

Cupcake Constellation

HOST ONLY - preparation and story

Includes answers. Keep these pages with an adult.

The birthday team has arrived, but one important part of the celebration is missing. Arrange paper cupcake stars to finish the birthday constellation. Collect five named badge digits, then use the final sheet to finish your mission. All the clues you need are printed here. Work together and ask for a hint whenever you want.

1. Print one player pack and two prop sheets per team. Keep all host and hint pages with an adult.
2. Put clue pages 1-5 at the table. Place the final sheet face down until the five badges are collected.
3. Share pencils and choose a reader, recorder and path finder. Swap jobs after each clue.

Players: 4; teams: 1. Print one player and prop set per team. Invitations and certificates: 4 each.

No locks, purchases or cutting required. Keep all clues at a low table. Scissors are optional and for adults only.

Cupcake Constellation

HOST ONLY - solution guide

1. Stars: 4

Count each triangle once; ignore the other shapes.

2. Orbit: 7

Add 2 to the final printed number. The allowed rule is stated on the sheet.

3. Ribbon: 7

The matching card has both circle and plain; matching just one property is insufficient.

4. Steps: 5

The rules form one chain: Draw a plan > Gather paper > Build the model > Show the model.
Read card 4.

5. Tray: 1

Subtract 0 from 2, then divide by 2. Check the result in the balance rule.

6. Final: 71745

grid-placement: Orbit > Tray > Ribbon > Stars > Steps. Keep leading zeroes.

Cupcake Constellation

HOST ONLY - timeline and paper check

3 minutes: Read the opening story and explain the badges.

5 minutes: Solve Stars; offer one hint at a time.

5 minutes: Solve Orbit; offer one hint at a time.

5 minutes: Solve Ribbon; offer one hint at a time.

5 minutes: Solve Steps; offer one hint at a time.

5 minutes: Solve Tray; offer one hint at a time.

5 minutes: Combine the badges on the final sheet.

2 minutes: Read the ending and award certificates.

Paper completion: check each badge against the solution guide, then check the final code. No device is required.

Mission complete! Cupcake Constellation is ready for its birthday celebration. Thank your team for sharing ideas and helping one another.

Duration and ages are estimates. Adjust pace and offer help for your group.

Cupcake Constellation

Player clue 1: Stars | Team 1

Welcome, birthday explorers! Arrange paper cupcake stars to finish the birthday constellation. Find five badge numbers. Use them on the last page. You can help each other and ask me for hints.

Count only the triangle shapes. Write that number on your Stars badge.



triangle



triangle



triangle



triangle



circle



circle



circle

Stars badge: _____

Cupcake Constellation

Player clue 2: Orbit | Team 1

The rule is: add 2 each time. What comes next? Write the next number.

RULE: add 2 each time

1

3

5

?

Orbit badge: _____

Cupcake Constellation

Player clue 3: Ribbon | Team 1

Find the card with the same shape AND marking as the target. Copy its digit.

Start after badges: Stars.

TARGET: circle, plain



circle / plain - digit 7



triangle / plain - digit 0



circle / dots - digit 2

Ribbon badge: _____

Cupcake Constellation

Player clue 4: Steps | Team 1

Use the BEFORE rules to put the four cards in order. Take the number on card 4.

Start after badges: Stars.

Build the model [3]	Draw a plan [8]
Show the model [5]	Gather paper [1]

Draw a plan BEFORE Gather paper

Gather paper BEFORE Build the model

Build the model BEFORE Show the model

Read position 4 (positions start at 1).

Steps badge: _____

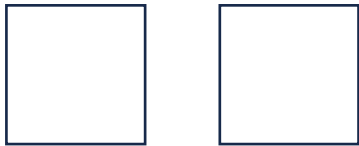
Cupcake Constellation

Player clue 5: Tray | Team 1

Every parcel weighs the same whole number from 1 to 9. Use the balance rule to find the weight of ONE parcel.

Start after badges: Orbit.

2 parcels + 0 loose units = 2 units



One parcel = ? units. Whole numbers 1-9.

All parcels have equal weight.

Tray badge: _____

Cupcake Constellation

Player clue 6: Final | Team 1

Place each badge digit in its named slot. Follow the printed reading order and join the five digits.

A2: Stars ?	B2: Orbit ?	C2: Ribbon ?
D2: Steps ?	E2: Tray ?	

READ SLOTS IN THIS ORDER:

B2 > E2 > C2 > A2 > D2

Final badge: _____

Need help? Ask your host for one hint at a time.

Cupcake Constellation

Hint cards - level 1 (spoilers; keep with host)

1. Stars

Look for the word triangle.

2. Orbit

Every step adds 2.

3. Ribbon

Compare two properties.

4. Steps

Use the written rules rather than the printed card order.

5. Tray

All parcels have the same weight.

6. Final

Keep the five badge results visible. Every number has a badge name.

Cupcake Constellation

Hint cards - level 2 (spoilers; keep with host)

1. Stars

Point to one triangle at a time.

2. Orbit

Start with the last number, not the first.

3. Ribbon

First find the same shape, then compare the marking.

4. Steps

Find the card that has no earlier card.

5. Tray

Remove the loose weight from the total first.

6. Final

Use the order, slots, route or matching columns printed on this page.

Cupcake Constellation

Hint cards - level 3 (spoilers; keep with host)

1. Stars

Mark the triangle shapes as you count, then check again.

2. Orbit

Add once more; do not skip a step.

3. Ribbon

Reject cards that agree on only one property.

4. Steps

Place each card immediately after its predecessor; count positions from one.

5. Tray

Share the remaining weight equally among the parcels.

6. Final

Start with the Orbit badge, then follow the printed rule.

Cupcake Constellation

Team 1 badge record (no cutting needed)

Write a digit beside each badge as you solve its clue.

Stars: _____

Orbit: _____

Ribbon: _____

Steps: _____

Tray: _____

Reader: reads the clue. Recorder: writes the digit. Path finder: traces routes. Swap roles every clue.

Cupcake Constellation

Team 1 paper unlock card

Our five badges are ready. We used the final sheet to find this code:

Host: compare this with your solution guide. When it matches, read the ending and celebrate.

No physical lock or prize is required. You may draw a celebration star on this card.

Cupcake Constellation

You're invited to a birthday mystery!

Join Birthday Explorer for Cupcake Constellation.

Arrange paper cupcake stars to finish the birthday constellation.

Date: _____

Time: _____

Place: _____

Bring your curiosity. Paper and pencils are provided. Work together, share ideas and solve six clues.

Designed for ages 6-8. Estimated 30-40 minutes.

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Cupcake Constellation

Birthday Mystery Explorer

Presented to Birthday Explorer

Team member: _____

For completing Cupcake Constellation with curiosity,
teamwork and kindness.

Mission complete! Cupcake Constellation is ready for its birthday
celebration. Thank your team for sharing ideas and helping one
another.

Date: _____

Host signature: _____

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