIM?

Selected innovation cards, such as:

writing systems

architecture

calendars

mathematics and science

systems of decision making

rights and freedoms

One teacher-selected primary source or reproduction relating to an ancient civilization

One teacher-selected secondary source addressing the same or closely related topic

PRIMARY SOURCE and SECONDARY SOURCE cards

Optional social scientist cards:

historian

archaeologist

anthropologist

geographer

Optional evidence cards:

artifact

written record

map

archaeological site

later historical account

modern scholarly interpretation

Before Students Begin

Choose two or three ancient innovation categories.

Include **mathematics and science** to provide a natural Adventure connection.

Prepare one simple broad legacy relationship.

For example:

Ancient mathematics and science

→ ideas and methods continue to develop

→ later societies continue mathematical and scientific inquiry

Do **not** write:

Ancient civilization X

→ Newton's exact theory

unless your classroom sources support that direct historical claim.

Choose a primary/secondary source pair students can interpret within the available time.

Keep text excerpts brief.

Prepare one unsupported claim for Session 2, such as:

> *"Newton invented mathematics because he was a famous scientist."*

Students will challenge it using the legacy concept.

- Use professional judgment to choose the Session 2 grouping—partners, groups of three, or whole group—that best supports student participation. Early in the year, whole-group practice may help students establish the routine, build confidence, and understand what successful participation looks and sounds like.

Keep the Legacy Board and sources available for Session 2.

Substitutions

Use artifact photographs, museum reproductions, inscriptions, maps, textbook excerpts, approved websites printed in advance, or teacher-selected source cards.

Students may classify and discuss sources orally rather than completing written source analysis.

Useful Vocabulary

Pre-teach essential vocabulary through an explicit vocabulary routine, providing students with opportunities to build meaning, interact with the words, and use them in context before and throughout the lesson.

Social Studies words:

ancient civilization • legacy • innovation • contemporary • evidence • historian • archaeologist • anthropologist • geographer • primary source • secondary source • interpretation • evolve

Story words:

Isaac Newton • Rob • Adventure • scientist • mathematics • question • past

A **legacy** is something from the past that continues to influence later times.

An **innovation** is a new idea, method, practice, or development.

Contemporary refers to the present time.

A **primary source** originates in the time or context being studied.

A **secondary source** is created later and interprets, analyzes, or explains information about the past.

An **interpretation** is an understanding or explanation built from evidence.

To **evolve** means to develop or change over time.

Supporting Our Diverse Learners

Use these supports proactively while preparing and teaching the two sessions.

Make it accessible	Use short source excerpts and strong visual evidence. Provide a completed example before students work with another category.
Support language	Model sentence frames such as: The ancient innovation category is ______. A continuing legacy may be ______. It has changed by ______. This source is primary / secondary because ______. The evidence supports ______. The evidence does not yet prove ______.
Offer response choices	Accept oral explanation, annotation, card sorting, diagramming, timeline representation, source matching, written response, communication devices, or assistive technology.
Support participation	Offer roles such as source classifier, innovation connector, evidence checker, legacy mapper, social-scientist matcher, claim checker, recorder, or Social Studies reporter.

Reduce memory load	Keep the definitions of primary source, secondary source, legacy, and innovation visible. Use no more than a few innovation categories in the core pathway.
Support rehearsal	Allow students to classify sources before explaining what information they provide. Let students revise the same legacy claim after receiving new evidence.
Preserve the learning	Change source length, number of innovation categories, writing demands, or response mode—not the requirement to connect claims with evidence.

KUSP Assessment: Evidence to Notice

FORMATIVE ASSESSMENT

Gather evidence through observations and conversations across both sessions.

Session 1 provides sufficient opportunities to gather evidence of the selected KUSP.

Session 2 gives students additional opportunities to demonstrate and communicate their understanding.

Evidence source	Listen or look for	Possible teacher note
Observation	Student identifies an innovation category and appropriately places evidence or source information.	“Places mathematics and science under ancient innovation categories and describes later development without claiming the form stayed unchanged.”
Conversation	Student explains a legacy while recognizing the limits of the available evidence.	“Explains that ancient mathematical ideas have continuing legacies but says more evidence would be needed to connect one ancient idea directly to Newton.”
Product	Student Legacy Board contribution or source comparison correctly identifies source type and supports an appropriate historical claim.	“Labels the artifact reproduction primary and the modern textbook secondary and identifies what each contributes.”

