

Comparing and ordering positive and negative integers

CURRICULUM ALIGNMENT

NUM.PVT.4

investigate how decimals and percentages (and fractions) can be compared, ordered and expressed in related terms.

INTERACTIVES [Number Line · challenge, display, explore](#)

WHAT THIS LESSON TEACHES

An integer is a whole number that can be positive, negative or zero. On a number line, numbers further left are smaller.

→ -8 is to the left of -3 so -8 is smaller.

→ $-6 < 2$ because -6 is left of 2.

MODEL THIS ON THE BOARD

COMPARE -8 AND -3 ON THE LINE

- 1 Draw a number line from -10 to 10.
- 2 Place -8 and -3 on it.
- 3 -8 is left of -3 so -8 is smaller.

LESSON ARC

Open with two winter temperatures, -8°C and -3°C , and split the class deliberately: which is colder versus which is the bigger number. Hold the disagreement, then bring up the number-line interactive and let 'further left is smaller' settle it. Walk three worked pairs, pivoting on -10 vs -1 where the smaller-looking number wins. Pupils write signs and order five integers in their copies before Student Activity Book practice.

TEACHING MOVES

1. **Getting Started.** Ask the two questions in strict order — colder first, then bigger — and take exactly three hands-up answers on 'bigger', not open call-outs. Expect and welcome the split; revoice both camps ('some think -8 is bigger, some think -3') and deliberately do NOT resolve it — the line does that next.
2. **Watch and Notice.** Work the three pairs one at a time on the number-line interactive. On -6 and +2, point to zero as the dividing line — any positive beats any negative. Before revealing -10 and -1, stop and take a prediction: this is the pay-off where the smaller-looking number is actually bigger.
3. **Try It Together.** Rotate four pupils to place markers on the interactive; the rest watch the line and call the sign. The interactive places markers only — choosing and writing $<$ or $>$ between the numbers is a spoken-and-board task. For each pair ask 'which is further left?' then keep revoicing 'the open mouth faces the bigger number'. Save -7 and -6 for last as the close pair where care matters.
4. **Write the Signs in Your Copy.** Walk the room glancing at which way each sign points, especially on the two-negatives pairs (-9 ____ -4 , -8 ____ -10) where the reversed sign shows up. Check the five-integer ordering list is smallest-to-biggest, not by digit size.
5. **Class Challenge.** Keep the board work brisk — pupils place the called integer and press Check to confirm the marker only. Run the spoken ordering task between placements: after -7, have the class read -7, -3, 0, 5 aloud smallest to biggest. Don't re-teach each placement.

6. What Did We Notice?. Listen for pupils reaching for the number line to settle the -9 versus -4 argument rather than debating digits. Revoice the winning line: ' -9 is further left, so it is smaller — the bigger digit does not decide it.'

COMMON MISCONCEPTIONS

⚠ Pupils say ' -8 is bigger than -3 because 8 is bigger than 3 ' — they compare the digits and ignore the minus sign.

Put both on the number-line interactive side by side. -8 sits further left, so it is the smaller number. Anchor the phrase 'further left is smaller' and make the pupil read the position, not the digit.

⚠ Pupils write the $<$ or $>$ pointing the wrong way on two-negative pairs like -9 ____ -4 , reversing it because -9 'feels' bigger.

Return to the line: -4 sits to the right, so it is bigger, so the open mouth faces $-4 \rightarrow -9 < -4$. Repeat the mantra 'the open mouth faces the bigger number' as they write it.

⚠ Pupils hesitate when zero is in the set, unsure whether 0 counts as bigger or smaller than a negative. Point to zero as the fixed dividing line on the interactive — every negative sits to its left, so 0 beats every negative. Have them place a negative and then 0 to see it directly.

DIFFERENTIATION

EMERGING

- Keep the marker for one number fixed on the line while the pupil places only the second, so they judge left-versus-right rather than reading two positions at once.
- For the copybook, let these pupils do the four sign pairs and skip the five-integer ordering until they've secured the sign direction.

DEVELOPING

- After the copybook signs, hand them a chain: order $-6, 0, -6$ again... no — give $-10, -1, 1, 10$ and ask them to spot the pattern in how the gaps grow from the middle.
- Ask them to write a pair where the number with the bigger digit is the smaller number, then prove it on the line.

PROFICIENT

- During Class Challenge, get the strongest pupils to justify the close pair (-7 vs -6) out loud with 'because it is further left' — no pointing at digits allowed.
- Pose: 'name an integer that would sit between -5 and -3 — how do you know it belongs there?' Pair with a copybook moment, or pull them ahead into the Student Activity Book page.

✚ **Cross-curricular:** Tie to Geography — pupils compare winter temperatures for towns like Belmullet and Birr on a cold night and order them from coldest to mildest.

ANSWER KEY

Scaffold: visual check on the page

Q1: -7

Q2: smaller

Q3: 0

Q4: $-8, -3, 0, 2, 5$

Q5: $-10, -5, 4, 10$

a) Always — -5 sits right of -8 on any number line.

b) Always — Any positive is right of zero while negatives are left.

c) Never — -3 is left of 0 so always smaller.

d) Never — Order from smallest to biggest is the reverse of biggest to smallest.