

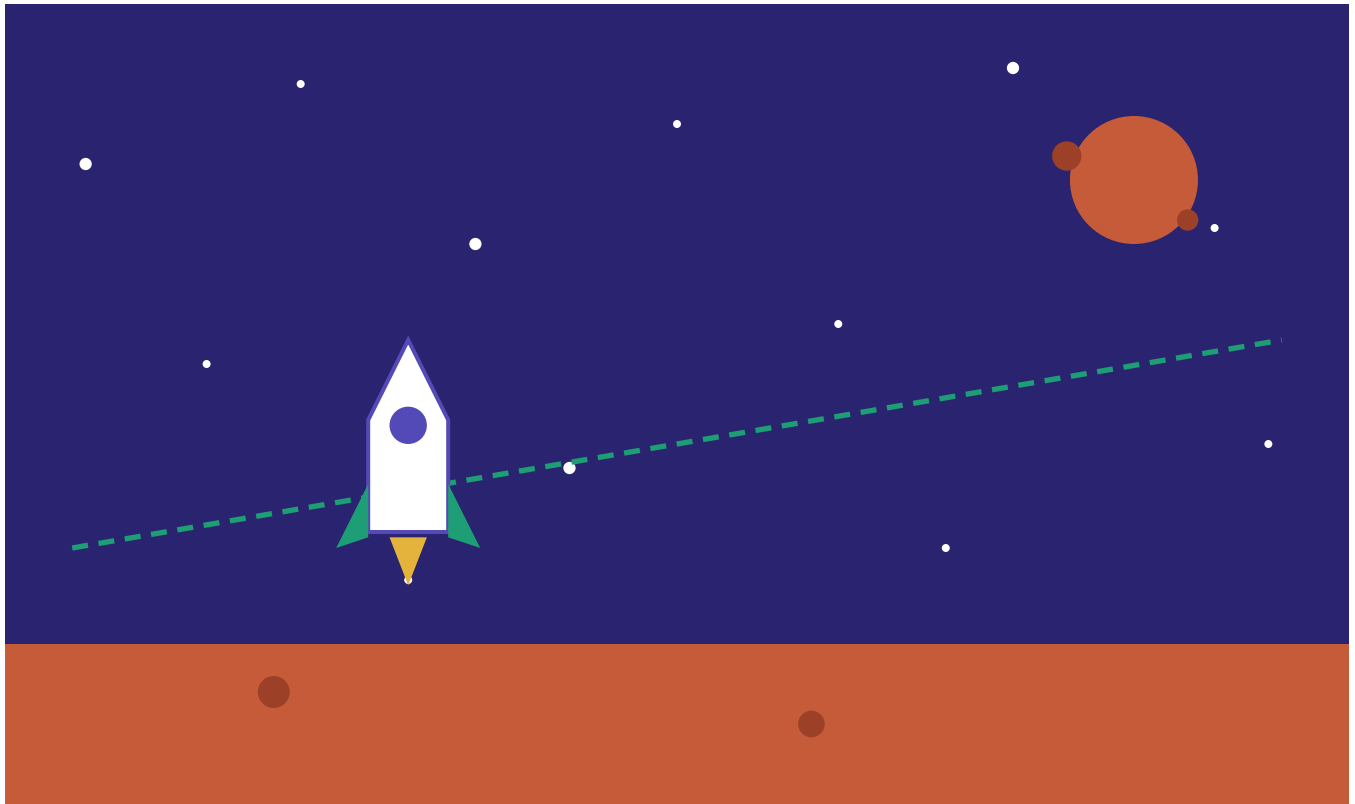


PRINTABLES

MATH MISSION TO MARS

Exponents & Order of Operations Escape Room

GRADE 6	CCSS 6.EE.A.1	5-STAGE ESCAPE ROOM	5 CODES TO CRACK
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A narrative-driven, 5-stage escape room reviewing writing and evaluating numerical expressions with whole-number exponents. Includes stage cards, recording sheets, tiered hint cards, anchor chart, vocabulary foldable, full answer key, and astronaut certificate.

Teacher Mission Guide

STANDARD: CCSS.MATH.CONTENT.6.EE.A.1 — Write and evaluate numerical expressions involving whole-number exponents. **SKILLS:** exponent notation & vocabulary, expanded form, order of operations (GEMS/PEMDAS) with exponents, evaluating formulas ($V = s^3$, $A = 6s^2$), and error analysis.

