TEACHER COPY · READ FIRST

Ropes Course Equations on paper · Grade 7

4 printable trips that match the 4 levels of the online game. No device or account needed.

What is inside

Pages	For	What
This page	Teacher	How to run, score and choose a next step
Trips 1–4	Students	Each trip: the level's picture and checkpoint names, five checkpoints (the last has two parts) and an unscored Talk bonus. Trips 1–2 use the game's main questions; trips 3–4 practice the same kinds of questions with new numbers.
Answer key	Teacher	Answer, the game's clue, worked steps, and what common wrong answers usually mean
Record sheet	Teacher	First answers and fixes, one row per student per trip

Run one trip (20–30 minutes)

1. Copy one trip for each student. Students may use scratch paper; no calculator is needed.
2. Check each checkpoint. After a first miss, read the **clue** from the key aloud and let the student try once more. They keep the first answer and write the new one with a star (★). This is what the online game does.
3. After a second miss, go through the **worked steps** together, as the game does.
4. On a question with several boxes or rows, every box must be right for the first answer to count.

Count and choose a next step

Count **first answers** on checkpoints 1–4, and record Part A and Part B of checkpoint 5 separately. Fixes with a star go in their own column. There is no cut score.

What you see	A next step
Fixed after the clue (★)	Ask what the clue made them notice; give the matching question on a later trip.
Missed twice	Work the steps together, then try the trip 3–4 question from the same family (same kind, new numbers).
The key's wrong-answer note keeps repeating	Teach to that error (for example, doing a step to only one side of an equation, or forgetting to flip an inequality when dividing by a negative).
Part A right, Part B wrong	The first step is solid; talk through how Part B uses it.

Levels in this packet

- **Course 1: Ropes Course** — Cargo Ladder, Swinging Bridge, Hanging Logs, Zip Line, Rings & Cargo Net
- **Course 2: Pine Canopy** — Rope Ladder, Overhead Traverse, Swinging Logs, Balance Beam & Zip Line, Bridge & Cargo Net
- **Course 3: Moab Canyon** — Stairs & Beam, Stone Steps, Cargo Net, Ladder & Zip Line, Bridge, Net & Traverse
- **Course 4: Alpine** — Stairs & Rope Traverse, Hanging Logs, Bridges & Stairs, Cargo Net, Steps & Zip Line

Same questions as the online game. These are the game's questions, so a student who played online may have seen some. Original practice from Pole Mountain Learning, informed by published mathematics expectations. It is not an official Pearson, NAVVY or WY-TOPP assessment and does not use their test questions. Results are practice notes, not grades, and do not predict test scores or establish mastery. Built and reviewed with AI tools; no human classroom trial of this revision yet. Free for classroom use. November 2026 edition.

Answer key · Grade 7

Course 1: Ropes Course

#	Skill · standard	Answer	Clue (after a first miss) and worked steps	Common wrong answers
1	Add and subtract expressions 7.EE.1	**B**	**Clue:** Group the variable terms together and the constant terms together. **Worked:** $3x + (-5x) = -2x$. $-2 + 7 = 5$. The combined expression is $-2x + 5$.	**A:** The second x coefficient is negative; $3 + (-5)$ is not 8. **C:** Keep the sign attached to each constant when adding them; recheck the constant term.
2	Equivalent expressions 7.EE.1	**B and E**	**Clue:** Distribute the factor to both terms, keeping track of each sign. **Worked:** $(\frac{1}{2}) \times 6x = 3x$ and $(\frac{1}{2}) \times (-8) = -4$. Both $3x - 4$ and $-4 + 3x$ are equivalent.	**A:** One half multiplies the constant −8 too. **C:** The constant stays negative after multiplying by positive one half. **D:** The variable term also needs the factor one half.
3	Factoring linear expressions 7.EE.1	$6x - 9 = 3(\underline{2}x \underline{-} 3)$	**Clue:** Divide each original term by the fixed outside factor. Check by distributing back. **Worked:** $6x \div 3 = 2x$ and $-9 \div 3 = -3$. The factored form is $3(2x - 3)$.	
4	Write and solve two-step equations 7.EE.4a	A matching equation is $\underline{3}x + \underline{7} = \underline{-5}$. Solving gives $x = \underline{-4}$.	**Clue:** Represent the repeated or fractional change, the starting value and the ending value before solving. **Worked:** Three equal changes contribute 3x; add them to the starting temperature: $3x + 7 = -5$. Subtract 7: $3x = -12$. Divide by 3: $x = -4$ degrees per interval. Check: $7 + 3 \times (-4) = -5$.	
5A	Justifying equation steps 7.EE.4d	$3x - 6 = 12$: **Yes** · $3x = 6$: **No** · $x - 2 = 4$: **Yes**	**Clue:** Try a legal operation on both sides, or solve each equation and compare. **Worked:** The original equation has solution $x = 6$. $3x - 6 = 12$ and $x - 2 = 4$ also have solution 6; $3x = 6$ has solution 2.	Compare this equation with the original; both must have the same solution.
5B		**C**	**Clue:** For the distributed form, apply the outside factor to both terms. **Worked:** The distributive property replaces $3(x - 2)$ with the equal expression $3x - 6$.	**A:** That would give $3x - 2$, not the correct distributed expression. **B:** An outside factor multiplies; it is not an amount to add.

