Launch Horizon HQ activity worksheets

Space for your own version

Use these pages beside the activity book or website. Draw, write or make notes. Blank spaces are invitations, not questions you must answer.

Choose a starting point

Three activities in each of twenty subjects

Art, Astronomy, Biology, Chemistry, Computing, Design, Ecology, Engineering, Film & Animation, Games, Geography, History, Languages, Mathematics, Music, Philosophy, Physics, Sport & Movement, Storytelling, Zoology.

Use the activity names and IDs to find a matching worksheet or a small individual PDF. You do not need to work through this collection in order.

Use any page that interests you. There is no order to complete, score to reach or personal story to share. You can change direction, work in another way or stop.

Use the space that helps

You can change a heading, use a separate sheet, dictate a response or leave a space blank. The editable document is ordinary text; saving typed answers follows your app and storage settings.

One doorway two possibilities

How much can one line choice change the way an image is read?

My reference

Sketch the same scene twice, or describe the supplied doorway.

One deliberate change

Which feature changes, and which features stay similar?

What I can see

Describe a visible difference without guessing a feeling.

A possible reading

What might the change communicate? Add another interpretation if you want.

Keep it, change it or leave it here. Sharing is optional.

A texture made of marks

How can repeated marks suggest a surface without copying a photograph?

My mark

Sketch or name the repeated mark.

Two arrangements

Keep the count similar; change how the marks are spaced.

Visible difference

Describe what you can point to before interpreting it.

A possible surface

What might the marks suggest? A different reading can remain open.

Keep it, change it or leave it here. Sharing is optional.

Three views of an invented object

What does each viewpoint reveal or leave hidden?

Object specification

Keep the width 4, height 3, depth 2 and face markings together.

My three views

Sketch or describe front, right and top.

Visible or hidden

Where can each supplied marking be shown?

Still unspecified

Name one feature the model does not tell you.

Keep it, change it or leave it here. Sharing is optional.

A space map with honest scale labels

Which comparisons can one small Solar System drawing show accurately?

My scale

Write how much paper distance represents 1 AU.

My conversions

Calculate or copy Earth 2 cm, Mars 3 cm and Jupiter 10.4 cm.

My labelled line

Start all distances from the same Sun reference.

What the model omits

Name a size, direction or timing detail it does not show.

Keep it, change it or leave it here. Sharing is optional.

Read a Moon phase model

What can a labelled paper model explain about the Moon's changing appearance?

Where the light comes from

Draw or describe sunlight travelling from left to right.

Two illuminated halves

Keep each Moon’s Sun-facing half lit.

The view from Earth

Compare what the observer can see at A and B.

A correction or limit

Explain why ‘Earth’s shadow makes every phase’ does not fit this model.

Keep it, change it or leave it here. Sharing is optional.

Find a pattern in an invented star signal

What might a repeated dip suggest, and what would still need checking?

My data or graph

Keep the eleven times and readings together.

What repeats

Identify low readings and calculate the gaps.

A prediction

State the ‘if’ condition and mark the unobserved next time.

A next check

What extra evidence would help investigate a real signal?

Keep it, change it or leave it here. Sharing is optional.

Compare two leaf diagrams

Which features are visible and which functions need a reference?

A visible features

Describe the outline and line arrangement.

B visible features

Compare the second outline and its lines.

Reference knowledge

Label one function that requires information beyond the drawing.

What is still unknown

Name a question that neither model settles.

Keep it, change it or leave it here. Sharing is optional.

Where a cell analogy stops working

How can an everyday comparison explain a cell without becoming misleading?

My pairing

Choose one structure and one everyday comparison.

What it helps explain

Name the specific shared function.

Where it fails

Describe a difference the comparison must not hide.

A better label

Complete ‘helps explain… but does not mean…’.

Keep it, change it or leave it here. Sharing is optional.

Read an invented growth log

What does a small growth table support, and what cannot it tell us?

The complete record

Keep days and centimetres attached to both rows.

Changes from the start

Find the day 0 to day 4 change for A and B.

Another interval

Compare the changes from day 2 to 4.

An unanswered cause

What condition or extra record would you need before explaining the difference?

Keep it, change it or leave it here. Sharing is optional.

Three particle pictures

How can symbols explain states of matter while showing a model's limits?

Same symbols

Count the dots and state what they represent.

Different arrangements

Describe one visible difference between two boxes.

Motion not visible

Add a short motion explanation or an explicitly labelled arrow.

A model limit

Name one detail these drawings do not measure.

Keep it, change it or leave it here. Sharing is optional.