WHAT'S INSIDE

- 5 full-color stage cards (one per mission phase), each with a 4-letter decode
- Student Mission Recording Sheet with stage-tracking grid + reflection page
- 15 hint cards (3 differentiated levels per stage)
- Teacher Answer Key with every code and fully worked order-of-operations solutions
- "Order of Operations with Exponents" anchor chart
- Vocabulary foldable (base, exponent, power, squared, cubed, evaluate) with labeled diagram
- Extension challenges for early finishers
- Printable Astronaut Completion Certificate

PREP & RUN OPTIONS

- **Station mode (recommended):** post the 5 stage cards around the room; crews rotate. 45–60 min.
- **Packet mode:** each crew gets all 5 cards at their desk; great for small groups. 40–50 min.
- **Solo/fast-finisher mode:** one student, full packet, hints face-down. 30–40 min.
- **Materials:** pencils, one recording sheet per student, optional envelopes for code "transmission".
- **Checking codes:** answers are self-checking via the decoder, but require your stamp before advancing so you can spot-check reasoning.

ANSWER SNAPSHOT (codes in mission order)

STAGE	PHASE	CODE
1	Launch Pad	LIFT
2	Orbital Burn	BURN
3	Fuel Depot	FUEL
4	Docking Sequence	DOCK
5	Mars Landing	MARS

Student Mission Briefing

CLASSIFIED — ASTRONAUT EYES ONLY. Welcome aboard, cadet. Earth needs a crew to fly the first supply run to Mars. Your ship's computer only accepts commands in **power expressions** and the **order of operations**. At each of the 5 mission stages, evaluate every expression, match each answer to the decoder, and enter the 4-letter code to unlock the next stage. Crack all five codes — LIFT, BURN, FUEL, DOCK, MARS — and you will be certified as a UM Printables Astronaut. Good luck, crew!

MISSION RULES

- Show ALL work on your Mission Recording Sheet — Mission Control checks reasoning, not just codes.
- Use the order of operations on every burn: Parentheses → Exponents → Multiply/Divide (left to right) → Add/Subtract (left to right).
- Stuck? Request a hint card. Level 1 costs 0 fuel points, Level 2 costs 1, Level 3 costs 2.
- Every crew member must be able to explain ANY answer before you transmit a code.

CREW ROLES

ROLE	DUTY
Commander	Reads the stage card and keeps the crew on mission
Recorder	Writes neat, complete work for every expression
Navigator	Matches answers to the decoder and fills code boxes
Timekeeper	Tracks time and decides when to request hints

Anchor Chart: Order of Operations with Exponents

1 — PARENTHESES () []

Do grouping symbols first, innermost first. *Example:* $(3 + 1)^2 \rightarrow$ do $3 + 1 = 4$

2 — EXPONENTS

Evaluate ALL powers next (they are shortcuts for repeated multiplication). *Example:* $4^2 = 16$, $2^3 = 8$

3 — MULTIPLY & DIVIDE

Left to right, in the order they appear. *Example:* $64 \div 4 = 16$, then $2 \times 8 = 16$

4 — ADD & SUBTRACT

Left to right, in the order they appear. *Example:* $16 + 5 - 4 = 17$

WORKED EXAMPLE

$$3 + 4^3 \times 2 - 5$$

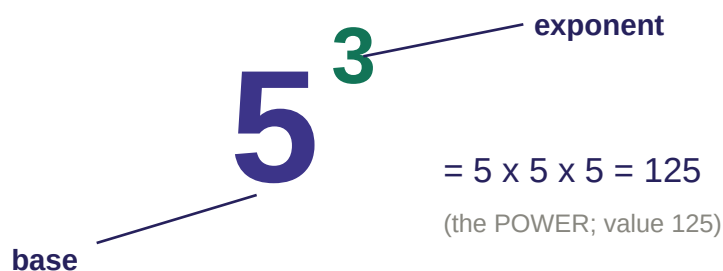
Step 1 Parentheses: none. Step 2 Exponents: $4^3 = 64 \rightarrow 3 + 64 \times 2 - 5$.

Step 3 Multiply: $64 \times 2 = 128 \rightarrow 3 + 128 - 5$. Step 4 Add/Subtract: $131 - 5 = \mathbf{126}$.

AVOID THESE TRAPS

- 5^3 is $5 \times 5 \times 5 = 125$, NOT $5 \times 3 = 15$.
- $(3 + 5)^2 = 8^2 = 64$, NOT $3^2 + 5^2 = 34$. Exponents do not distribute!
- In $6s^2$, square FIRST: $6 \times 5^2 = 6 \times 25 = 150$, not $(6 \times 5)^2 = 900$.
- Multiply and divide strictly left to right; so do addition and subtraction.

