

Geometric Mean – Day 2
Unit 7: Representations of Exponential Relations

Find the missing term or terms in each geometric sequence.

1. ..., 3, __, 48, ... $a_2 = 12$	2. ..., -1, __, -36, ... $a_2 = -6$
3. ..., -4, __, __, -108, ... $a_2 = -12$ $a_3 = -36$	4. ..., -4, __, __, -864, ... $a_2 = -24$ $a_3 = -144$
5. ..., 2, __, __, 250, ... $a_2 = 10$ $a_3 = 50$	6. ..., 1, __, __, 27, ... $a_2 = 3$ $a_3 = 9$
7. ..., -3, __, __, __, -1875, ... $a_2 = -15$ $a_3 = -75$ $a_4 = -375$	8. ..., 3, __, __, __, 3888, ... $a_2 = 18$ $a_3 = 108$ $a_4 = 648$
9. ..., 1, __, __, __, 1296, ... $a_2 = 6$ $a_3 = 36$ $a_4 = 216$	10. ..., -4, __, __, __, -1024, ... $a_2 = -16$ $a_3 = -64$ $a_4 = -256$

11. ..., 4, ..., ..., 5184, ...

$$a_2 = 24$$

$$a_3 = 144$$

$$a_4 = 864$$

12. ..., 4, ..., ..., 324, ...

$$a_2 = 12$$

$$a_3 = 36$$

$$a_4 = 108$$

13. ..., 2, ..., ..., 6250, ...

$$a_2 = 10$$

$$a_4 = 250$$

$$a_3 = 50$$

$$a_5 = 1250$$

14. ..., -4, ..., ..., -128, ...

$$a_2 = -8$$

$$a_4 = -32$$

$$a_3 = -16$$

$$a_5 = -64$$

15. ..., 2, ..., ..., 2048, ...

$$a_2 = 8$$

$$a_4 = 128$$

$$a_3 = 32$$

$$a_5 = 512$$

16. ..., -1, ..., ..., -32, ...

$$a_2 = -2$$

$$a_4 = -8$$

$$a_3 = -4$$

$$a_5 = -16$$

17. ..., 4, ..., ..., 186624, ...

$$a_2 = 24$$

$$a_5 = 5184$$

$$a_3 = 144$$

$$a_6 = 31104$$

$$a_4 = 864$$

18. ..., 4, ..., ..., 2916, ...

$$a_2 = 12$$

$$a_5 = 324$$

$$a_3 = 36$$

$$a_6 = 972$$

$$a_4 = 108$$

19. ..., 1, ..., ..., 46656, ...

$$a_2 = 6$$

$$a_5 = 1296$$

$$a_3 = 36$$

$$a_6 = 7776$$

$$a_4 = 216$$

20. ..., -1, ..., ..., -46656, ...

$$a_2 = -6$$

$$a_5 = -1296$$

$$a_3 = -36$$

$$a_6 = -7776$$

$$a_4 = -216$$

$$\textcircled{1} \dots, \underset{a_1}{3}, \underset{a_2}{\quad}, \underset{a_3}{48}, \dots$$

$$a_2 = 3 \cdot 4 = \boxed{12}$$

$$a_n = a_1 (r)^{n-1}$$

$$48 = 3(r)^{3-1}$$

$$\frac{48}{3} = \frac{3(r)^2}{3}$$

$$\sqrt{16} = \sqrt{r^2}$$

$$4 = r$$

$$\textcircled{2} \dots, \underset{a_1}{-1}, \underset{a_2}{\quad}, \underset{a_3}{-36}, \dots$$

$$a_2 = -1 \cdot 6 = \boxed{-6}$$

$$a_n = a_1 (r)^{n-1}$$

$$-36 = -1(r)^{3-1}$$

$$\frac{-36}{-1} = \frac{-1(r)^2}{-1}$$

$$\sqrt{36} = \sqrt{r^2}$$

$$6 = r$$

$$\textcircled{3} \dots, \underset{a_1}{-4}, \underset{a_2}{\quad}, \underset{a_3}{\quad}, \underset{a_4}{-108}, \dots$$