Choose a material from evidence cards

Which stated properties matter for an invented design brief?

The brief

State which criteria are required and whether use is dry.

The evidence

Keep the yes, no and unknown entries for cards A, B and C separate.

First decision

Which card meets both original requirements, and why?

Changed requirement

What happens when water resistance becomes essential?

Keep it, change it or leave it here. Sharing is optional.

Plan a separation on paper

Which property would a proposed separation use, and what remains assumed?

Input and rules

Name both components and state what the model filter catches.

Caught output

Account for the four chip symbols.

Passed through output

Keep the water and six salt symbols together.

What is not solved

Explain which separation goal remains open.

Keep it, change it or leave it here. Sharing is optional.

Debug a paper robot

Where does an instruction sequence first stop matching its goal?

The starting state

Mark the start square, facing direction, goal and blocked square.

My first trace

After each command, record square and direction. Where does the first blocked move occur?

My repair

Write a new sequence and trace it from the original starting state.

What I have checked

State what the trace demonstrates. Name one changed starting case I have not checked.

Keep it, change it or leave it here. Sharing is optional.

Encode a tiny pixel picture

Can someone rebuild a small image from an unambiguous written code?

Header and legend

State width, height, reading order and 0/1 meanings.

My decoded grid

Copy or describe the dark and white cells.

My round trip check

Read all four rows back to the code.

One deliberate change

Record which bit changes and which cell it affects.

Keep it, change it or leave it here. Sharing is optional.

Build a six card search index

What makes a paper search return a useful match?

The collection

Keep the six card letters and titles together.

My index

List each distinct title word with its matching letters.

My query

Apply one word or an explicitly stated AND query.

Meaning of no match

Explain what the result says about this rule and collection.

Keep it, change it or leave it here. Sharing is optional.

A symbol that explains itself

What instructions help an unfamiliar icon communicate its meaning?

The function

Describe the single action my symbol represents.

Symbol plus words

Keep the label beside the symbol.

A second appearance

Use the same meaning on another paper screen.

Possible ambiguity

What could a new reader misunderstand, and which label would help?

Keep it, change it or leave it here. Sharing is optional.

Sketch a small package net

Which folds and labels would another person need to understand the design?

My labelled net

Keep the six face positions and equal side lengths clear.

My folding explanation

Describe how one side joins Base and how Lid reaches the opening.

Opposite faces

Name one or all three opposite pairs.

What needs more design

Add a question about tabs, thickness, closure or intended use.

Keep it, change it or leave it here. Sharing is optional.

Make an invented poster easier to read

Which layout change helps a reader find one important detail?

Facts to preserve

Keep the four supplied statements unchanged in meaning.

Version A

Use one paragraph or inspect the supplied paragraph.

Version B

Create a heading and short, grouped detail lines.

A reasoned revision

Which structural choice helps locate one detail, and what would need testing?

Keep it, change it or leave it here. Sharing is optional.

A food web with labelled assumptions

How do arrows and evidence change the meaning of a simple food web?

My key

State exactly what an arrow means.

The supplied web

Draw or list the five solid links.

A proposed link

Keep a hypothesis visually distinct and labelled.

What remains open

Name information needed before making a stronger claim.

Keep it, change it or leave it here. Sharing is optional.

Map a fictional microhabitat

Which small differences would be useful to record before making an explanation?

My map key

Keep square area, row order and P meaning explicit.

The four records

Attach light, moisture and count to each square.

One pattern

Describe a supported difference without naming its cause.

A next question

What extra repeated information would make comparison more useful?

Keep it, change it or leave it here. Sharing is optional.

What makes a useful species record

Which details turn an invented sighting note into a clearer record without guessing an identity?

What the source supplies

Copy the slip's time, place, count and described features.

What the draft added

Identify the unsupported species claim.

My corrected record

Use the source details and an honest identity label.

A next check

Name a source check without inventing or submitting a record.

Keep it, change it or leave it here. Sharing is optional.

What can one fold change

How can I compare two paper shapes without claiming more than I tested?

The two versions

Sketch A flat and B with a shallow lengthways V. Label the supports and gap.

What stays the same

List the paper, gap, pads and observation you will keep consistent.

My observations or open questions

Record A and B separately. Mark a prediction, fictional entry or unknown clearly.

My careful conclusion

What does this comparison show? What does it leave untested?

Keep it, change it or leave it here. Sharing is optional.

Explain an invented mechanism

How can a sequence of labelled drawings show where motion goes?

My parts

Label the input, contact and output.

