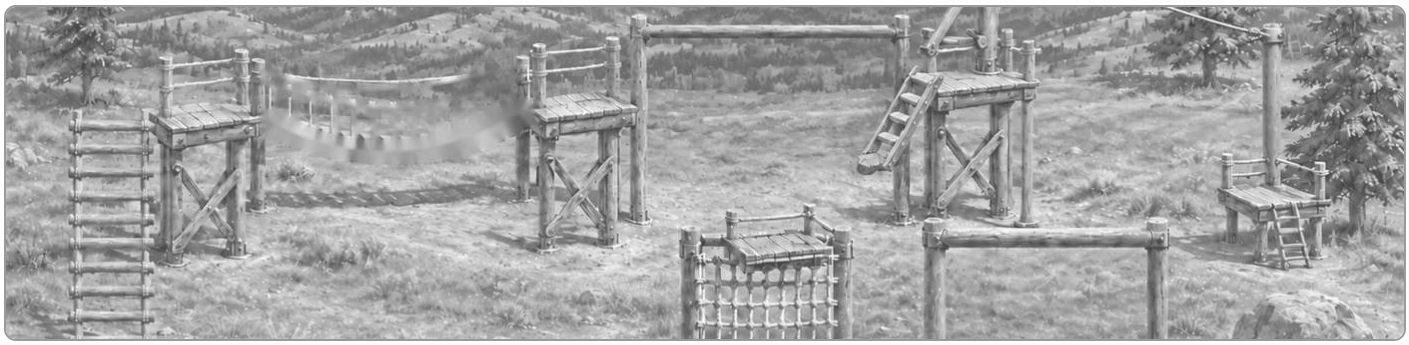
POLE MOUNTAIN LEARNING · PRINTABLE · NO DEVICE NEEDED

Ropes Course Equations: Course 1 of 4

Ropes Course · Grade 8



Name or class code _____ Date _____

Your trip

1. Solve each checkpoint. Show your thinking in the space beside the question.
2. Circle, write or fill in your answer on the question itself, then mark that checkpoint on the trip map.
3. Checkpoint 5 has two parts. Answer Part A, then Part B.
4. Your teacher checks each checkpoint. If you missed one, your teacher gives you the clue and you try again. Keep your first answer; write the new one beside it with a star (★).

① Cargo Ladder	② Swinging Bridge	③ Hanging Logs	④ Zip Line	⑤ Rings & Cargo Net
☐ done ☐ fixed ★	☐ done ☐ fixed ★	☐ done ☐ fixed ★	☐ done ☐ fixed ★	☐ A done ☐ B done ☐ fixed ★

Course Talk (bonus, not scored · do this after checkpoint 5): balance

The balance beam is a reminder to keep an equation **balanced**. In a balanced equation, both sides have equal value. Adding or subtracting the same amount on both sides keeps that equality.

If you subtract 3 from one side of an equation, what must you do to the other side to keep the equation balanced?

_____

_____

① Cargo Ladder

Linear equations

Solve $5x - 7 = 2x + 8$.

Find the value of the variable.

Answer: _____

Write a number only. Write a minus sign for a negative answer. Leave out units.

② Swinging Bridge

Multi-step linear equations

A puzzle card shows $3(x - 2) + 2 = 2(x + 1)$.

What value makes both sides equal?

Answer: _____

Write a number only. Write a minus sign for a negative answer. Leave out units.

③ Hanging Logs

One, none or infinitely many

Classify each equation separately.

How many solutions does each equation have?

Mark one box in each row.

	One	None	Infinitely many
$2(x + 3) = 2x + 6$	☐	☐	☐
$4x - 1 = 4x + 5$	☐	☐	☐
$3x + 2 = x + 8$	☐	☐	☐
$-2(x - 3) = -2x + 4$	☐	☐	☐

④ Zip Line

Equation structure and solution classes

Each blank completes a DIFFERENT equation. Choose a right side that gives the named number of solutions.

Complete each equation separately.

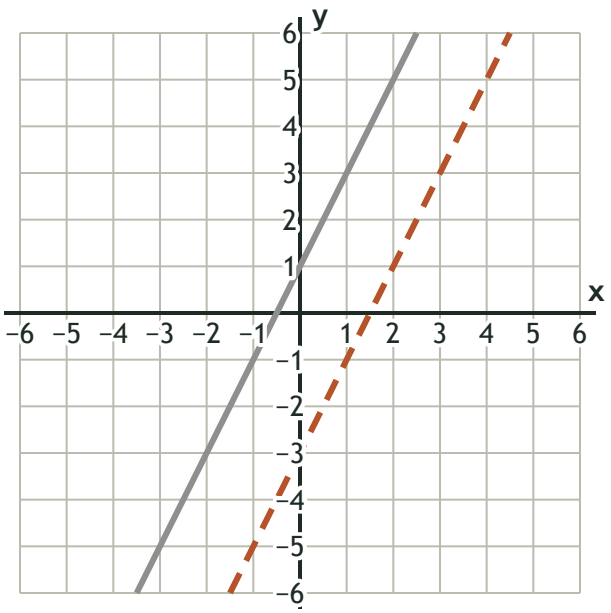
Circle one choice in each box.

