Graphing Inequalities Foldable: Four Flaps for One-Variable Number Lines

Rubric Key

Source rubric criteria.

Criterion	Description
1	Flap one correctly pairs each symbol with open or closed circle.
2	Flap two shows each solve step and reverses the symbol only when required.
3	Flap three uses the correct circle type and arrow direction.
4	Flap four includes one true test value and one false test value.
5	Handwriting is legible and follows the stated convention; valid alternative letter styles are accepted.

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Complete worked example / separate answer key

Solve and graph $3x - 2 \leq 10$ on a number line, then check a test value.

Answer: Add 2 to both sides: $3x \leq 12$. Divide by 3: $x \leq 4$. Graph a closed circle at 4 with an arrow to the left. Check $x = 0$: $3(0) - 2 \leq 10$ is $-2 \leq 10$, true. Check $x = 5$: $3(5) - 2 \leq 10$ is $13 \leq 10$, false.

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Original tasks 1, 2, 3, 4 / complete keys

Task 1

Solve and graph $x + 5 > 2$ on a number line. State the circle type and arrow direction.

Answer: $x > -3$; open circle at -3; arrow to the right.

Reason: Subtract 5 from both sides: $x > -3$. The symbol is greater than, so the circle is open. Test $x = 0$: $0 + 5 > 2$ is $5 > 2$, true, so the arrow points right.

Check: Substitute $x = 0$ and confirm true; substitute $x = -4$ and confirm false.

Task 2

Solve and graph $4x \leq 12$ on a number line. State the circle type and arrow direction.

Answer: $x \leq 3$; closed circle at 3; arrow to the left.

Reason: Divide both sides by 4: $x \leq 3$. The symbol is less than or equal to, so the circle is closed. Test $x = 0$: $4(0) \leq 12$ is $0 \leq 12$, true, so the arrow points left.

Check: Substitute $x = 0$ and confirm true; substitute $x = 4$ and confirm false.

Task 3

Solve and graph $-2x < 8$ on a number line. State the circle type and arrow direction.

Answer: $x > -4$; open circle at -4; arrow to the right.

Reason: Divide both sides by -2 and reverse the symbol: $x > -4$. The symbol is greater than, so the circle is open. Test $x = 0$: $-2(0) < 8$ is $0 < 8$, true, so the arrow points right.

Check: Substitute $x = 0$ and confirm true; substitute $x = -5$ and confirm false.

Task 4

Solve and graph $5 - x \geq 1$ on a number line. State the circle type and arrow direction.

Answer: $x \leq 4$; closed circle at 4; arrow to the left.

Reason: Subtract 5 from both sides: $-x \geq -4$. Multiply by -1 and reverse the symbol: $x \leq 4$. The symbol is less than or equal to, so the circle is closed. Test $x = 0$: $5 - 0 \geq 1$ is $5 \geq 1$, true, so the arrow points left.

Check: Substitute $x = 0$ and confirm true; substitute $x = 5$ and confirm false.

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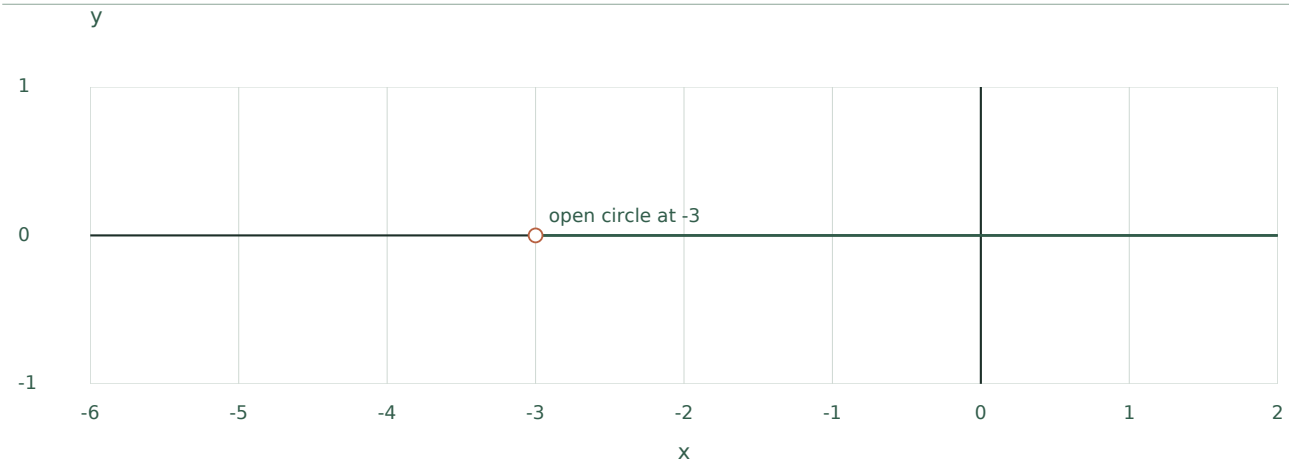
Worked example / Four-Flap Foldable Layout (Symbol and Circle, Solve, Graph, Check)