LABELED DIAGRAM: PARTS OF A POWER



Stage 1 — LAUNCH PAD: Exponent Vocabulary & Notation

STAGE 1

LAUNCH PAD
Exponent Vocabulary & Notation

CODE: 4 LETTERS



MISSION BRIEF: Crew members, no liftoff until Mission Control verifies your power-expression credentials. Complete all four checks, decode each value into a letter, and enter your 4-letter code.

1A. Write $5^3 \times 4$ in expanded form, then evaluate.

1B. Evaluate 2^5 .

1C. In the power 4^7 , what is the exponent?

1D. In the power 4^7 , what is the base?

DECODER — match each correct value to its letter:

VALUE	500	32	7	4
LETTER	L	I	F	T

TRANSMIT CODE — STAGE 1

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Mission tip: Say each power out loud: "base to the exponent power." | **Think–Pair–Check:** solve alone, compare with your co-pilot, then transmit.

Stage 5 — MARS LANDING: Mission Control

STAGE 5

MARS LANDING
Mission Control

CODE: 4 LETTERS



MISSION BRIEF: Final approach! Mission Control sends four clearance expressions. The last one uses nested parentheses [()], exponents, and all four operations. Evaluate each to earn your landing code.

5A. Evaluate $3^2 + (8 \div 2) \times 4 - 6$.

5B. Evaluate $(5 + 3)^2 \div 4 - 2^3$.

5C. Evaluate $[(6 + 2) \times 3 - 4^2] \div 2 + 7$.

5D. Evaluate $2 \times [(3 + 1)^2 - 2^3] + 15 \div 3 - 4$.

DECODER — match each correct value to its letter:

VALUE	19	8	11	17
LETTER	M	A	R	S

TRANSMIT CODE — STAGE 5

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Mission tip: Brackets [] are just outer parentheses: finish the inner () first. | **Think–Pair–Check:** solve alone, compare with your co-pilot, then transmit.



MATH MISSION TO MARS

Exponents & Order of Operations Escape Room

GRADE 6

CCSS 6.EE.A.1

5 STAGES

27-PAGE FULL RESOURCE

WHAT'S INCLUDED

- 5 full-color stage cards, one per mission phase, with 4-letter decoders.
- Student Mission Recording Sheet with tracking grid and reflection workspace.
- 15 differentiated hint cards - 3 levels per stage.
- Teacher Answer Key with mission codes and worked solutions.
- Order of Operations with Exponents anchor chart and vocabulary foldable.
- Early-finisher extension challenges and a printable Astronaut Completion Certificate.

THE 5-MISSION FLOW

- 01 LAUNCH PAD - Exponent Vocabulary & Notation
- 02 ORBITAL BURN - Order of Operations with Exponents
- 03 FUEL DEPOT - Exponents in Real-World Formulas
- 04 DOCKING SEQUENCE - Error Analysis
- 05 MARS LANDING - Mission Control
- Mission codes: LIFT → BURN → FUEL → DOCK → MARS

TEACHER-FRIENDLY IMPLEMENTATION

- Setup + play:** 5 minutes to set up; 45–60 minutes for the recommended station mode.
- Formats:** Station, packet, or solo/fast-finisher use are provided.
- Crew structure:** Crews of 3–4 can use Commander, Recorder, Navigator, and Timekeeper roles.
- Support:** Each stage has three hint tiers; the resource also includes Think–Pair–Check guidance.

SKILL FOCUS

Write and evaluate numerical expressions involving whole-number exponents, use order of operations with exponents, apply exponents in formulas, and analyze errors.

FULL RESOURCE ROADMAP

p. 1	Cover	pp. 10–15	Stage Cards
pp. 2–3	Contents & How to Play	pp. 16–17	Recording + Reflection
p. 4	Teacher Mission Guide	pp. 18–19	Hint Cards
p. 5	Differentiation & Support	p. 20	Extensions
p. 6	Student Mission Briefing	pp. 21–25	Teacher Answer Key
p. 7	Anchor Chart	p. 26	Astronaut Certificate
pp. 8–9	Vocabulary Foldable	p. 27	UMPrintables.com review page

PREVIEW NOTE

This preview shows selected pages from the 27-page full resource. The complete resource contains all five mission stages plus the teacher/student support materials, hint cards, extensions, answer key, and certificate.