For no solution: $3(x + 2) =$ [$3x + 6$ / $3x + 8$ / $2x + 6$]. For infinitely many solutions: $2(x - 4) =$ [$2x - 8$ / $4x - 8$ / $2x + 8$]. For one solution: $5x + 1 =$ [$5x + 1$ / $3x + 1$ / $5x - 1$].

5 Rings & Cargo Net

Systems and shared points

Use the graph and its two equations for both parts.



Line 1: y = 2x + 1

Line 2: y = 2x − 3

Part A

Classify the system.

Circle one choice in the box.

The system has

- ○ one solution
- ○ no solution
- ○ infinitely many solutions

Part B

Which comparison of the equations supports your classification?

(A) Both lines have slope 2 and different y-intercepts.

(B) Both lines rise 2 units for each 1 unit to the right.

(C) Both lines cross the y-axis at an integer value.

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Ropes Course Equations: Course 2 of 4

Pine Canopy · Grade 8



Name or class code _____ Date _____

Your trip

1. Solve each checkpoint. Show your thinking in the space beside the question.
2. Circle, write or fill in your answer on the question itself, then mark that checkpoint on the trip map.
3. Checkpoint 5 has two parts. Answer Part A, then Part B.
4. Your teacher checks each checkpoint. If you missed one, your teacher gives you the clue and you try again. Keep your first answer; write the new one beside it with a star (★).

① Rope Ladder	② Overhead Traverse	③ Swinging Logs	④ Balance Beam & Zip Line	⑤ Bridge & Cargo Net
☐ done	☐ done	☐ done	☐ done	☐ A done ☐ B done
☐ fixed ★	☐ fixed ★	☐ fixed ★	☐ fixed ★	☐ fixed ★

(1) Rope Ladder

Linear inequalities

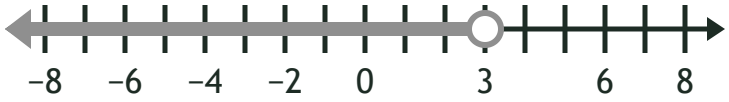
Solve $(\frac{3}{2})x - 2 \leq (\frac{1}{2})x + 1$.

Which number line gives all solutions?

(A)



(B)



(C)



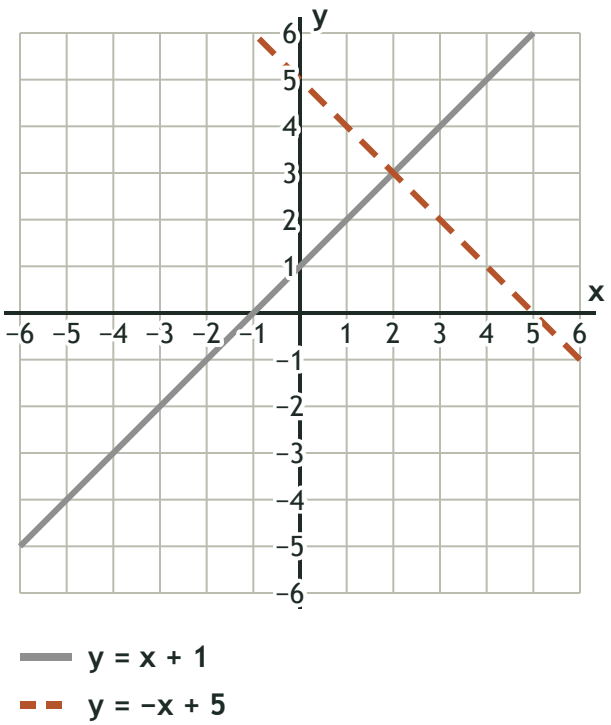
(D)



(2) Overhead Traverse

Systems on a graph

The graph shows two linear equations.



Which point is a solution of BOTH equations?

(A) (3, 2)
(B) (0, 1)
(C) (2, 3)

(3) Swinging Logs

Meaning of a system solution

Use the system y = x + 2 and y = −2x + 11.

Does each point satisfy BOTH equations?

Mark one box in each row.

