

Comparing and Ordering Integers

- You will need**
- number lines

GOAL

Use a number line to compare and order integers.

Léa did a report on climate change in Canada. She included a chart showing typical temperatures in the capital cities of the Western provinces and Northern territories.

City	Low (°C)	High (°C)
Edmonton	-19	-8
Iqaluit	-31	-22
Regina	-21	-11
Victoria	+1	+7
Whitehorse	-22	-13
Winnipeg	-23	-13
Yellowknife	-31	-23



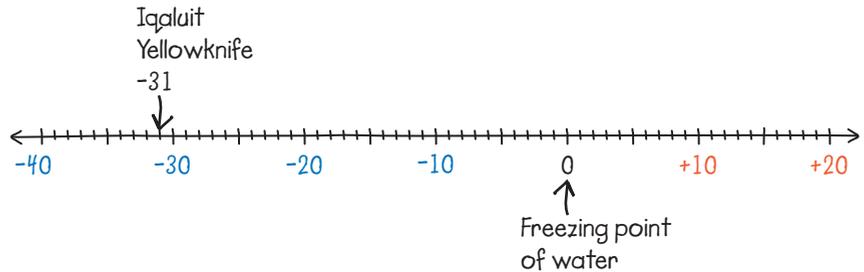
What is the order of the temperatures from coldest to warmest?





Léa's Comparison

My number line looks like a thermometer placed on its side. I marked 0°C and the low temperature for Iqaluit and Yellowknife.



I'll mark the other low temperatures on the number line to figure out the order of the temperatures.

- A.** How does an integer tell you whether a temperature is above or below the freezing point of water?
- B.** Mark each low temperature on a number line like Léa's. Which temperature is colder, -21°C or -22°C ?
- C.** How can you tell that -31°C is the coldest temperature in the chart?
- D.** Write the low temperatures in order from coldest to warmest. Explain what you did.
- E.** Write the high temperatures in order from coldest to warmest.

Reflecting

- F.** How can you decide which is warmer when comparing a positive temperature with a negative temperature?
- G.** How can you decide which of two negative temperatures is warmer? How is this the same as comparing two positive temperatures? Use examples to explain.

Checking

- Copy and complete. Use $<$ or $>$ to make each statement true.
 - $-20\text{ }^{\circ}\text{C}$ $+30\text{ }^{\circ}\text{C}$
 - $-5\text{ }^{\circ}\text{C}$ $-20\text{ }^{\circ}\text{C}$
- The chart below shows the extreme low and extreme high January temperatures in the capital cities of the Western provinces and Northern territories.



Extreme January Temperatures

City	Extreme low ($^{\circ}\text{C}$)	Extreme high ($^{\circ}\text{C}$)
Edmonton	-48	+10
Iqaluit	-45	+4
Regina	-50	+10
Victoria	-16	+15
Whitehorse	-52	+9
Winnipeg	-42	+8
Yellowknife	-51	+3

- Write the extreme low temperatures in order from warmest to coldest.
- Write the extreme high temperatures in order from coldest to warmest.

Practising

- Copy and complete. Use $<$ or $>$ to make each statement true.
 - $+9\text{ }^{\circ}\text{C}$ $-30\text{ }^{\circ}\text{C}$
 - $+25\text{ }^{\circ}\text{C}$ $+17\text{ }^{\circ}\text{C}$
 - $-3\text{ }^{\circ}\text{C}$ $+2\text{ }^{\circ}\text{C}$
 - $-7\text{ }^{\circ}\text{C}$ $-16\text{ }^{\circ}\text{C}$
 - $-22\text{ }^{\circ}\text{C}$ $+22\text{ }^{\circ}\text{C}$
 - $+8\text{ }^{\circ}\text{C}$ $-12\text{ }^{\circ}\text{C}$
- What temperature is halfway between $-10\text{ }^{\circ}\text{C}$ and $+4\text{ }^{\circ}\text{C}$? Use a number line.

5. The temperature on Liam's birthday went from -7°C to -4°C . Which of the following temperatures are between -7°C and -4°C ?
 -8°C -3°C -6°C -5°C

6. How can you tell whether a temperature is colder or warmer than -5°C ? Use a number line to explain.

7. Write an integer to make each statement true.

a) $-20^{\circ}\text{C} < \blacksquare^{\circ}\text{C}$

b) $\blacksquare^{\circ}\text{C} < -7^{\circ}\text{C}$

8. Carmen and Jack roll a number cube with these integers on the faces: $+1$, -3 , $+3$, -2 , -1 , $+2$. Carmen scores 1 point if the integer rolled is greater than $+1$. Jack scores 1 point if the integer rolled is less than -1 . Who has more chances to score a point?

9. Erynn made a chart showing the typical surface temperatures of four planets and the approximate distance of each planet from the Sun.



Distance from the Sun		
Planet	Approximate distance from Sun (in millions of kilometres)	Typical surface temperature ($^{\circ}\text{C}$)
Earth	150	$+14$
Mars	228	-63
Jupiter	778	-130
Neptune	4500	-200

- a) Which temperature is colder than -150°C ?
 b) Which temperature is warmer than -50°C ?
 c) What is the relationship between a planet's distance from the Sun and its surface temperature?
10. How does thinking about temperatures help you decide which of two integers is greater? Use examples to explain.