$$a_2 = -4 \cdot 3 = \boxed{-12}$$

$$a_3 = -12 \cdot 3 = \boxed{-36}$$

$$a_n = a_1 (r)^{n-1}$$

$$-108 = -4(r)^{4-1}$$

$$\frac{-108}{-4} = \frac{-4(r)^3}{-4}$$

$$\sqrt[3]{27} = \sqrt[3]{r^3}$$

$$3 = r$$

$$\textcircled{4} \dots, \underset{a_1}{-4}, \underset{a_2}{\quad}, \underset{a_3}{\quad}, \underset{a_4}{-864}, \dots$$

$$a_2 = -4 \cdot 6 = \boxed{-24}$$

$$a_3 = -24 \cdot 6 = \boxed{-144}$$

$$a_n = a_1 (r)^{n-1}$$

$$-864 = -4(r)^{4-1}$$

$$\frac{-864}{-4} = \frac{-4(r)^3}{-4}$$

$$\sqrt[3]{216} = \sqrt[3]{r^3}$$

$$6 = r$$

$$\textcircled{5} \dots, \underset{a_1}{2}, \underset{a_2}{\quad}, \underset{a_3}{\quad}, \underset{a_4}{250}, \dots$$

$$a_2 = 2 \cdot 5 = \boxed{10}$$

$$a_3 = 10 \cdot 5 = \boxed{50}$$

$$a_n = a_1 (r)^{n-1}$$

$$250 = 2(r)^{4-1}$$

$$\frac{250}{2} = \frac{2(r)^3}{2}$$

$$\sqrt[3]{125} = \sqrt[3]{r^3}$$

$$5 = r$$

$$\textcircled{6} \dots, 1, \frac{\quad}{a_2}, \frac{\quad}{a_3}, \frac{\quad}{a_4}, 27, \dots$$

$$a_2 = 1 \cdot 3 = \boxed{3}$$

$$a_3 = 3 \cdot 3 = \boxed{9}$$

$$a_n = a_1 (r)^{n-1}$$

$$27 = 1 (r)^{4-1}$$

$$\frac{27}{1} = \frac{1 (r)^3}{1}$$

$$\sqrt[3]{27} = \sqrt[3]{r^3}$$

$$3 = r$$

$$\textcircled{7} \dots, -3, \frac{\quad}{a_2}, \frac{\quad}{a_3}, \frac{\quad}{a_4}, -1875, \dots$$

$$a_2 = -3 \cdot 5 = \boxed{-15}$$

$$a_3 = -15 \cdot 5 = \boxed{-75}$$

$$a_4 = -75 \cdot 5 = \boxed{-375}$$

$$a_n = a_1 (r)^{n-1}$$

$$-1875 = -3 (r)^{5-1}$$

$$\frac{-1875}{-3} = \frac{-3 (r)^4}{-3}$$

$$\sqrt[4]{625} = \sqrt[4]{r^4}$$

$$5 = r$$

$$\textcircled{8} \dots, 3, \frac{\quad}{a_2}, \frac{\quad}{a_3}, \frac{\quad}{a_4}, 3888, \dots$$

$$a_2 = 3 \cdot 6 = \boxed{18}$$

$$a_3 = 18 \cdot 6 = \boxed{108}$$

$$a_4 = 108 \cdot 6 = \boxed{648}$$

$$a_n = a_1 (r)^{n-1}$$

$$3888 = 3 (r)^{5-1}$$

$$\frac{3888}{3} = \frac{3 (r)^4}{3}$$

$$\sqrt[4]{1296} = \sqrt[4]{r^4}$$

$$6 = r$$

$$\textcircled{9} \dots, 1, \frac{\quad}{a_2}, \frac{\quad}{a_3}, \frac{\quad}{a_4}, 1296, \dots$$

$$a_2 = 1 \cdot 6 = \boxed{6}$$

$$a_3 = 6 \cdot 6 = \boxed{36}$$

$$a_4 = 36 \cdot 6 = \boxed{216}$$

$$a_n = a_1 (r)^{n-1}$$

$$1296 = 1 (r)^{5-1}$$

$$\frac{1296}{1} = \frac{1 (r)^4}{1}$$

$$\sqrt[4]{1296} = \sqrt[4]{r^4}$$

$$6 = r$$

$$\textcircled{10} \dots, -4, \frac{\quad}{a_2}, \frac{\quad}{a_3}, \frac{\quad}{a_4}, -1024, \dots$$