Talk bonus (balance): Subtract 3 from the other side too.

Course 2: Pine Canopy

#	Skill · standard	Answer	Clue (after a first miss) and worked steps	Common wrong answers
1	Equations with parentheses 7.EE.4a	5.5 Any numerically equivalent whole number, fraction, mixed number or finite decimal; no rounding.	**Clue:** You can divide both sides by the outside factor before undoing the inside operation. **Worked:** Divide by 2: $x - 3 = 2.5$. Add 3 to both sides: $x = 5.5$. Check: $2 \times (5.5 - 3) = 5$.	

#	Skill · standard	Answer	Clue (after a first miss) and worked steps	Common wrong answers
2	Multi-step equations 7.EE.4b	3 Any numerically equivalent whole number, fraction, mixed number or finite decimal; no rounding.	**Clue:** Distribute, combine like terms, then use inverse operations. **Worked:** Distribute: $4x - 8 + 3x = 13$. Combine like terms: $7x - 8 = 13$. Add 8, then divide by 7: $x = 3$. Check: $4 \times (3 - 2) + 3 \times 3 = 13$.	
3	Two-step inequalities 7.EE.4c	**A**	**Clue:** Solve the inequality. If you divide by a negative number, reverse its direction; then check the boundary. **Worked:** Subtract 2: $3x < 9$. Divide by positive 3: $x < 3$. Use an open dot at 3 with a ray to the left.	**B:** The ray points toward values that fail the original inequality. **C:** Check whether equality is allowed in the original inequality.
4	Inequalities in context 7.EE.4c	**A and D**	**Clue:** Check every stated condition. A count can fit the budget or score rule and still fail the minimum count. **Worked:** The station requirement is $p \geq 2$. The budget gives $3p + 8 \leq 20$, so $p \leq 4$. A count must be at least 2 and at most 4. The listed counts 3 and 2 meet both requirements. Zero costs only 8 tokens but fails the minimum station requirement.	**B:** The count 0 is below the required minimum of 2. **C:** 5 stations cost 23 tokens, above the 20-token budget. **E:** 6 stations cost 26 tokens, above the 20-token budget.
5A	Equation reasoning 7.EE.4a, 7.EE.4d	8 markers Any numerically equivalent whole number, fraction, mixed number or finite decimal; no rounding.	**Clue:** Remove the fixed cost before finding the per-marker amount. **Worked:** Subtract 6: $1.5m = 12$. Divide by 1.5: $m = 8$ markers. Check: $6 + 1.5 \times 8 = 18$.	
5B		**A**	**Clue:** Ask whether multiplying a rate by a total finds a count, or whether division is needed. **Worked:** The remaining cost is $18 - 6 = 12$ credits. $12 \div 1.5$ finds the number of markers; multiplication does not.	**B:** The total already includes the fixed cost; it must be removed. **C:** This keeps the fixed cost in the total and still uses multiplication.

Talk bonus (traverse): The climber moves sideways along the bar, one hand at a time.

Course 3: Moab Canyon

#	Skill · standard	Answer	Clue (after a first miss) and worked steps	Common wrong answers
1	Add and subtract expressions 7.EE.1	**C**	**Clue:** The minus sign outside parentheses applies to every term inside. **Worked:** $(7y + 1) - (2y - 4) = 7y + 1 - 2y + 4$. $7y - 2y = 5y$ and $1 + 4 = 5$. The result is $5y + 5$.	**A:** Subtracting -4 adds 4 to the constant; it does not subtract 4. **B:** The $2y$ term is subtracted, not added.

