

Fill in the missing quadrants from the given one.

Water boils at 100°C...except when it doesn't!

English

Water boils at 100°C ... at sea level.

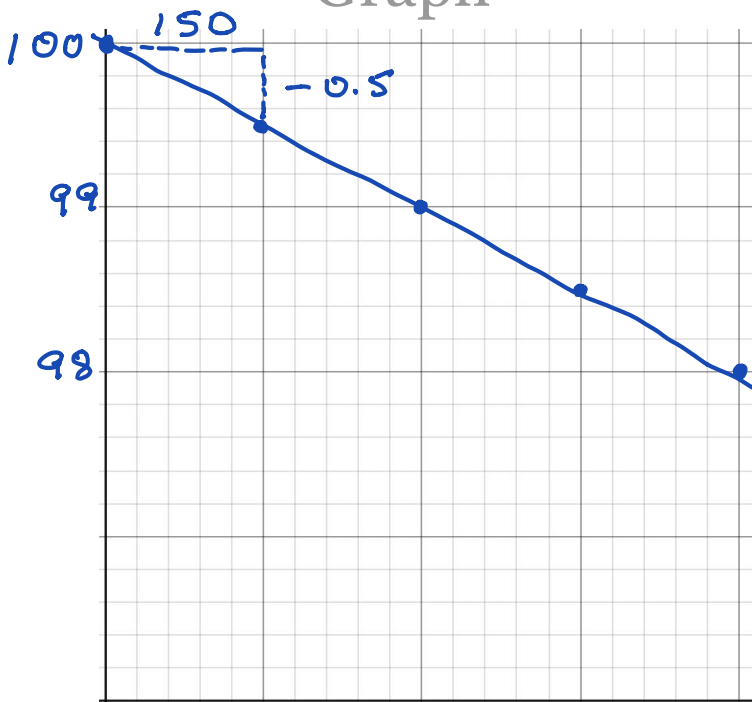
"The boiling point of water goes down by 0.5°C for every 150m increase in elevation."

h

Data Table

$h(m)$	$T(^{\circ}C)$
0	100
150	99.5
300	99

Graph



Equation

$$y = mx + b$$

$$T = \text{---} h + \text{---}$$

$$= \frac{-0.5}{150} h + 100$$

$$= \frac{-h}{300} + 100$$

Someone's water boils at 81°C. Where in Canada are they?

Find their elevation: $81 = \frac{-h}{300} + 100$

$$\Rightarrow 81 - 100 = \frac{-h}{300} \Rightarrow -19 = \frac{-h}{300} \Rightarrow h = 19 \cdot 300 = 5700m$$

Must be on Mt Logan!

Fill in the missing quadrants from the given one.

It's cooler up top

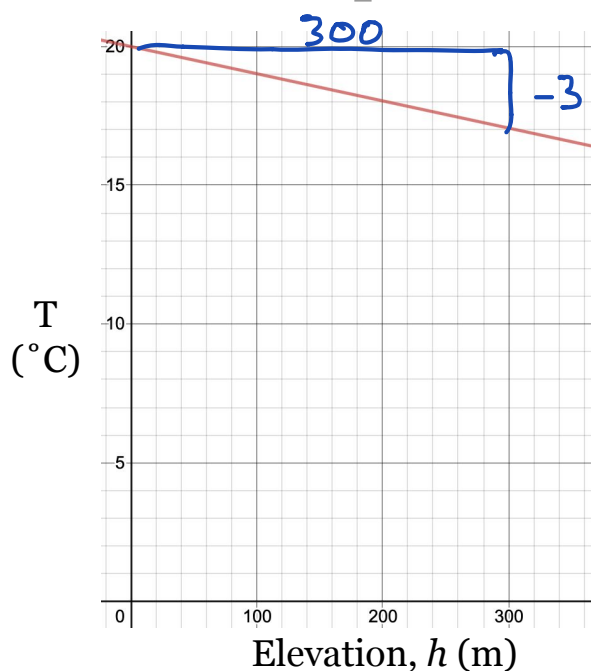
English

The temperature starts at 20°C and falls 1 degree for every 100 m increase in elevation. ←

