Extrapolating linear, quadratic, and exponential patterns

Mana Maths

Te reo Māori terms

hātepe
sequence
Open in Te Aka

tauranga
term
Open in Te Aka

hikuaua
pattern
Open in Te Aka

rerekētanga
difference
Open in Te Aka

Extrapolating linear, quadratic, and exponential patterns — Foundation

1. Write the next two terms: $4,\ 7,\ 10,\ 13$

2. Write the next two terms: $21,\ 18,\ 15,\ 12$

3. Write the next two terms: $0.5,\ 1.0,\ 1.5,\ 2.0$

4. The first five terms are $3,\ 8,\ 13,\ 18,\ 23$. Write term 6.

5. The first four terms are $50,\ 45,\ 40,\ 35$. Write term 7.

6. Write the next two terms: $2,\ 4,\ 8,\ 16$

7. Write the next two terms: $3,\ 6,\ 12,\ 24$

8. Write the next two terms: $100,\ 50,\ 25,\ 12.5$

9. A pattern starts $5,\ 10,\ 20,\ 40$. What is term 6?

10. A bacteria count goes $200,\ 400,\ 800,\ 1600$. What is the next term?

11. Write the next two terms: $1,\ 4,\ 9,\ 16$

12. Write the next two terms: $2,\ 5,\ 10,\ 17$

13. Write the next two terms: $7,\ 12,\ 19,\ 28$

14. The first five terms are $6,\ 11,\ 18,\ 27,\ 38$. Write term 6.

Extrapolating linear, quadratic, and exponential patterns — Proficient

1. Write the next two terms of the linear pattern: $-3,\ 1,\ 5,\ 9,\ 13$

2. Write the next two terms of the linear pattern: $40,\ 34,\ 28,\ 22,\ 16$

3. Write the next two terms of the quadratic pattern: $1,\ 4,\ 9,\ 16,\ 25$

4. Write the next two terms of the quadratic pattern: $2,\ 6,\ 12,\ 20,\ 30$

5. Write the next two terms of the exponential pattern: $5,\ 10,\ 20,\ 40,\ 80$

6. Write the next two terms of the exponential pattern: $81,\ 27,\ 9,\ 3,\ 1$

7. A sequence starts $8,\ 13,\ 18,\ 23$. Write terms 5 and 6.

8. A pattern starts $12,\ 24,\ 48,\ 96$. Write terms 5 and 6.

9. The first five terms are $3,\ 7,\ 13,\ 21,\ 31$. Write term 6.

10. The first five terms are $50,\ 43,\ 36,\ 29,\ 22$. What is term 10?

11. The first five terms are $1,\ 3,\ 9,\ 27,\ 81$. What is term 7?

12. A plant grows in this pattern of heights (cm): $6,\ 10,\ 14,\ 18,\ 22$. Predict the height at term 8.

Extrapolating linear, quadratic, and exponential patterns — Excellence

1. Write terms 6 and 7, then state term 8: $5,\ 9,\ 13,\ 17,\ 21$

2. Write terms 6 and 7, then state term 8: $2,\ 8,\ 18,\ 32,\ 50$

3. Write terms 6 and 7, then state term 8: $3,\ 6,\ 12,\ 2$

4. The first differences are constant. Sequence: $-7,\ -2,\ 3,\ 8,\ 13$. Write terms 6 and 7.

5. The second differences are constant. Sequence: $4,\ 9,\ 16,\ 25,\ 36$. Write terms 6 and 7.

6. A pattern goes $200,\ 100,\ 50,$ Write terms 6 and 7.

7. A delivery fee follows $12,\ 17,\ 22,\ 27,\ 32$. Predict term 12.

8. A tile pattern has totals $3,\ 8,\ 15,\ 24,\ 35$. Predict term 6 and term 7.

9. A viral video view count doubles each day: $150,\ 300,$ Predict day 6.

10. The first five terms are $10, 7, 4, 1, -2$. Predict term 12.

11. The first five terms are $2, 5, 10, 17, 26$. Predict term 8.

12. The first five terms are $1, 4, 16, 64, 256$. Predict term 7.

13. By term 6, which grows fastest: A $4, 8, 12, 16, 20$; B $1, 4, 9, 16, 25$; or C $2, 4, 8, 16, 32$? Give a reason.

14. A pattern starts at 7 and increases by consecutive odd numbers: $7, 10, 15, 22, 31$. Write the next two terms.

15. A machine output follows $6, 18, 54, 162$. Predict the next two outputs.

16. A sequence is $90, 78, 66, 54, 42$. What is term 15?