Foldable flap labels and worked example 3x-2<=10 are source facts; layout is a labeled table, not a picture.

Flap	Worked example (inside flap)	Blank practice strip
Symbol and Circle	x < 3: open circle at 3. x >= 3: closed circle at 3.	(blank)
Solve	3x - 2 <= 10; add 2: 3x <= 12; divide by 3: x <= 4. No reversal (3 positive).	(blank)
Graph	Closed circle at 4, arrow to the left.	(blank)
Check	x = 0: 3(0)-2 <= 10 is -2 <= 10, true. x = 5: 3(5)-2 <= 10 is 13 <= 10, false.	(blank)

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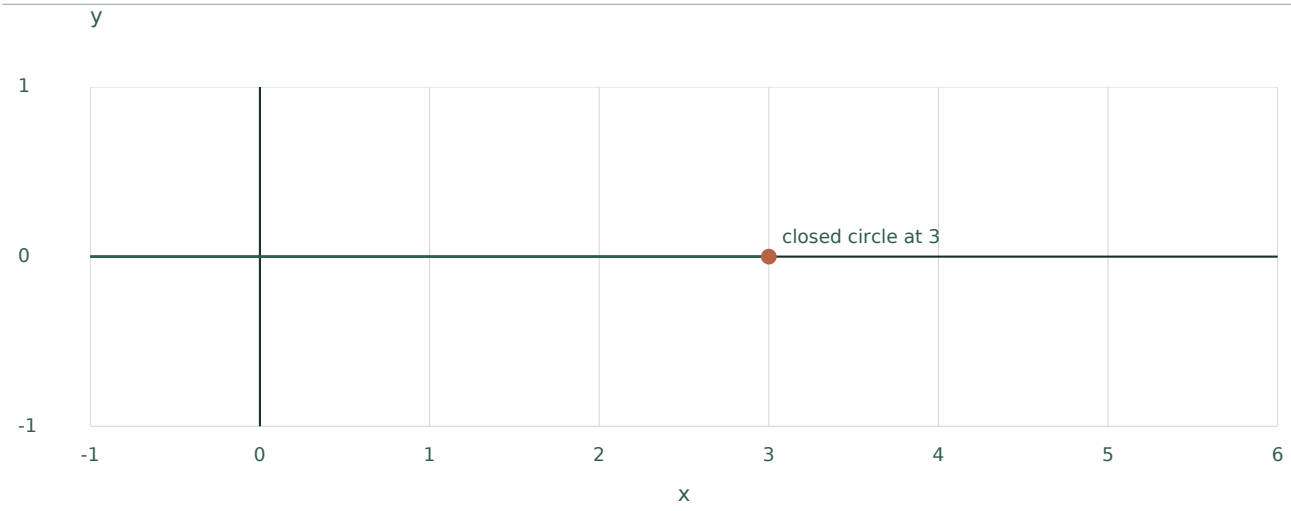
Task 1 / Separate Answer Sheet: Exercise 1



x > -3; open circle at -3; arrow right.