Direction

Which direction does each gear turn, under the stated rule?

Turn comparison

How far does B turn when A makes one or two turns?

Model limit

What would need checking before a real mechanism could be built?

Keep it, change it or leave it here. Sharing is optional.

A flow network on paper

What does a branching network allow, and where could a bottleneck appear?

My network

Draw the branches and their limits.

Turn 1

How many arrive, leave and wait?

Turn 2

Include the waiting token before adding new arrivals.

One revision

Which capacity changes, and what happens from an empty start?

Keep it, change it or leave it here. Sharing is optional.

Tell a small story in six shots

What information does each frame give the viewer?

My change

What is different between the opening and ending?

Six panels

Draw or label what each shot shows.

New information

Which panel adds something the viewer needs?

A possible gap

What might a viewer still need to understand?

Keep it, change it or leave it here. Sharing is optional.

Change the timing of an invented sequence

How can the same drawn action suggest a different pace?

Fixed drawings

Which positions stay identical?

Timing A

Write the duration of each position and the total.

Timing B

Mark exactly which hold changes.

My interpretation

What might the longer pause suggest, and what is directly shown?

Keep it, change it or leave it here. Sharing is optional.

Plan a soundscape without recording

What would a sound cue add that a picture leaves open?

Fixed picture

What happens at 0, 2 and 4 seconds?

Cue A

Name each sound and its timing, including silence.

Cue B

Change one cue while keeping the picture fixed.

What it adds

What could a sound imply that the picture does not establish?

Keep it, change it or leave it here. Sharing is optional.

Change one movement rule

What changes when a puzzle allows diagonal moves?

My board and rules

Copy the grid or label the example. What counts as one move?

First route

Draw or list a route using only up, down, left and right. Count the moves.

One changed rule

Add diagonals. Record a route without landing on the blocked square.

What follows from the change

What became possible? What stayed the same? Leave any untested claim as a question.

Keep it, change it or leave it here. Sharing is optional.

A maze with a readable clue

How can a clue help a player without silently solving the puzzle?

My rules

Label start, finish, blocked squares and allowed moves.

A checked route

Trace and count a route that obeys every rule.

My clue

What does the hint reveal, and what choice remains?

A second route

Can a different route satisfy the same clue?

Keep it, change it or leave it here. Sharing is optional.

Design a cooperative paper puzzle

Which rule makes two fictional roles useful without requiring competition?

The shared goal

What must the finished arrangement satisfy?

Rule A

What information does the first card provide?

Rule B

What does the second card add?

My revision

Change one rule and check a new arrangement against both cards.

Keep it, change it or leave it here. Sharing is optional.

Scale an imaginary island map

Which distances can I calculate from a clearly stated scale?

My scale

How much model distance does one grid square represent?

First leg

Count A to B and convert to metres.

Second leg and total

Convert B to C, then add the two route legs.

A clear label

Which distances did I calculate, and which remain unknown?

Keep it, change it or leave it here. Sharing is optional.

Read the shape of a drawn hill

What do contour spacing and height labels tell us about a landscape model?

My contour interval

What height difference separates neighbouring lines?

Equal height

Choose two points on one line. What height do they share?

Spacing comparison

Which side is steeper, and which visible detail supports that?

An unknown

What cannot be calculated or inferred from this drawing?

Keep it, change it or leave it here. Sharing is optional.

Compare two invented transport routes

What makes a route useful when distance is only one consideration?

The alternatives

Write each route's distance, given time and feature.

My criterion

What is this fictional traveller trying to prioritise?

A supported choice

Which route fits that criterion, and why?

Missing information

Name one detail needed before making a real-world recommendation.

Keep it, change it or leave it here. Sharing is optional.

An object and three possible explanations

Which details support an explanation of an invented historical object?

Visible or supplied details

List details before proposing a use.

Three possibilities

Name alternative explanations that could fit the drawing.

Support and doubt

Which clue supports an idea, and why is it not decisive?

Next evidence

What further record would help distinguish the explanations?

Keep it, change it or leave it here. Sharing is optional.

A timeline with honest gaps

How can I order supplied records while making missing information visible?

Record dates

Which date belongs to each supplied record?

Supported order

Arrange the three dated records.

An honest gap

Show where the revision can go without choosing an exact year.

Careful caption

What can the set establish, and what would be an overclaim?

Keep it, change it or leave it here. Sharing is optional.

Separate a picture from its caption

Which claim comes from visible detail and which depends on a record?

What I can point to

List visible details without a date guess.

Claim made by the record

What does the separate note say, and who wrote it?