	Yes	No
(1, 3)	☐	☐
(4, 3)	☐	☐
(3, 5)	☐	☐

4 Balance Beam & Zip Line

Systems in context

In a route puzzle, score A starts at 4 and rises by 2 per lap. Score B starts at 10 and rises by 1 per lap. Let x count laps and y be a score.

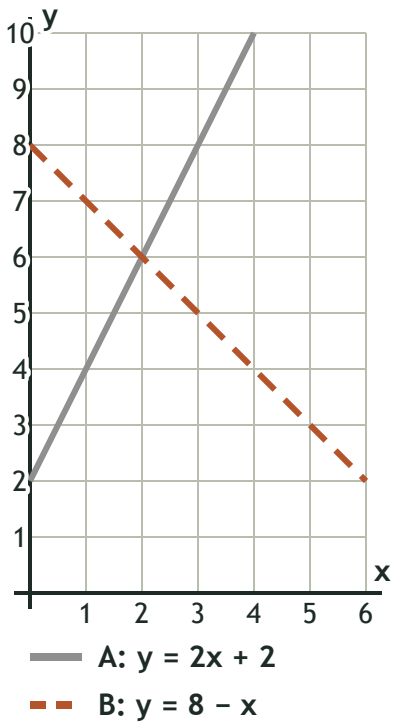
Circle exactly TWO equations, one for each quantity in the situation.

- A $y = 4x + 2$
- B $y = 10x + 1$
- C $y = 2x + 4$
- D $y = 3x + 14$
- E $y = x + 10$

5 Bridge & Cargo Net

Systems in context

During sign preparation, box A starts with 2 markers and gains 2 per minute. Box B starts with 8 markers and loses 1 per minute. Let x be minutes and y be markers: $y = 2x + 2$ and $y = 8 - x$.



Part A

After how many minutes do the boxes hold the same number of markers?

Answer: _____ minutes

Write a number only. Leave out units.

Part B

What does the intersection mean in this situation?

(A) After 2 minutes, each box contains 6 markers.

(B) Each box holds 2 markers after 6 minutes.

(C) After 2 minutes, the two boxes contain 6 markers total.

Course Talk (bonus, not scored): traverse

To **traverse** is to move across something. On the overhead traverse, the climber moves sideways along the bar, one hand at a time.

How does the climber traverse the overhead bar?

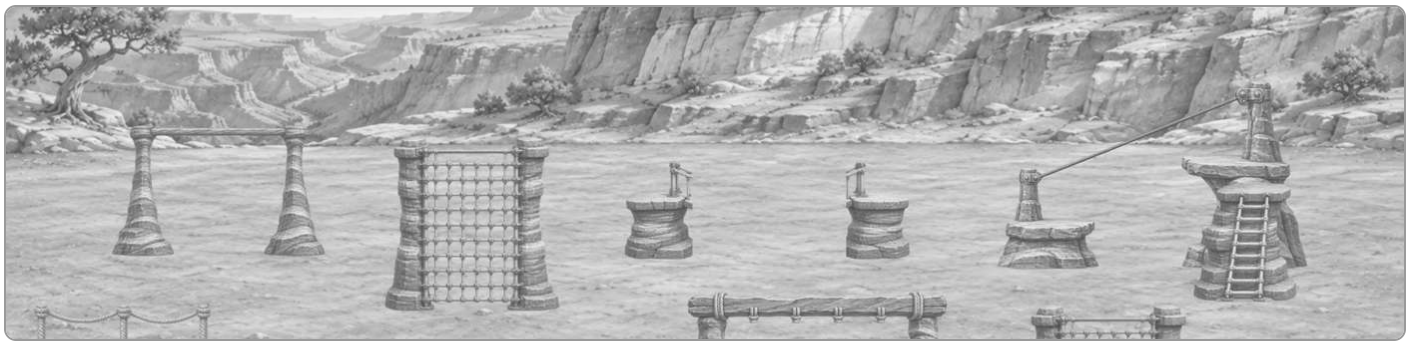
_____

_____

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Ropes Course Equations: Course 3 of 4

Moab Canyon · Grade 8



Name or class code _____ Date _____

Your trip

1. Solve each checkpoint. Show your thinking in the space beside the question.
2. Circle, write or fill in your answer on the question itself, then mark that checkpoint on the trip map.
3. Checkpoint 5 has two parts. Answer Part A, then Part B.
4. Your teacher checks each checkpoint. If you missed one, your teacher gives you the clue and you try again. Keep your first answer; write the new one beside it with a star (★).