#	Skill · standard	Answer	Clue (after a first miss) and worked steps	Common wrong answers
2	Equivalent expressions 7.EE.1	**A and C**	**Clue:** Distribute the factor to both terms, keeping track of each sign. **Worked:** $-2 \times 3 = -6$ and $-2 \times (-y) = 2y$. Both $2y - 6$ and $-6 + 2y$ match.	**B:** The product of the two negative factors on the y term is positive. **D:** The constant comes from a negative factor times a positive number; check its sign. **E:** The factor −2 must multiply the −y term too.
3	Factoring linear expressions 7.EE.1	$-8y + 12 = -4(\underline{2}y - \underline{3})$	**Clue:** Divide each original term by the fixed outside factor. Check by distributing back. **Worked:** $-8y \div (-4) = 2y$ and $12 \div (-4) = -3$. The result is $-4(2y - 3)$.	
4	Write and solve two-step equations 7.EE.4a	A matching equation is $\frac{1}{2}y + \underline{3} = \underline{-1}$. Solving gives $y = \underline{-8}$.	**Clue:** Represent the repeated or fractional change, the starting value and the ending value before solving. **Worked:** Half of the full-hour change is $(\frac{1}{2})y$. Start at 3°C: $(\frac{1}{2})y + 3 = -1$. Subtract 3: $(\frac{1}{2})y = -4$. Multiply both sides by 2: $y = -8$ degrees. Check: $3 + (\frac{1}{2}) \times (-8) = -1$.	
5A	Justifying equation steps 7.EE.4d	$-2y - 6 = 8$: **Yes** · $-2y + 3 = 8$: **No** · $y + 3 = -4$: **Yes**	**Clue:** Try a legal operation on both sides, or solve each equation and compare. **Worked:** The original equation has solution $y = -7$. $-2y - 6 = 8$ and $y + 3 = -4$ keep that solution; $-2y + 3 = 8$ does not.	Compare this equation with the original; both must have the same solution.
5B		**B**	**Clue:** An equivalent equation keeps the same solutions. Check each proposed change on both sides. **Worked:** Dividing BOTH sides by the same nonzero number preserves equality.	**A:** Adding 2 does not remove the outside factor −2. **C:** Dividing only one side does not preserve the equation.

Talk bonus (pillar): A rock pillar at each end.

Course 4: Alpine

#	Skill · standard	Answer	Clue (after a first miss) and worked steps	Common wrong answers
1	Equations with parentheses 7.EE.4a	−3.5 Any numerically equivalent whole number, fraction, mixed number or finite decimal; no rounding.	**Clue:** Divide both sides by the negative outside factor. Then isolate y. **Worked:** Divide by −3: $y + 2 = -1.5$. Subtract 2 from both sides: $y = -3.5$. Check: $-3 \times (-3.5 + 2) = 4.5$.	
2	Multi-step equations 7.EE.4b	0 Any numerically equivalent whole number, fraction, mixed number or finite decimal; no rounding.	**Clue:** Keep the constant term when combining variable terms, then undo the remaining operations. **Worked:** Distribute: $6y + 3 - 2y = 3$. Combine: $4y + 3 = 3$. Subtract 3, then divide by 4: $y = 0$. Check: $3 \times (2 \times 0 + 1) - 2 \times 0 = 3$.	

#	Skill · standard	Answer	Clue (after a first miss) and worked steps	Common wrong answers
3	Two-step inequalities 7.EE.4c	**C**	**Clue:** Solve the inequality. If you divide by a negative number, reverse its direction; then check the boundary. **Worked:** Subtract 1: $-2x \le 6$. Divide by -2 and reverse the inequality: $x \ge -3$. Use a closed dot at -3 with a ray to the right.	**A:** The ray points toward values that fail the original inequality. **B:** Check whether equality is allowed in the original inequality.
4	Inequalities in context 7.EE.4c	**A and D**	**Clue:** Check every stated condition. A count can fit the budget or score rule and still fail the minimum count. **Worked:** There is already 1 wrong step, so $w \ge 1$. The score goal is $18 - 2w > 10$. Subtract 18, then divide by -2 and reverse direction: $w < 4$. The listed counts 1 and 3 work. Zero is impossible because a wrong step has already been recorded; 4 leaves only 10 points.	**B:** 4 wrong steps leave 10 points, not more than 10. **C:** The count 0 is below the required minimum of 1. **E:** 5 wrong steps leave 8 points, not more than 10.
5A	Equation reasoning 7.EE.4a, 7.EE.4d	-0.5 degrees Celsius Any numerically equivalent whole number, fraction, mixed number or finite decimal; no rounding.	**Clue:** Divide both sides by 4 before undoing subtraction inside the parentheses. **Worked:** Divide by 4: $s - 2 = -2.5$. Add 2: $s = -0.5$. Check: $4 \times (-0.5 - 2) = -10$.	
5B		**B**	**Clue:** Use the same operation on both sides, or distribute to every term. **Worked:** Divide the entire left side and the entire right side by 4. The resulting equivalent equation is $s - 2 = -2.5$.	**A:** The factor 4 multiplies the -2 as well as s. **C:** Distributing on the left does not change the right side from -10 to $+10$.

Talk bonus (suspended): They hang from ropes instead of resting on something solid.

TEACHER COPY · CLASS RECORD SHEET

Ropes Course Equations on paper · Grade 7

Use initials or class codes only. One row per student per trip. Copy this page for more students.

Student (initials or code)	Course #	Checkpoint 1	Checkpoint 2	Checkpoint 3	Checkpoint 4	Checkpoint 5 · Part A	Checkpoint 5 · Part B	Next step / notes

In each checkpoint cell write ✓ if the FIRST answer was right, or ★ if the student fixed it after the clue. Leave it blank if it was still missed. Count only ✓ as first answers, as the online game does; ★ fixes are shown but counted separately. Part A and Part B of checkpoint 5 are recorded separately.