An unsupported addition

Which part of Opening day is not supplied by evidence?

My careful label

Write a description that attributes the note and keeps uncertainty visible.

Keep it, change it or leave it here. Sharing is optional.

One sentence two readings

How can punctuation change the way an invented message is understood?

Two versions

Copy or point to both versions with the same words.

The addressed listener

Which version speaks to Pip?

The pictured subject

Which version asks for a picture of Pip?

A clearer message

How could a short explanation make the intended task obvious?

Keep it, change it or leave it here. Sharing is optional.

Find a rule in invented words

What pattern can a small set of made-up words support?

Observed pairs

Mark the shared and changed parts in both supplied pairs.

My rule

State a rule no broader than the examples support.

A prediction

Use the new one-star label to predict a two-star label.

An unknown case

What further card would separate a pair rule from a general plural rule?

Keep it, change it or leave it here. Sharing is optional.

Two ways to express one idea

Which part of a meaning survives when the wording changes?

Required details

List timing, object and destination.

A matching version

Which details survive in the first paraphrase?

A changed version

Point to at least one changed requirement in the second.

My wording

Choose a fictional audience and write a version that keeps the needed details.

Keep it, change it or leave it here. Sharing is optional.

A tiling pattern with a rule

How can a repeated shape cover a region without gaps or overlaps?

My region and tile

Label the 6-by-4 region and a two-square domino.

My placement rule

Mark tile boundaries. How did I check for gaps and overlaps?

Two counts

Count tiles by rows or columns, then check their total area.

What my evidence shows

Which region have I covered? What would need a new check?

Keep it, change it or leave it here. Sharing is optional.

Two charts from the same invented table

Which display choices change an impression without changing the values?

My fictional table

Record all three values and label them invented.

My two scales

State each count-axis range and equal step size.

A numerical check

Find C - A on both charts. Did the underlying result change?

My display choice

Which display helps my stated purpose, and which labels must stay visible?

Keep it, change it or leave it here. Sharing is optional.

Show one fraction two ways

What must stay the same for two fraction pictures to be equivalent?

My whole

Label what counts as one whole in each picture.

My equal parts

Show four equal parts and eight equal parts. State what each part represents.

My equivalence

Mark the shaded parts and explain 3/4 = 6/8 with a calculation or matching endpoints.

Proportion or amount

Explain why 3/4 of 12 cm and 3/4 of 8 cm have different lengths without being different fractions.

Keep it, change it or leave it here. Sharing is optional.

Remix an eight cell rhythm

Can two rhythms have the same length and number of sounds but different patterns?

My legend

State the reading direction, half-beat cell length and meanings of X and dot.

Pattern A

Draw eight cells and copy or create a pattern. Count its sound beginnings.

Pattern B

Move one X into an empty cell. Record exactly which cell changed.

Same and different

Compare total beats, number of sounds and where each sound begins.

Keep it, change it or leave it here. Sharing is optional.

Write a graphic score legend

What must a reader know before a symbol becomes a musical instruction?

My symbol key

State each symbol's duration and whether it starts sound or silence.

My time trace

Mark the start and end of each symbol, including silence.

One changed order

Keep the key and total duration fixed; show what changed.

A detail left free

What could two readers legitimately do differently?

Keep it, change it or leave it here. Sharing is optional.

An imagined instrument on paper

Which design choices would need checking before claiming a particular sound?

My design and aim

Label the sound-producing part and one intended effect.

A conditional prediction

Write what might change and the conditions you assumed.

What stays unknown

Separate pitch, loudness and timbre questions.

Evidence I would need

Plan a controlled check without inventing observations.

Keep it, change it or leave it here. Sharing is optional.

A claim a reason and a question

What would make an invented explanation stronger or weaker?

Claim

Write the exact scope word: every, some or only these records.

Reason

Which supplied records support it, and how?

Challenging evidence

Does the new record really fall within the claim?

Revised statement and question

Say what the records establish and what remains open.

Keep it, change it or leave it here. Sharing is optional.

Find a shape that breaks a rule

What can one clear counterexample show about an ‘all’ claim?

The exact all claim

Name the category and the property being asserted.

My candidate exception

Show that it belongs to the category.

The broken property

Explain exactly which required property fails.

A careful conclusion

Use “not all” without changing it to “none”.

Keep it, change it or leave it here. Sharing is optional.

A definition that needs revising

When does an invented category become too broad or too narrow?

Intended examples

Which cards must be included?

Too broad

Which unwanted card slips through my first rule?