① Stairs & Beam	② Stone Steps	③ Cargo Net	④ Ladder & Zip Line	⑤ Bridge, Net & Traverse
☐ done ☐ fixed ★	☐ done ☐ fixed ★	☐ done ☐ fixed ★	☐ done ☐ fixed ★	☐ A done ☐ B done ☐ fixed ★

① Stairs & Beam

Linear equations

The next equation is $\left(\frac{1}{2}\right)y + 3 = \left(\frac{3}{2}\right)y - \frac{1}{2}$.

Find the value of the variable.

Answer: _____

Write a number only. Write a minus sign for a negative answer. Leave out units.

② Stone Steps

Multi-step linear equations

Solve $2(3y + 1) - y = 4(y - 1)$.

Write the solution for y.

Answer: _____

Write a number only. Write a minus sign for a negative answer. Leave out units.

③ Cargo Net

One, none or infinitely many

Classify each equation separately.

How many solutions does each equation have?

Mark one box in each row.

	One	None	Infinitely many
$2(y + 1) = 3y - 4$	☐	☐	☐
$(\frac{1}{2})(4y - 8) = 2y - 4$	☐	☐	☐
$5(y - 1) = 3y + 1$	☐	☐	☐
$3(y - 2) = 3y + 2$	☐	☐	☐

④ Ladder & Zip Line

Equation structure and solution classes

Each blank completes a DIFFERENT equation. Choose a right side that gives the named number of solutions.

Complete each equation separately.

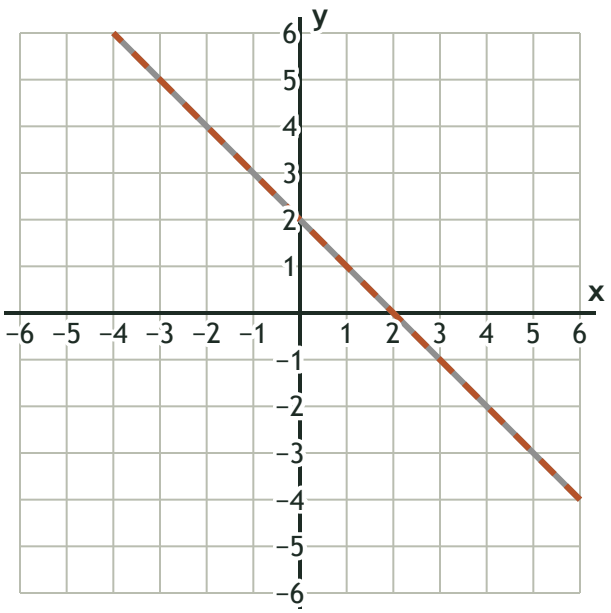
Circle one choice in each box.

For infinitely many solutions: $(\frac{1}{2})(4y - 8) =$ [2y + 4 / y − 4 / 2y − 4]. For one solution: $-2(y + 1) =$ [−2y − 2 / −y − 2 / −2y + 2]. For no solution: $4y + 3 =$ [2y + 3 / 4y − 3 / 4y + 3].

5 Bridge, Net & Traverse

Systems and shared points

Use the graph and its two equations for both parts.



Line 1: y = −x + 2

Line 2: x + y = 2

Part A

Classify the system.

Circle one choice in the box.

The system has

- ○ no solution
- ○ one solution
- ○ infinitely many solutions

Part B

Which statement gives enough information to justify your classification?

(A) Both have slope −1 and fall as x increases on the grid.

(B) Both simplify to y = −x + 2 with the same slope and intercept.

(C) Both include (0, 2), where their graphs cross the y-axis.

Course Talk (bonus, not scored): pillar

A **pillar** is a tall, strong column that holds something up. On this course, a rock pillar holds up each end of the bridge.

What holds up the bridge on the Moab Canyon course?

_____

_____

POLE MOUNTAIN LEARNING · PRINTABLE · NO DEVICE NEEDED

Ropes Course Equations: Course 4 of 4

Alpine · Grade 8



Name or class code _____ Date _____

Your trip

1. Solve each checkpoint. Show your thinking in the space beside the question.
2. Circle, write or fill in your answer on the question itself, then mark that checkpoint on the trip map.
3. Checkpoint 5 has two parts. Answer Part A, then Part B.
4. Your teacher checks each checkpoint. If you missed one, your teacher gives you the clue and you try again. Keep your first answer; write the new one beside it with a star (★).

① Stairs & Rope Traverse	② Hanging Logs	③ Bridges & Stairs	④ Cargo Net	⑤ Steps & Zip Line
□ done	□ done	□ done	□ done	□ A done □ B done
□ fixed ⋆	□ fixed ⋆	□ fixed ⋆	□ fixed ⋆	□ fixed ⋆

(1) Stairs & Rope Traverse

Linear inequalities

Solve $2 - y < 2y + 8$.

