

Pip's Night-Sky Adventure — Patterns, Shapes & Skip-Counting

A story-driven Year 4 maths adventure worksheet starring Pip the possum. As Pip explores Burraga Hollow after dark, learners follow her through five "stations": continuing number and shape patterns, skip-counting along the creek, sorting and classifying her gumnut treasures, naming and counting 2D shapes, and finishing/creating their own repeating patterns with the Star Jar. Themed in Pip's soft, wondering voice with animated SVG diagrams. Aligned to Year 4 number patterns, multiplication-fact skip-counting, shapes, and data/sorting. Printable; works individually or in pairs.



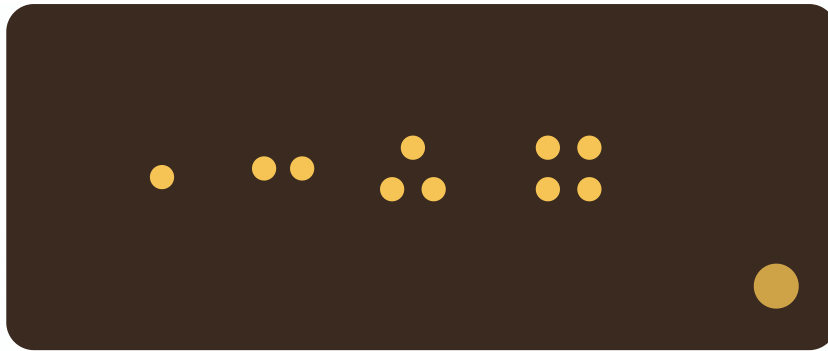
Burraga Hollow after dark: Pip the possum sits by the hollow log under a moon and twinkling stars, ready for her night-time adventure.

The sun has slipped behind the gum trees, and the Hollow is turning golden, then dusky, then starry. That means it is Pip's favourite time. She uncurls in the hollow log, gives a slow blink, and picks up her Star Jar. "Ooh," she whispers. "Let's see what the night is hiding tonight." Come along on Pip's adventure — there are patterns to spot, gumnuts to sort, and shapes hiding everywhere. Bring a pencil. Pip will count the stars while you think.

How to travel with Pip. There are five stops on tonight's adventure. Do them in order, like footprints along a track. If you take a wrong turn, that's alright — it's just a friendly detour. Have another go.

Stop 1 — The Counting Stars

Pip looks up. "When I can't sleep, I count the stars," she says. "And look — tonight they came out in a pattern!" Each little cluster has more stars than the one before.



Pip's star clusters: 1 star, then 2, then 3, then 4. Her Star Jar glows in the corner whenever she has an idea.

Pip wonders aloud. "1, then 2, then 3, then 4... each cluster has *one more star* than the last. So the next cluster should have... 5!" This is a **growing pattern** — it goes up by the same amount each time.

Q1. How many stars would be in the **5th** cluster? _____

Q2. Keep Pip's star pattern going. Write the next three numbers:

1, 2, 3, 4, _____, _____, _____

Q3. Pip finds another patch of sky counting a different way: 2, 4, 6, 8, ... What is the rule, and what are the next two numbers?

Rule: the numbers go up by _____ each time.

Next two numbers: _____, _____

Stop 2 — Skip-Counting Along the Creek

Pip pads down to the creek. The stepping stones go all the way across, and she likes to hop them in jumps. "If I hop in **twos**, I get there faster," she says. **Skip-counting** is counting in equal hops instead of one at a time.

Skip-counting is just like your times tables wearing comfy shoes. Counting by 5s? That's the 5 times table: 5, 10, 15, 20...

Q4. Pip hops across in **5s**. Fill in her hops:

5, 10, _____, _____, 25, _____, _____

Q5. Now she hops in **3s**, because the stones are close together. Fill in the gaps:

3, 6, _____, 12, _____, 18, _____

Q6. There are 4 stones, and Pip leaves **2 paw-prints** on each stone. How many paw-prints altogether? Show how skip-counting helps.

Stop 3 — Sorting Pip’s Treasures

Pip empties her little pouch onto the flat rock. Out tumble her night-time treasures: shiny gumnuts, smooth pebbles, and curled gumleaves. “I love sorting,” she says. “It helps me see what I’ve got.” When we sort, we put things into groups that are the same in some way.

Here is what spilled out of Pip’s pouch:

3 shiny gumnuts · 5 curled gumleaves · 2 smooth pebbles · 4 shiny gumnuts · 1 smooth pebble

Q7. Help Pip sort her treasures. Count how many of each kind, then fill in the table.

Kind of treasure	How many
Gumnuts	
Gumleaves	
Pebbles	

Q8. Which treasure does Pip have the **most** of? _____

Q9. How many treasures does Pip have **altogether**? _____

Stop 4 — Shapes in the Dark

Pip peeks through a gap in the leaves. “I wonder what shapes are hiding out here,” she says. The full moon is a circle. The old signpost by the log is a rectangle. A fallen gumleaf, pointy at both ends, makes her think of a triangle.

Q10. Match each thing Pip sees to its shape.

Thing Pip sees	Its shape
The full moon	
The signpost	
A slice of star-fruit (3 sides)	
The window of the burrow (4 equal sides)	

Q11. Pip draws a shape in the dirt with her paw. It has **4 sides** and **4 corners**, and all its sides are the same length. What shape is it? _____

Q12. Draw a triangle and a rectangle for Pip in the box below. Under each one, write how many sides it has.