$$a_2 = -4 \cdot 4 = \boxed{-16}$$

$$a_3 = -16 \cdot 4 = \boxed{-64}$$

$$a_4 = -64 \cdot 4 = \boxed{-256}$$

$$a_n = a_1 (r)^{n-1}$$

$$-1024 = -4 (r)^{5-1}$$

$$\frac{-1024}{-4} = \frac{-4 (r)^4}{-4}$$

$$\sqrt[4]{256} = \sqrt[4]{r^4}$$

$$4 = r$$

$$(11) \dots, \underset{a_1}{4}, \underset{a_2}{\quad}, \underset{a_3}{\quad}, \underset{a_4}{\quad}, \underset{a_5}{5184}, \dots$$

$$a_2 = 4 \cdot 6 = \boxed{24}$$

$$a_3 = 24 \cdot 6 = \boxed{144}$$

$$a_4 = 144 \cdot 6 = \boxed{864}$$

$$a_n = a_1 (r)^{n-1}$$

$$5184 = 4(r)^{5-1}$$

$$\frac{5184}{4} = \frac{4(r)^4}{4}$$

$$\sqrt[4]{1296} = \sqrt[4]{r^4}$$

$$6 = r$$

$$(12) \dots, \underset{a_1}{4}, \underset{a_2}{\quad}, \underset{a_3}{\quad}, \underset{a_4}{\quad}, \underset{a_5}{324}, \dots$$

$$a_2 = 4 \cdot 3 = \boxed{12}$$

$$a_3 = 12 \cdot 3 = \boxed{36}$$

$$a_4 = 36 \cdot 3 = \boxed{108}$$

$$a_n = a_1 (r)^{n-1}$$

$$324 = 4(r)^{5-1}$$

$$\frac{324}{4} = \frac{4(r)^4}{4}$$

$$\sqrt[4]{81} = \sqrt[4]{r^4}$$

$$3 = r$$

$$(13) \dots, \underset{a_1}{2}, \underset{a_2}{\quad}, \underset{a_3}{\quad}, \underset{a_4}{\quad}, \underset{a_5}{\quad}, \underset{a_6}{6250}, \dots$$

$$a_2 = 2 \cdot 5 = \boxed{10}$$

$$a_4 = 50 \cdot 5 = \boxed{250}$$

$$a_3 = 10 \cdot 5 = \boxed{50}$$

$$a_5 = 250 \cdot 5 = \boxed{1250}$$

$$a_n = a_1 (r)^{n-1}$$

$$6250 = 2(r)^{6-1}$$

$$\frac{6250}{2} = \frac{2(r)^5}{2}$$

$$\sqrt[5]{3125} = \sqrt[5]{r^5}$$

$$5 = r$$

$$(14) \dots, \underset{a_1}{-4}, \underset{a_2}{\quad}, \underset{a_3}{\quad}, \underset{a_4}{\quad}, \underset{a_5}{\quad}, \underset{a_6}{-128}, \dots$$

$$a_2 = -4 \cdot 2 = \boxed{-8}$$

$$a_4 = -16 \cdot 2 = \boxed{-32}$$

$$a_3 = -8 \cdot 2 = \boxed{-16}$$

$$a_5 = -32 \cdot 2 = \boxed{-64}$$

$$a_n = a_1 (r)^{n-1}$$

$$-128 = -4(r)^{6-1}$$

$$\frac{-128}{-4} = \frac{-4(r)^5}{-4}$$

$$\sqrt[5]{32} = \sqrt[5]{r^5}$$

$$2 = r$$

$$(15) \dots, \underset{a_1}{2}, \underset{a_2}{\quad}, \underset{a_3}{\quad}, \underset{a_4}{\quad}, \underset{a_5}{\quad}, \underset{a_6}{2048}, \dots$$

$$a_2 = 2 \cdot 4 = \boxed{8}$$

$$a_4 = 32 \cdot 4 = \boxed{128}$$

$$a_3 = 8 \cdot 4 = \boxed{32}$$

$$a_5 = 128 \cdot 4 = \boxed{512}$$

$$a_n = a_1 (r)^{n-1}$$

$$2048 = 2(r)^{6-1}$$

$$\frac{2048}{2} = \frac{2(r)^5}{2}$$

$$\sqrt[5]{1024} = \sqrt[5]{r^5}$$

$$4 = r$$

$$(16) \dots, \underset{a_1}{-1}, \underset{a_2}{-}, \underset{a_3}{-}, \underset{a_4}{-}, \underset{a_5}{-}, \underset{a_6}{-32}, \dots$$