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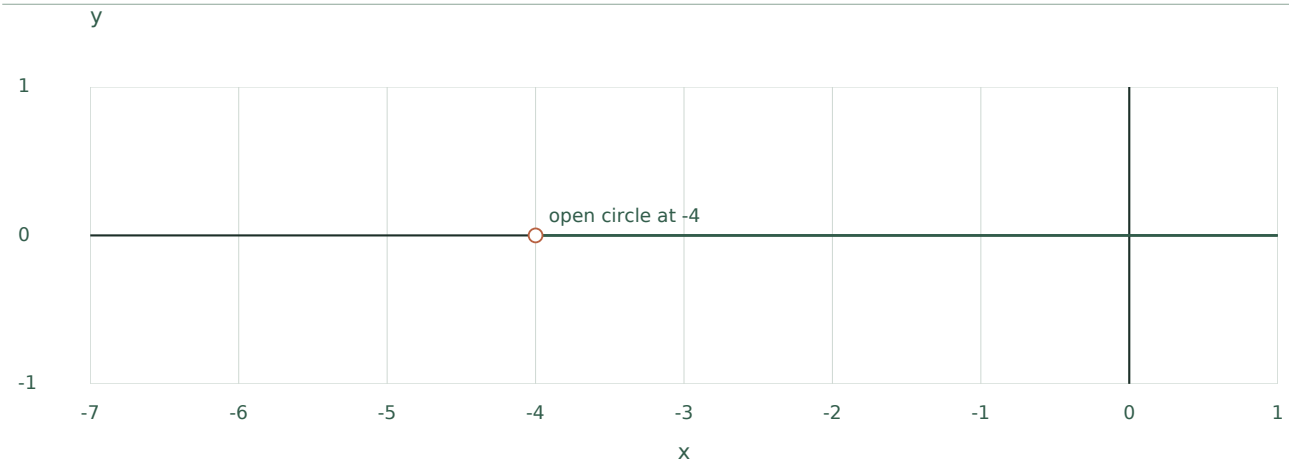
Task 2 / Separate Answer Sheet: Exercise 2



x <= 3; closed circle at 3; arrow left.

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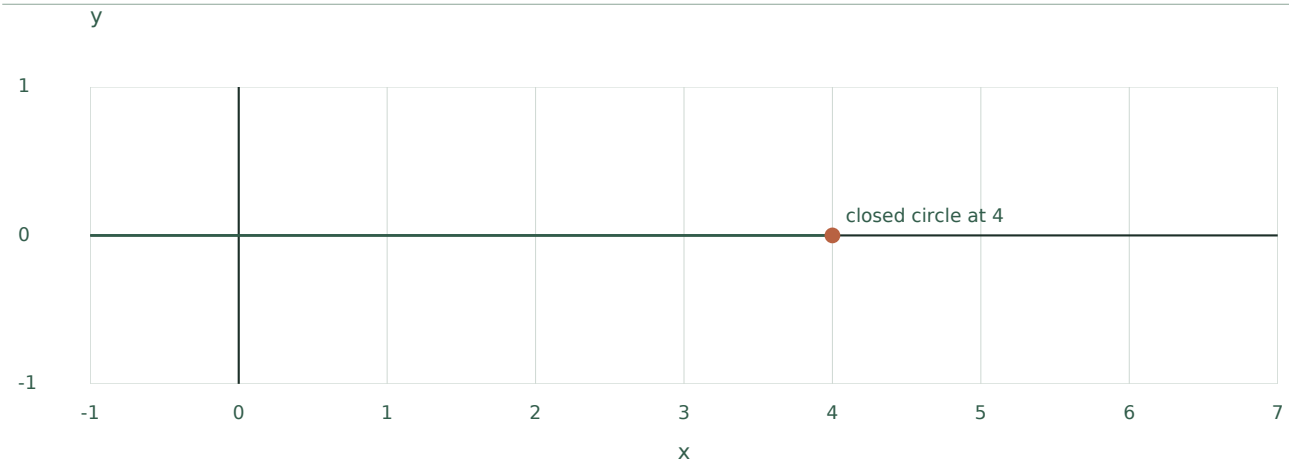
Task 3 / Separate Answer Sheet: Exercise 3



x > -4; open circle at -4; arrow right.

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Task 4 / Separate Answer Sheet: Exercise 4



x <= 4; closed circle at 4; arrow left.