Data Table

$h(\text{m})$	$T(^{\circ}\text{C})$
0	20
100	19
200	18

Graph



Equation

$$\begin{aligned} T &= \dots h + \dots \\ &= \frac{-3}{300} h + 20 \\ &= \frac{-1}{100} h + 20 \\ &= -0.01h + 20 \end{aligned}$$

It's 20°C at the corner of $\overbrace{4\text{th and Main}}^{670\text{m}}$. Should you pack an extra layer to hike to the $\underbrace{\text{top of Mt McIntyre}}_{1568\text{m}}$?

$$h = 1568 - 670 = 898\text{m}$$

$$T = -0.01(898) + 20 = -8.98 + 20 = 11.02^{\circ}\text{C}$$

Definitely want another layer for lunch at the top!

Fill in the missing quadrants from the given one.

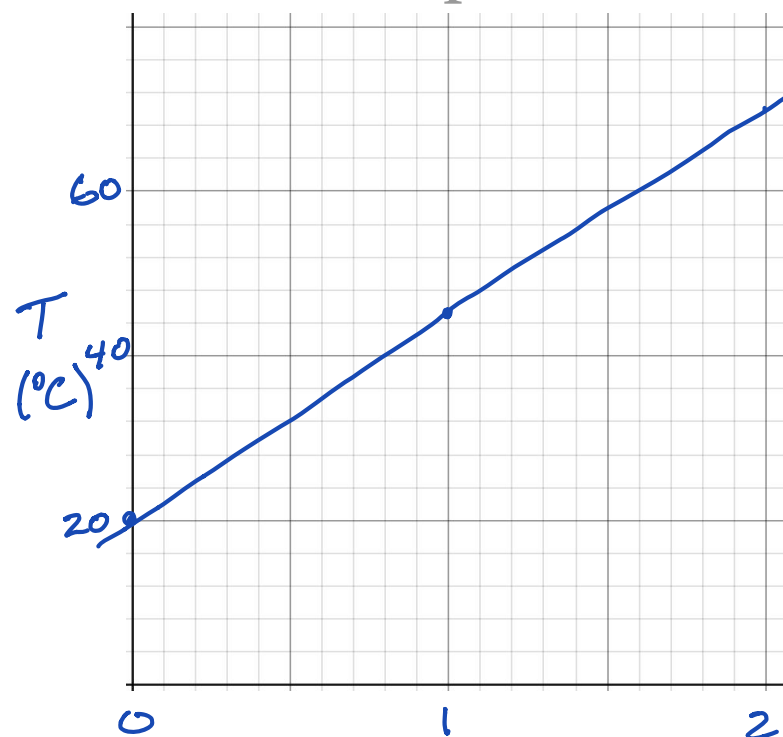
"By 2008, the mine reached 3.9 km (2.4 mi) underground and the temperature of the rock face reached 60 °C."

English

Starting from 20,
T increases by 25
for every unit
change in d.

The temperature of the
planet increases by an
average of 25°C for every
km we go underground.