$$a_2 = -1 \cdot 2 = \boxed{-2}$$

$$a_4 = -4 \cdot 2 = \boxed{-8}$$

$$a_3 = -2 \cdot 2 = \boxed{-4}$$

$$a_5 = -8 \cdot 2 = \boxed{-16}$$

$$a_n = a_1 (r)^{n-1}$$

$$-32 = -1(r)^{6-1}$$

$$\frac{-32}{-1} = \frac{-1(r)^5}{-1}$$

$$\sqrt[5]{32} = \sqrt[5]{r^5}$$

$$2 = r$$

$$(17) \dots, \underset{a_1}{4}, \underset{a_2}{-}, \underset{a_3}{-}, \underset{a_4}{-}, \underset{a_5}{-}, \underset{a_6}{-}, \underset{a_7}{186624}, \dots$$

$$a_2 = 4 \cdot 6 = \boxed{24}$$

$$a_5 = 864 \cdot 6 = \boxed{5184}$$

$$a_3 = 24 \cdot 6 = \boxed{144}$$

$$a_6 = 5184 \cdot 6 = \boxed{31104}$$

$$a_4 = 144 \cdot 6 = \boxed{864}$$

$$a_n = a_1 (r)^{n-1}$$

$$186624 = 4(r)^{7-1}$$

$$\frac{186624}{4} = \frac{4(r)^6}{4}$$

$$\sqrt[6]{46656} = \sqrt[6]{r^6}$$

$$6 = r$$

$$(18) \dots, \underset{a_1}{4}, \underset{a_2}{-}, \underset{a_3}{-}, \underset{a_4}{-}, \underset{a_5}{-}, \underset{a_6}{-}, \underset{a_7}{2916}, \dots$$

$$a_2 = 4 \cdot 3 = \boxed{12}$$

$$a_5 = 108 \cdot 3 = \boxed{324}$$

$$a_3 = 12 \cdot 3 = \boxed{36}$$

$$a_6 = 324 \cdot 3 = \boxed{972}$$

$$a_4 = 36 \cdot 3 = \boxed{108}$$

$$a_n = a_1 (r)^{n-1}$$

$$2916 = 4(r)^{7-1}$$

$$\frac{2916}{4} = \frac{4(r)^6}{4}$$

$$\sqrt[6]{729} = \sqrt[6]{r^6}$$

$$3 = r$$

$$(19) \dots, \underset{a_1}{1}, \underset{a_2}{-}, \underset{a_3}{-}, \underset{a_4}{-}, \underset{a_5}{-}, \underset{a_6}{-}, \underset{a_7}{46656}, \dots$$

$$a_2 = 1 \cdot 6 = \boxed{6}$$

$$a_5 = 216 \cdot 6 = \boxed{1296}$$

$$a_3 = 6 \cdot 6 = \boxed{36}$$

$$a_6 = 1296 \cdot 6 = \boxed{7776}$$

$$a_4 = 36 \cdot 6 = \boxed{216}$$

$$a_n = a_1 (r)^{n-1}$$

$$46656 = 1(r)^{7-1}$$

$$\frac{46656}{1} = \frac{1(r)^6}{1}$$

$$\sqrt[6]{46656} = \sqrt[6]{r^6}$$

$$6 = r$$

$$(20) \dots, \underset{a_1}{-1}, \underset{a_2}{-}, \underset{a_3}{-}, \underset{a_4}{-}, \underset{a_5}{-}, \underset{a_6}{-}, \underset{a_7}{-46656}, \dots$$

$$a_2 = -1 \cdot 6 = \boxed{-6}$$

$$a_5 = -216 \cdot 6 = \boxed{-1296}$$

$$a_3 = -6 \cdot 6 = \boxed{-36}$$

$$a_6 = -1296 \cdot 6 = \boxed{-7776}$$

$$a_4 = -36 \cdot 6 = \boxed{-216}$$

$$a_n = a_1 (r)^{n-1}$$

$$-46656 = -1(r)^{7-1}$$

$$\frac{-46656}{-1} = \frac{-1(r)^6}{-1}$$

$$\sqrt[6]{46656} = \sqrt[6]{r^6}$$

$$6 = r$$