The Two-Session Flow

Session 1 — Trace the Legacy | 30 minutes

Time	Section	Student experience	Teacher move
~5 min	**Get Curious**	Reconnect with Newton as a later historical thinker and ask what ideas and innovations existed long before him.	Create a need to look beyond famous individuals toward longer histories of ideas.
~5 min	**Wonder Lab: Model**	See one broad ancient innovation category traced toward later relevance.	Model the difference between continuing legacy and unchanged copying.
~15 min	**Wonder Lab: Build**	Collaboratively build several legacy pathways and identify what evidence would be needed to support stronger claims.	Require evidence and interrupt unsupported direct-causation claims.
~5 min	**Think It Through**	Explain how ancient innovations can remain relevant after changing over time.	Connect students' pathways with the understanding that legacies of ancient civilizations continue.

Session 2 — Test the Evidence | 30 minutes

Time	Section	Student experience	Teacher move
~5 min	**Reconnect**	Return to the Legacy Board and test several claims for accuracy.	Ask students what evidence would be required before accepting a historical connection.
~8 min	**Wonder Lab: Rehearse**	Classify and compare a primary and secondary source and rehearse one evidence-based legacy explanation.	Prompt students to distinguish what the source says from what they infer.
~9 min	**Wonder Lab: Share**	Share legacy claims, source evidence, and limitations.	Focus audience attention on evidence quality and appropriate claim strength.
~3 min	**Think It Through**	Reflect on why interpretations of history can change.	Return to the central question.
~5 min	**Keep Wondering**	Generate and deepen questions about ancient legacies, evidence, and what existed	Use Puddle–Pond–Lake–Ocean language to deepen story-

Time	Section	Student experience	Teacher move
		before Newton.	anchored historical wondering.

Session 1 — Trace the Legacy

Get Curious | ~5 minutes

Show Newton.

Ask:

- “Newton is famous for work in mathematics and science.”
- “Was Newton the first human being ever to use mathematics?”
- “No.”
- “Was he the first human being ever to observe nature and ask questions about how the world works?”
- “No.”

Ask:

> *“So what came before Newton?”*

Display:

LEGACIES OF ANCIENT CIVILIZATIONS CONTINUE.

Tell students:

> *“Grade 5 Social Studies takes us thousands of years farther back than Newton.”*
>
> *“The curriculum tells us that many categories of contemporary innovation have evolved from innovations originating in ancient civilizations.”*

Display several category cards.

Ask:

- “Which one immediately connects with the kind of work Newton became famous for?”
- Mathematics and science.

TEACHER MOVE

Do not turn Get Curious into a history of Newton’s intellectual influences.

The useful question is broader:

Ideas have histories. What existed before later famous thinkers?

2. Wonder Lab

Model | ~5 minutes

Choose:

MATHEMATICS AND SCIENCE

Place it under:

ANCIENT INNOVATION CATEGORY.

Ask:

- "Do people still use mathematics and science today?"
- Yes.

Ask:

- "Does that mean mathematics and science today are exactly identical to what existed thousands of years ago?"
- No.

Add an arrow:

ANCIENT INNOVATION

→ DEVELOPMENT / CHANGE

→ LATER LEGACY

Think aloud:

> *"A legacy can continue while changing."*
>
> *"'Evolved from' does not mean 'copied without change.'"*

Ask:

- "If I wanted to claim that one specific ancient mathematical idea directly influenced Newton, what would I need?"
- Evidence.

Add:

WHAT EVIDENCE WOULD HELP?

FACILITATION PROMPTS

- What innovation category are we examining?
- What might continue?
- What might change?
- What does legacy mean?
- Does continuing mean identical?
- What evidence would support a broad connection?
- What extra evidence would we need for a direct claim?

TEACHER MOVE

Model cautious historical language.

Use:

may

evolved

continued

evidence supports

rather than unsupported certainty.

Build | ~15 minutes

Select two or three innovation categories.

Possible examples:

mathematics and science

writing systems

calendars

systems of decision making

For each, ask students to construct:

Ancient innovation category

→ continued development

→ later or contemporary relevance

Do not require students to name a specific ancient civilization unless the supporting classroom evidence does so.

Now add the social-scientist cards.

Explain that historians, archaeologists, anthropologists, and geographers study evidence of ancient civilizations.

Ask:

- “What kinds of evidence might each person examine?”
- Use only general distinctions supported by prior class instruction.
- Introduce the primary and secondary source pair briefly.

Ask:

- “Which source comes from the historical time or context?”
- “Which was created later to explain or interpret?”

Add both sources to the Evidence column.

Ask:

- “Could the two sources give us different kinds of information?”

- "Yes."

