

Negative Sequences

For each sequence:

1. Build a Table of Values
2. Label RISE / RUN / X_1 / Y_1
3. Substitute the values into the slope-point form equation: $y - y_1 = \frac{\text{rise}}{\text{run}}(x - x_1)$
4. Complete the algebraic steps to rearrange the formula into y-intercept form $y = mx + b$.

MILD

1. 20, 18, 16, ...
2. 15, 12, 9, ...
3. 30, 26, 22, ...
4. 40, 35, 30, ...
5. 9, 6, 3, ...

MEDIUM

6. 100, 85, 70, ...
7. 12, 4, -4, ...
8. -3, -10, -17, ...
9. 60, 42, 24, ...
10. 250, 220, 190, ...

SPICY

11. 14.5, 10.0, 5.5, ...
12. 0.9, -0.6, -2.1, ...
13. $\frac{35}{6}$, $\frac{29}{6}$, $\frac{23}{6}$, ...
14. 72, 53, 34, ...
15. -6, -25, -44, ...

EXTRA SPICY

16. $\frac{19}{3}$, 2, $-\frac{13}{3}$, ...
17. 287, 253, 219, ...
18. 48, 13, -22, ...
19. 105.6, 82.3, 59.0, ...
20. -12, -57, -102, ...

1. A candle is 15 cm tall and burns down at a constant rate. After 1 hour it is 14 cm, and after 2 hours it is 13 cm tall. How long until the candle is 8 cm long?
2. A cyclist's speed going uphill is 32 km/h, then 29 km/h one minute later, and 26 km/h the next minute. If the slowdown continues at the same rate, after how many minutes will the cyclist come to a stop?
3. A plane descends from 7400 m to 7100 m to 6800 m, dropping steadily each minute.
 - a) How many minutes will it take to reach an altitude of 1000 m?
 - b) Is the plane still above ground level after 10 more minutes?
4. A phone battery drops from 95% to 88% to 81% while running a high-power app. If the owner wants to shut it down before it reaches 20%, how long can they keep using it?
5. A commercial freezer warms from $-32.4\text{ }^{\circ}\text{C}$ to $-30.8\text{ }^{\circ}\text{C}$ to $-29.2\text{ }^{\circ}\text{C}$ each hour after a power failure. Meat spoils at $-12\text{ }^{\circ}\text{C}$.
 - a) How long until the freezer reaches that temperature?
 - b) Will the food be safe if repairs take 9 hours?
6. A truck is worth \$74,000, then \$67,800, then \$61,600 a year later.
 - a) At what point does the truck's value fall to half of the original price?
 - b) How many years until it is worth \$0 if the pattern continued?
7. A satellite is falling out of orbit. Its height is 12 050 km, then 11 620 km, then 11 190 km each orbit. Atmospheric burn-up begins at 80 km.
 - a) How many orbits remain before destruction?
 - b) If each orbit takes 90 minutes, how much time is that?
8. A high-speed train brakes from 118 km/h to 83 km/h to 48 km/h every minute. It must slow to **30 km/h** before reaching a sharp curve, which is **1.8 km** away.
 - a) Will the train reach 30 km/h before the curve?
 - b) If not, by how much does it exceed the safe speed at the curve?