Graph



Data Table

d	T
0	20
1	45
2	70

Equation

$$T = 20 + 25d$$

temperature in °C depth in km

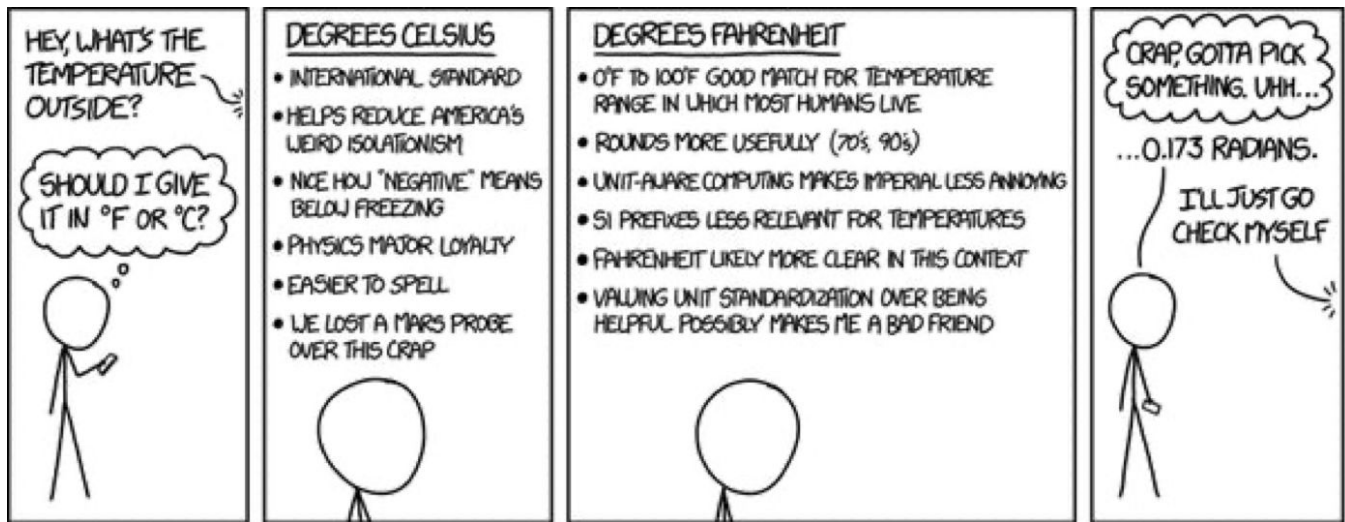
Estimate the temperature at the centre of the Earth.

radius of Earth $\approx 6,370$ km

$$T = 20 + 25(6,370) = 159,270^\circ\text{C}$$

N.B. Geologists estimate
it to be "only" 7,000 °C.

Fill in the missing quadrants from the given one.



English

The Fahrenheit temp. is 32 when C is 0, and increases by 1.8° for every degree C.

Data Table

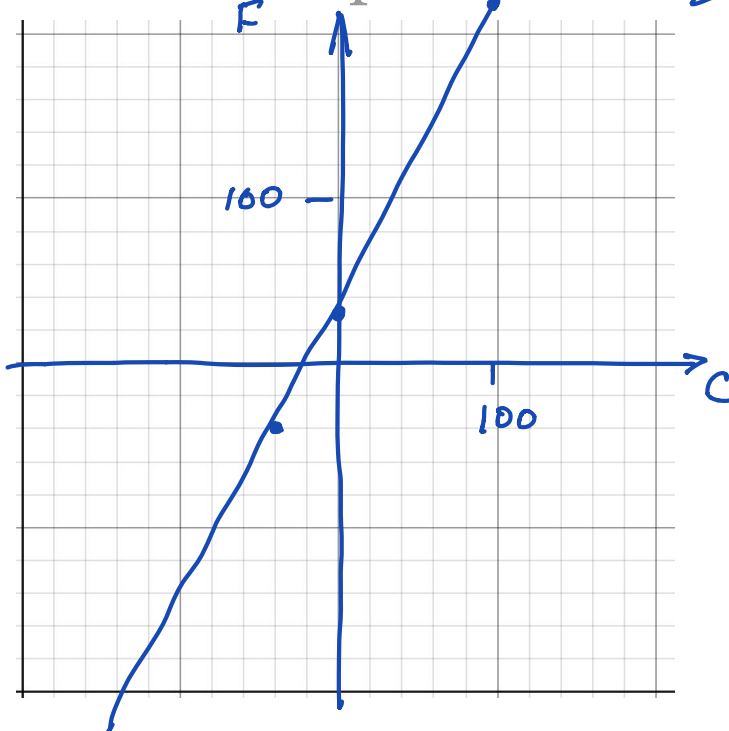
$^\circ\text{C}$	$^\circ\text{F}$
-40	-40
0	32
100	212

run = 100

rise = $212 - 32 = 180$

$F_{\text{intercept}}$

Graph



Equation

$$y = mx + b$$

$$F = \frac{180}{100} C + 32$$

$$= 1.8 C + 32$$