Finally ask:

> *"What might happen if archaeologists discover new evidence?"*

Connect with:

Interpretations of the past can evolve based on new evidence and technology.

FACILITATION PROMPTS

- Which ancient innovation category are we studying?
- What seems to continue?
- What has changed?
- What source could help us understand the ancient form?
- Is this source primary or secondary?
- What information does it provide?
- What information does it not provide?
- Which social scientist might study this kind of evidence?
- How could new technology change what researchers can discover?
- What claim are we confident about?
- What claim would need more evidence?

TEACHER MOVE

Make uncertainty legitimate.

Historical reasoning improves when students can identify the limits of evidence.

Think It Through | ~5 minutes

Step back from the Legacy Board.

Ask:

- What is a legacy?
- What kinds of ancient innovations does the curriculum identify?
- Why does evolution not mean something stayed exactly the same?
- What is a primary source?
- What is a secondary source?
- Why might both be useful?
- Who studies evidence of ancient civilizations?
- Why can interpretations change?
- How does asking "What came before Newton?" change the way we think about a famous historical innovator?

Return to the central question:

How can innovations from ancient civilizations remain relevant in later societies and today?

Sample Response Guidance

Possible response:
“A legacy can continue even when it changes.”
“Mathematics and science existed long before Newton.”
“A primary source comes from the time being studied.”
“A secondary source explains or interprets the past later.”
“New evidence can change what historians think.”
• “We need evidence before claiming one ancient idea directly influenced Newton.” • Look for the relationship among legacy, change, and evidence.

Session 1 Closing

Tell students:

> *“Newton may feel very long ago to us.”*
>
> *“Ancient civilizations take us much farther back.”*
>
> *“Today we discovered that famous ideas do not appear in a world with no history.”*
>
> *“Historians ask what came before, what changed, what continued, and what evidence supports the connection.”*
>
> *“Next time, you will test those connections more closely.”*

Session 2 — Test the Evidence

Reconnect | ~5 minutes

Display several statements.

> *“Ancient civilizations developed innovations.”*
>
> *“Every modern innovation is exactly the same as its ancient form.”*
>
> *“Legacies can continue while changing.”*
>
> *“Newton invented mathematics.”*

Ask:

- “Which statements are supported by our Grade 5 learning?”
- “Which should we reject?”
- “Which would require more evidence?”

Then display the source pair.

Ask students to classify each again.

TEACHER MOVE

Reconnection should reactivate both **legacy reasoning** and **evidence discipline**.

2. Wonder Lab

Rehearse | ~8 minutes

Students work with partners.

Each pair chooses one innovation category and the relevant sources or evidence available.

Partner A explains:

> *"The ancient innovation category is ________."*
>
> *"A continuing legacy may be ________."*
>
> *"The evidence we have is ________."*
>
> *"This source is primary / secondary because ________."*
>
> *"Our evidence supports ________."*
>
> *"Our evidence does not yet prove ________."*

Partner B checks:

- Is the innovation category correct?
- Did the speaker explain continuity and change?
- Did the speaker classify the source accurately?
- Is the claim stronger than the evidence?
- What would strengthen the explanation?

Partner A revises.

Switch roles.

FACILITATION PROMPTS

- What is the claim?
- What is the evidence?
- What comes directly from the source?
- What are you inferring?
- Is the source primary or secondary?
- What can this evidence reasonably support?
- What additional evidence would you want?

TEACHER MOVE

The strongest Grade 5 responses may contain phrases such as:

"We do not know yet."

"We would need another source."

"That source supports part of the claim."

Those are signs of historical reasoning, not weakness.

Share | ~9 minutes

Invite several pairs.

After each:

- What legacy did they describe?
- What evidence did they use?
- Was the source primary or secondary?
- How strong was their claim?
- Did they acknowledge limitations?

Ask the audience:

- “What would make this explanation stronger?”
- Compare two innovation categories.

Ask:

- “Does every legacy develop in exactly the same way?”
- “No.”

Then ask:

> *“How might historians, archaeologists, anthropologists, or geographers contribute different evidence?”*

FACILITATION PROMPTS

- What part of the explanation was directly supported?
- What part was interpretation?
- Could a new discovery change this interpretation?
- Why are multiple sources useful?
- What would be risky about building a large historical claim from one piece of evidence?

TEACHER MOVE

Share should reward careful claims rather than dramatic conclusions.

Think It Through | ~3 minutes

Ask:

- Why does evidence matter when connecting past and present?
- Why might interpretations change over time?
- How can the ancient world remain relevant without remaining unchanged?

Return to the central question.