Which number line gives all solutions?

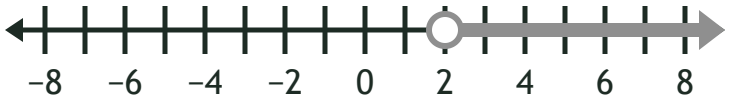
(A)



(B)



(C)



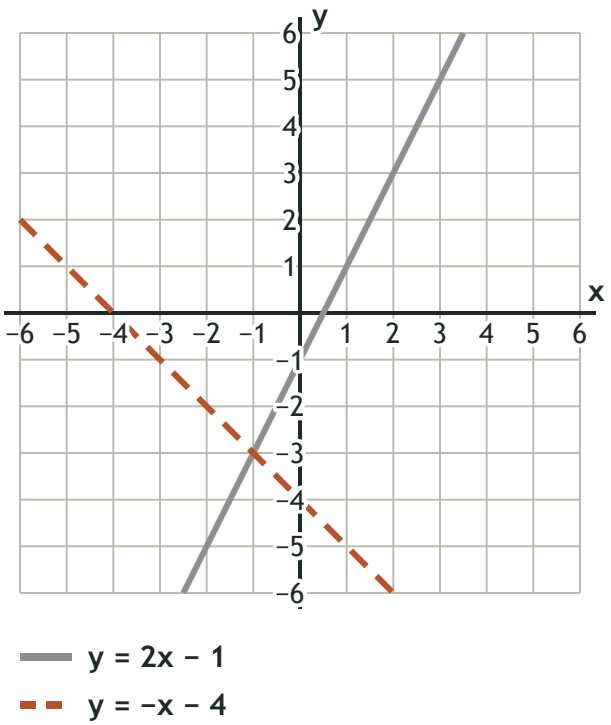
(D)



(2) Hanging Logs

Systems on a graph

The graph shows two linear equations.



Read the coordinates where the two lines meet.

(A) (-1, -3)
(B) (-3, -1)
(C) (0, -1)

(3) Bridges & Stairs

Meaning of a system solution

Check the system y = 2x − 3 and 2y = 4x − 6.

Does each point satisfy BOTH equations?

Mark one box in each row.

	Yes	No
(1, −1)	☐	☐
(−1, −5)	☐	☐
(2, 2)	☐	☐

4 Cargo Net

Systems in context

At an activity, container A starts with 12 liters and loses 2 liters per minute. Container B starts with 3 liters and gains 1 liter per minute. Let x be minutes and y be liters.

Circle exactly TWO equations, one for each quantity in the situation.

A $y = 12 - 2x$

B $y = 2x + 12$

C $y = 3x + 1$

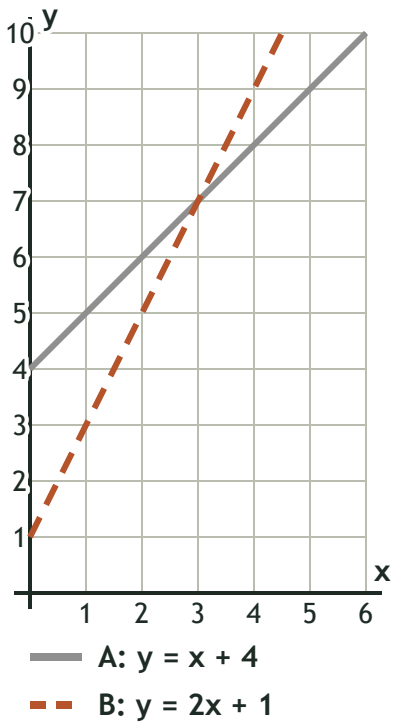
D $y = 12x - 2$

E $y = x + 3$

5 Steps & Zip Line

Systems in context

Two model-kit prices depend on the number x of markers. Price A is y = x + 4 credits. Price B is y = 2x + 1 credits. Use the graph to compare them.



Part A

How many markers make the two kit prices equal?

Answer: _____ markers

Write a number only. Leave out units.

Part B

Which statement correctly interprets the shared point?

(A) Both kits cost 3 credits with 7 markers.

(B) With 4 markers, both kits cost 8 credits each.

(C) With 3 markers, both kits cost 7 credits each.

Course Talk (bonus, not scored): suspended

Something **suspended** hangs from above instead of resting on the ground. On the Alpine course, the logs and steps are suspended from ropes, so they swing when you step on them.

Why do the suspended steps swing when you step on them?

_____

_____