Stop 5 — The Star Jar Pattern

It is nearly time for Pip to curl up. She lines up her treasures along a log to make one last pattern before bed: a gumnut, two leaves, a gumnut, two leaves... "A pattern is a part that *repeats*," she says happily. The part that repeats is called the core.

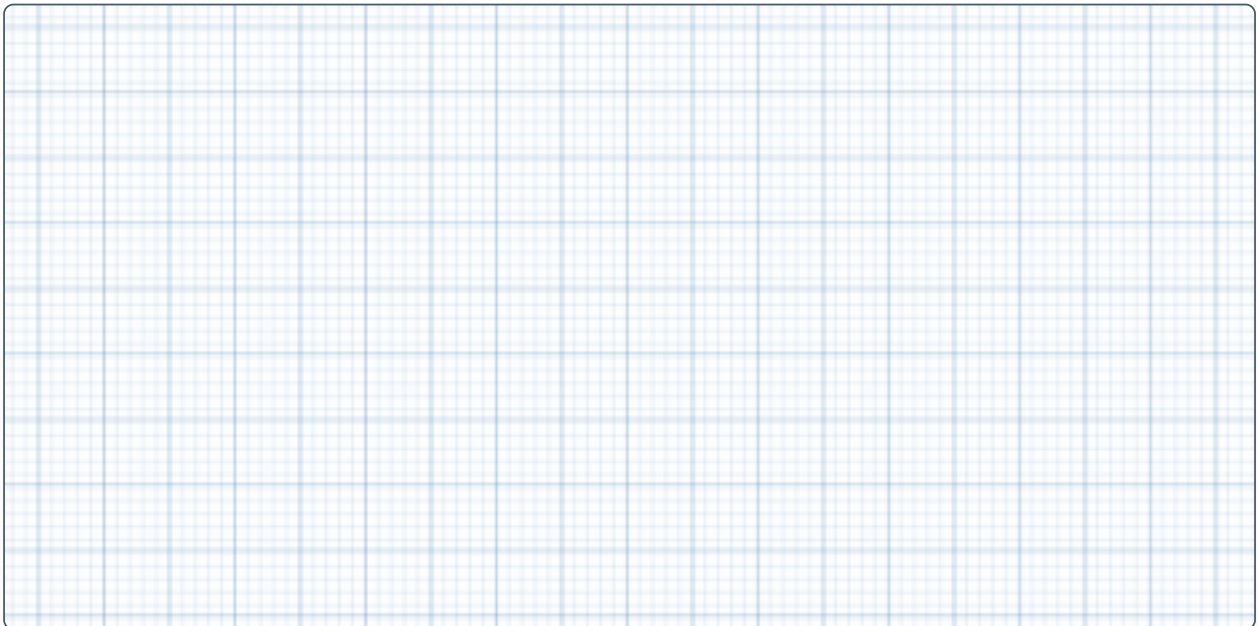


Pip's repeating pattern: gumnut, leaf, leaf, gumnut, leaf, leaf... The same little group keeps coming back.

Q13. What is the repeating part (the core) of Pip's pattern? _____

Q14. If Pip keeps her pattern going, what comes **next** after the last leaf? _____

Q15. Now make your *own* repeating pattern for Pip to find in the morning. Use shapes, letters, or little drawings — just make sure a part repeats at least three times. Then draw a circle around the core.



Pip gives a big, sleepy yawn and sets her Star Jar down beside her. "What a lovely adventure," she whispers. "We found growing patterns in the stars, hopped the creek by skip-counting, sorted my treasures, spotted shapes in the dark, and made a repeating pattern. Good trying, friend — that's how we learn." The fireflies dim, the Hollow goes quiet, and Pip curls up to dream of tomorrow's puzzles.

For the teacher — answer notes

- **Q1.** 5 stars.
- **Q2.** 5, 6, 7 (rule: +1 each time).
- **Q3.** Rule: +2 each time; next two numbers 10, 12.
- **Q4.** 5, 10, **15, 20**, 25, **30, 35**.
- **Q5.** 3, 6, **9**, 12, **15**, 18, **21**.
- **Q6.** 8 paw-prints. Skip-count by 2s four times: 2, 4, 6, 8 (or $4 \times 2 = 8$).
- **Q7.** Gumnuts 7 ($3 + 4$), Gumleaves 5, Pebbles 3 ($2 + 1$).
- **Q8.** Gumnuts (7).
- **Q9.** 15 treasures altogether.
- **Q10.** Moon → circle; signpost → rectangle; star-fruit slice (3 sides) → triangle; burrow window (4 equal sides) → square.
- **Q11.** A square.
- **Q12.** Triangle = 3 sides; rectangle = 4 sides. Check the drawings show closed shapes with straight sides.
- **Q13.** The core is "gumnut, leaf, leaf" (an ABB pattern).
- **Q14.** A gumnut (the core starts again).
- **Q15.** Open response. Look for a clearly repeating core shown at least three times, with the core correctly circled.

Curriculum focus: continuing and describing number patterns and growing patterns; skip-counting by 2s, 3s and 5s and linking it to multiplication; collecting, sorting and interpreting simple data; naming and describing 2D shapes by their sides and corners; identifying and creating the core of a repeating pattern.