Keep Wondering | ~5 minutes

PUDDLE

Examples:

- Was Newton part of an ancient civilization?
- What is a legacy?
- What is a primary source?

- What is one ancient innovation category?

POND

Examples:

- Why can an ancient innovation still matter after changing?
- What kinds of evidence help us learn about the ancient past?
- What question does Newton's story raise about ideas that existed before him?
- Why might a primary and secondary source tell us different things?

LAKE

Examples:

- How could we trace an idea through several time periods without assuming each version was identical?
- Why might primary and secondary sources produce different kinds of understanding?
- How can new technology change what historians know about ancient societies?
- How can we tell whether a historical connection is strong or only a guess?

OCEAN

Examples:

- Who gets remembered as an innovator, and how can that affect the history people tell about an idea?
- How can historians responsibly connect present-day practices with ancient origins when thousands of years of change occurred between them?
- What evidence would we need before claiming that a specific ancient idea directly influenced Newton?
- How might a new archaeological discovery change something people thought they already knew?

Depth comes from evaluating evidence, tracing continuity and change, and recognizing uncertainty.

Invite Student Questions

Ask:

> *"What are you still wondering about the ideas and innovations that existed before the world of Newton's Adventure?"*

Invite questions about:

ancient civilizations

innovation

mathematics and science

sources

evidence

social scientists

historical interpretations

FACILITATION PROMPTS

- Is your question about the ancient innovation or its later legacy?
- What evidence would help answer it?
- Would a primary source, secondary source, or both be useful?
- What part of Newton's Adventure made you wonder what came before?
- Could a new discovery change the answer?
- Can we turn a fact question into an evidence question?

TEACHER MOVE

The Adventure supplies the later historical anchor.

Evidence supplies the ancient history.

Close with one student-generated question worth preserving.

"Every adventure begins with a question. Keep wondering."

Likely Misconceptions and Helpful Responses

- **If students claim Newton invented mathematics or science**

Try:

- "What does our curriculum tell us about ancient innovation categories?"
- **If students think legacy means unchanged copying**

Try:

- "Can something evolve and still have a legacy?"
- **If students think a primary source is automatically better**

Try:

- "What different information can primary and secondary sources provide?"
- **If students assume a secondary source is unreliable because it is later**

Try:

- "Does 'secondary' mean wrong, or does it describe when and how the source was created?"
- **If students infer direct influence without evidence**

Try:

- "What source supports that exact connection?"
- **If students think all social scientists do identical work**

Try:

- "What kinds of questions or evidence might different social scientists examine?"
- **If students believe one artifact proves a complete interpretation**

Try:

- "What other evidence would strengthen the conclusion?"
- **If students think an Ocean question means the oldest civilization**

Try:

> *“Ocean means deeper reasoning, not farther back in time.”*

If students...	Try this teacher response
If students call Newton ancient	Try: • “Newton lived long ago, but is his period the same as the ancient civilizations in our Grade 5 study?”

Use the Evidence Next

If a student remembers innovation categories but not the legacy concept

Ask how the category remains relevant while changing.

If a student understands legacy

Ask what evidence would support the connection.

If a student confuses primary and secondary sources

Return to when and why each source was created.

If a student classifies sources accurately

Ask what different information each source provides.

If a student makes an unsupported direct-causation claim

Ask:

- “What evidence is missing?”
- **If a student recognizes that interpretations can change**
- Ask what kind of new evidence or technology could cause revision.
- **If a student asks a strong Newton/ancient connection question**
- Preserve it for research rather than supplying a guess.
- **If a student generates mostly Puddle questions**

Ask:

- “What evidence would help us answer that?”
- **If a student demonstrates strong source analysis through annotations or sorting**
- Treat the source work as substantive assessment evidence.

Optional Social Studies Extensions

PRIMARY OR SECONDARY?

Provide additional approved source examples.

Students classify each and justify the classification.

Ask what kind of historical question the source might help answer.

SOCIAL SCIENTIST MATCH

Provide questions or evidence types.

Students match them with:

historian

archaeologist

anthropologist

geographer

Discuss where more than one social scientist might contribute.

LEGACY TIMELINE

Create:

Ancient → Later → Contemporary

Students add only evidence-supported steps.

Leave gaps where the class does not have enough evidence.

Discuss why an honest gap is preferable to an invented connection.

NEW EVIDENCE

Present a hypothetical new artifact or newly translated text.

Ask:

- What interpretation might it challenge?
- What would researchers need to verify?
- How could new technology alter historical understanding?

Every adventure begins with a question.
Keep wondering.