Too narrow

Which intended card is wrongly excluded?

Revised definition

State boundary and quantity words so another reader can decide.

Keep it, change it or leave it here. Sharing is optional.

Read an invented friction comparison

Which variables need controlling before a surface comparison is useful?

My model conditions

List the conditions the comparison assumes are unchanged.

The fictional table

Copy each entry and label both the invented status and N unit.

My calculation

Calculate the two means and their difference, or check the supplied working.

What remains unchecked

Name one real measurement or control the table cannot establish.

Keep it, change it or leave it here. Sharing is optional.

Explain a drawn shadow

How can a ray diagram show what a shadow model assumes?

My geometry

Label source, block, screen and the two source distances.

My edge rays

Show each line skimming one block edge and meeting the screen.

My calculated shadow

Record the upper and lower screen coordinates and shadow height.

Limits of my model

Name one assumption and how changing it could change the drawing’s prediction.

Keep it, change it or leave it here. Sharing is optional.

An energy transfer explanation

Which transfers belong in a clear model of an invented machine?

My boundary and interval

Label the battery, wheel, device and room included in this invented account.

My decrease and destinations

Record the battery decrease and each stated destination, all in J.

My balance

Check the 100 J transfer total and the 140 J complete before/after total.

My explanation and limit

Distinguish the sound transfer from its final thermal destination. What has not been measured?

Keep it, change it or leave it here. Sharing is optional.

Design a game with more than one way to join

Which rule changes create a real participation choice?

Objective

What must any completed route include?

Restriction

Which original rule unnecessarily limits how a move is communicated?

Equivalent options

Show two modes that convey the same complete choice.

Still to ask

Name one remaining clarity or access question without assuming an answer.

Keep it, change it or leave it here. Sharing is optional.

Explain a movement sequence on paper

What order and timing information would a diagram need?

Positions and start

Label the coordinate convention and initial position.

Order

Draw the arrows for each schedule.

Arrival times and intervals

Subtract consecutive times; keep units visible.

Missing information

What movement detail is not fixed by the three position records?

Keep it, change it or leave it here. Sharing is optional.

What does a scoring rule reward

How can the same fictional play produce different results under two scoring systems?

Raw record

Keep near/far counts separate from point totals.

System 1

Show the calculation for each route.

System 2

Show weights, multiplication and totals.

What the rule rewards

Explain the changed comparison and one thing neither score measures.

Keep it, change it or leave it here. Sharing is optional.

Three openings for one invented story

What does each beginning invite a reader to wonder about?

Shared facts

Which facts must every version preserve?

First information

What does each opening reveal first?

My alternative

Write, draw or dictate a new entry point.

A connected next line

Which introduced detail does the next line develop?

Keep it, change it or leave it here. Sharing is optional.

The same small event from two viewpoints

Which details change when an invented narrator changes?

Fixed event

List what happened independently of either telling.

Access

What can each narrator see, hear or not know?

My short version

Stay within one selected narrator's access.

Observation and inference

Label one observed detail and one uncertain interpretation.

Keep it, change it or leave it here. Sharing is optional.

One world rule three consequences

How does an invented rule create connected story possibilities?

My rule

State what changes, when and what stays fixed.

Three consequences

For each, show the connection back to the rule.

A choice for a character

Write or draw a small situation affected by it.

Consistency check

Which sentence would require an explicit rule revision?

Keep it, change it or leave it here. Sharing is optional.

Sort animal clues without guessing

What happens when a grouping rule meets a missing detail?

My four cards

Write or sketch the supplied features. Mark D's hidden covering as unknown.

Rule one

Group by covering. Which card needs an unknown place?

Rule two

Group by stripes or spots. Which cards change companions?

Supported and unanswered

Write one supported statement and one question these descriptions cannot settle.

Keep it, change it or leave it here. Sharing is optional.

A beak drawing and a function question

What can shape alone suggest, and what needs a checked reference?

Visible model information

Record dimensions, units and how each was defined.

My calculation

Show length divided by width for each model.

A tentative function question

Keep a possible idea distinct from an established fact.

Missing evidence

Name a suitable reference or observation; no animal interaction is needed.

Keep it, change it or leave it here. Sharing is optional.

Invent a creature with a labelled inspiration

Which movement idea is researched and which part belongs to invention?

Researched note

Paraphrase one supplied research statement with its source.

Invented design

Label the parts and what I propose they might do.

The boundary

Which claim would go beyond the research?

A check still needed

State an unanswered feasibility question without inventing a result.

Keep it, change it or leave it here. Sharing is optional.