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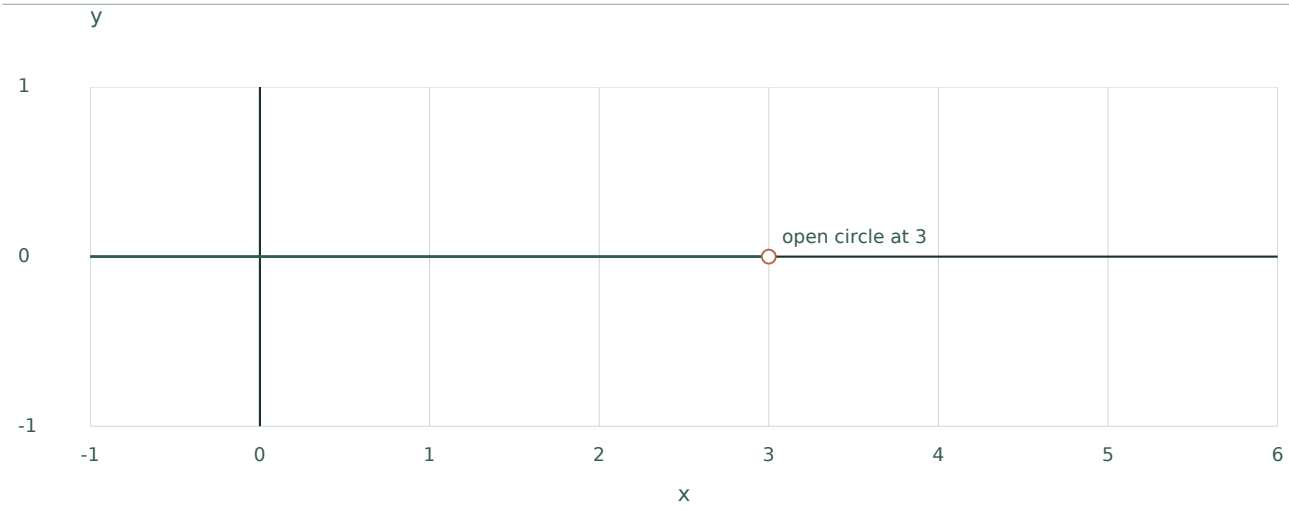
Task 1, Task 2, Task 3, Task 4 / Separate Answer Sheet: Reasoning and Check Methods

Source reasoning and check methods for all four exercises.

Exercise	Reasoning	Check method
1	Subtract 5: x > -3. Greater than => open circle. Test x=0: 5>2 true => arrow right.	x=0 true; x=-4 false.
2	Divide by 4: x <= 3. Less than or equal => closed circle. Test x=0: 0<=12 true => arrow left.	x=0 true; x=4 false.
3	Divide by -2 and reverse: x > -4. Greater than => open circle. Test x=0: 0<8 true => arrow right.	x=0 true; x=-5 false.
4	Subtract 5: -x >= -4. Multiply by -1 and reverse: x <= 4. Less than or equal => closed circle. Test x=0: 5>=1 true => arrow left.	x=0 true; x=5 false.

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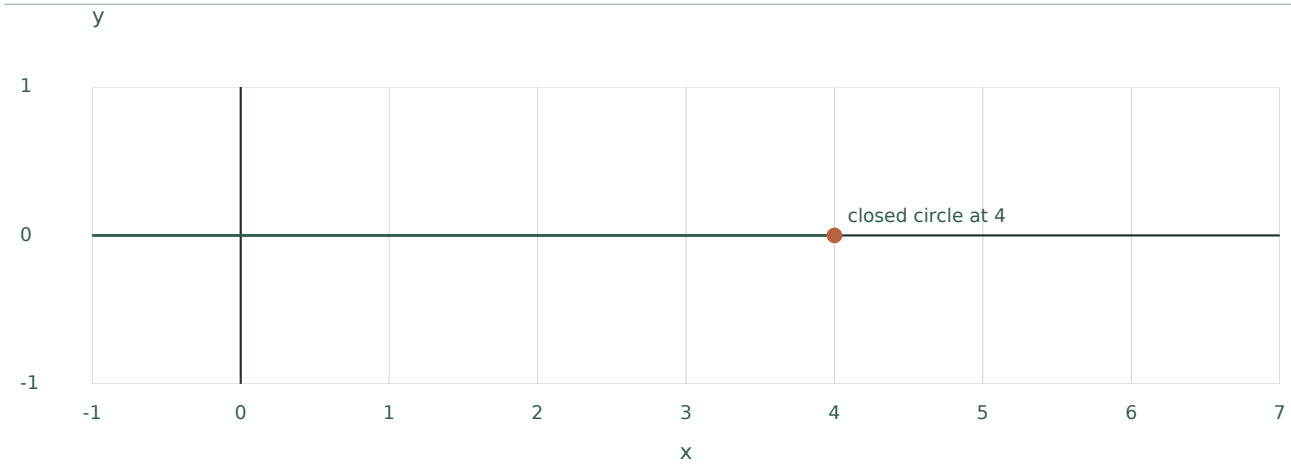
Worked example / Number-Line Diagram: Open Circle at 3, Arrow Left (x < 3)



Open circle at 3; arrow points left.

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Worked example / Number-Line Diagram: Closed Circle at 4, Arrow Left (x <= 4)



Closed circle at 4; arrow points left.

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Source rubric / reflection

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Reflection: What did you check, what did you change, and what will you try next?