Absolute value inequality review

Prepare for ELO C1 tomorrow, October 27. Work on paper. Plan for 45 minutes across these four pages.

Start here Read the reminders and worked example. Fill in the quick check. About 9 minutes.

Remember the center and the distance

$$|x| = |x - 0|$$

Both expressions give the distance from 0.

$$|x - 40|$$

This gives the distance from 40. The center is 40. At the center, the distance is 0.

Mai allows 40 liters, plus or minus 4 liters. Exactly 4 liters away still passes.

$$|x - 40| \leq 4$$

The boundary values are 4 below and 4 above the center: 36 and 44 liters.

Here x is the water amount, not the distance.

Quick check

1. At 36 liters, find the distance from 40.

$$|36 - 40| = |____| = ____$$

2. At 40 liters, the distance is _____.

3. Does 40 liters pass? _____ Why?

Acceptable values pass. Unacceptable values fail. Read which ones the question asks for.

Worked example Soup cans

A soup can must contain 7 ounces, plus or minus 0.5 ounce, to pass inspection. Find the acceptable amounts. Let x be the amount in ounces.

An amount exactly 0.5 ounce from 7 passes.

(a) Write

$$|x - 7| \leq 0.5$$

The distance from 7 can be 0.5 or less.

(b) Solve

The difference x − 7 is from −0.5 to 0.5.

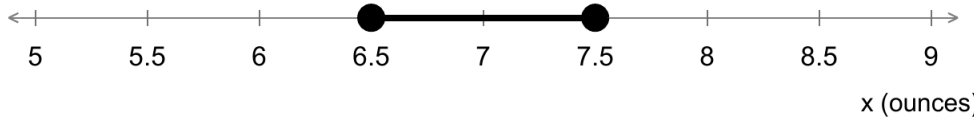
$$-0.5 \leq x - 7 \leq 0.5$$

Add 7 to all three parts.

$$-0.5 + 7 \leq x - 7 + 7 \leq 0.5 + 7$$

$$6.5 \leq x \leq 7.5$$

(c) Graph



Filled circles include both boundaries. Shade between.

(d) Explain the answer

The can passes if its amount is greater than or equal to 6.5 ounces AND less than or equal to 7.5 ounces.

Boundary check: |7.5 − 7| = 0.5. It passes because 0.5 ≤ 0.5.

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NAME:	BLOCK:	DATE: October 26, 2026

LEARNING PAPER EVIDENCE

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Find the heights that fail

Guided practice • About 12 minutes. Complete all four parts. Use the hints if you get stuck.

4 Ashley's zipline platform must be 8 yards high, plus or minus 0.5 yard, to pass inspection. A height exactly 0.5 yard from 8 passes. Find the UNACCEPTABLE heights. Let x be the height in yards.

(a) Write

The center is _____. The allowed distance is _____.

A height fails when its distance from 8 is more than 0.5. Fill in the sign.

$$|x - 8| ____ 0.5$$

(b) Solve

The height is more than 0.5 below 8 OR more than 0.5 above 8:

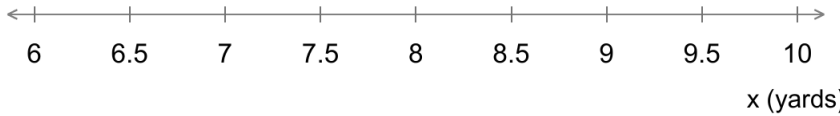
$$x - 8 < -0.5 \quad OR \quad x - 8 > 0.5$$

Add 8 to both sides of each inequality. Show the steps. Then write the solution with OR.

Check your boundaries: 8 − 0.5 and 8 + 0.5.

(c) Graph

Mark both boundaries. Use open or filled circles. Shade every height in your answer.



Each small step is 0.5 yard. A filled circle includes a value. An open circle leaves it out.

(d) Explain the answer

Finish the sentence with comparison words and numbers.

The platform fails if its height is

_____ yards

OR _____ yards.

Words you may need: less than; greater than; less than or equal to; greater than or equal to.

Check a boundary and a nearby height

At x = 8.5, distance = _____. Pass or fail? _____

At x = 9, distance = _____. Pass or fail? _____

For these stories, the exact boundary values pass. The values that fail lie outside the two boundaries.

LEARNING PAPER EVIDENCE

Find the amounts that pass

Independent practice • About 10 minutes. Try all four parts before looking back at the example.

5 A soup can must contain 7.5 ounces, plus or minus 1 ounce, to pass inspection. An amount exactly 1 ounce from 7.5 passes. Find the ACCEPTABLE amounts. Let x be the amount of soup in ounces.

(a) Write

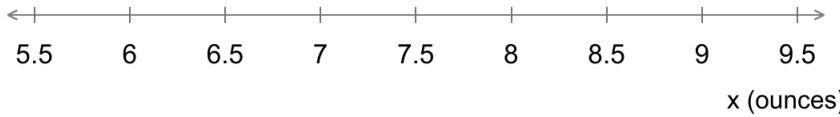
Write an absolute value inequality for the amounts that pass.

(b) Solve

Write the inequality without absolute value bars. Show each operation. Finish with the solution.

(c) Graph

Mark the boundaries and shade the solution. Each small step is 0.5 ounce.



(d) Explain the answer

Use comparison words and numbers to finish.

The can passes if its amount is

_____ ounces

AND _____ ounces.

Check one amount

A can holds 7 ounces. Use your absolute value inequality to decide whether it passes. Show your work.

Before you turn the page, check that your graph and your sentence match your solved inequality.

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Find the heights that fail on your own

About 10 minutes for Problem 6. Then use 4 minutes for the memory check and corrections.

6 Alonzo's zipline platform must be 7.5 yards high, plus or minus 1 yard, to pass inspection. A height exactly 1 yard from 7.5 passes. Find the UNACCEPTABLE heights. Let x be the height in yards.

(a) Write

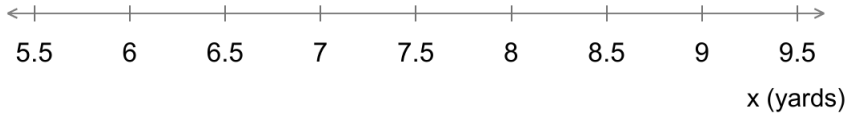
Write an absolute value inequality for the heights that fail.

(b) Solve

Write the two inequalities without absolute value bars. Show each operation. Finish with the solution.

(c) Graph

Mark the boundaries and shade the solution. Each small step is 0.5 yard.



(d) Explain the answer

Use comparison words and numbers to finish.

The platform fails if its height is

_____ yards

OR _____ yards.

7 Memory check Cover the earlier pages. Fill in the blanks and circle your choices.

For |x − 10|, the center is _____. At a distance of 2, the two boundary values are _____ and _____.

|x − 10| ≤ 2 Circle: between / outside open / filled circles AND / OR

|x − 10| > 2 Circle: between / outside open / filled circles AND / OR

Uncover the examples. Check your choices. Fix any errors in the packet so you can study the correct work.

Optional help outside class: Absolute Value Studio — From Story to Solution, Revision 1, on Mr. Jackson's website. You do not need a website or Studio to finish this packet.