

Powers and Prime factorization

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1. Write $2 \times 2 \times 2 \times 2$ as a power.

5. Write 10×10 as a power.

2. Express $3 \times 3 \times 3$ as a power.

6. Write 2^5 in expanded form.

3. Write $5 \times 5 \times 5 \times 5 \times 5$ as a power.

7. Express 3^4 in expanded form.

4. Express $7 \times 7 \times 7$ as a power.

8. Write 4^3 in expanded form.



9. Express 5^2 in expanded form.

17. Express 3^6 in expanded form.

10. Write 6^3 in expanded form.

18. Write 4^5 in expanded form.

11. Find the value of 2^4 .

19. Express 5^4 in expanded form.

12. Find the value of 3^5 .

20. Write 6^4 in expanded form.

13. Find the value of 5^3 .

21. Write 36 as a product of prime factors.

14. Find the value of 6^3 .

22. Express 45 as a product of prime factors.

15. Find the value of 7^2 .

23. Write 60 as a product of prime factors.

16. Write 2^7 in expanded form.

24. Express 72 as a product of prime factors.



25. Write 96 as a product of prime factors.

31. Find the value of $2^3 \times 3^2$.

26. Write the prime factorization of 84 in powers.

32. Find the value of $5^2 \times 2^3$.

27. Express the prime factorization of 120 in powers.

33. Find the value of $7^2 \times 2$.

28. Write the prime factorization of 150 in powers.

34. Find the value of $3^3 \times 2^2$.

29. Express the prime factorization of 225 in powers.

35. Find the value of $2^4 \times 3$.

30. Write the prime factorization of 360 in powers.

36. A square garden has sides of 12 m. Write the area as a power.



37. A cube has sides of 5 cm. Write the volume as a power. (Volume of a cube = side³)

38. A rectangular field has length 9 m and width 25 m. Express the area as product of powers.

39. A box has sides of 6 cm. Write the volume as a power. (Volume of a cube = side³)

40. A square tile has sides of 15 cm. Write the area as a power.

41. fill in the blank:

- a. The prime factorization of 84 is $2 \times \underline{\quad} \times \underline{\quad} \times 7$.
- b. The number 120 can be expressed as the product of prime factors $2 \times 3 \times \underline{\quad} \times \underline{\quad} \times \underline{\quad}$.
- c. The prime factorization of 150 is $2 \times \underline{\quad} \times \underline{\quad} \times 5$.
- d. The prime factors of 225 are $3 \times \underline{\quad} \times \underline{\quad} \times 5$.
- e. The prime factorization of 360 is $2 \times 3 \times \underline{\quad} \times \underline{\quad} \times \underline{\quad} \times \underline{\quad}$.



42. A company produces 2^5 laptops in a week. How many laptops is that?

43. A school has 3^4 classrooms. How many classrooms are there?

44. A farmer plants 5^2 trees in each row. How many trees in total if there are 10 rows?

45. A factory produces $2^3 \times 3^2$ bulbs daily. How many bulbs is that?

46. A library has $2^4 \times 5^2$ books. How many books are there?



Answer Key:

1. 2^4

2. 3^3

3. 5^5

4. 7^3

5. 10^2

6. $2 \times 2 \times 2 \times 2 \times 2$

7. $3 \times 3 \times 3 \times 3$

8. $4 \times 4 \times 4$

9. 5×5

10. $6 \times 6 \times 6$

11. 16

12. 243

13. 125

14. 216

15. 49

16. $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$

17. $3 \times 3 \times 3 \times 3 \times 3 \times 3$

18. $4 \times 4 \times 4 \times 4 \times 4$

19. $5 \times 5 \times 5 \times 5$

20. $6 \times 6 \times 6 \times 6$

21. $2^2 \times 3^2$

22. $3^2 \times 5$

23. $2^2 \times 3 \times 5$

24. $2^3 \times 3^2$

25. $2^5 \times 3$

26. $2^2 \times 3 \times 7$

27. $2^3 \times 3 \times 5$

28. $2 \times 3 \times 5^2$

29. $3^2 \times 5^2$

30. $2^3 \times 3^2 \times 5$

31. 72

32. 200

33. 98

34. 72

35. 48

36. $12^2 = 144$

37. $5^3 = 125$

38. $9 \times 25 = 225$ (or $3^2 \times 5^2$)

39. $6^3 = 216$

40. $15^2 = 225$

41. a. $2 \times 2 \times 3 \times 7$

b. $2 \times 2 \times 2 \times 3 \times 5$

c. $2 \times 3 \times 5^2$ d. $3^2 \times 5^2$

e. $2^3 \times 3^2 \times 5$

42. $2^5 = 32$ laptops

43. $3^4 = 81$ classrooms

44. $5^2 \times 10 = 250$ trees

45. $2^3 \times 3^2 = 72$ bulbs

46. $2^4 \times 5^2 = 400$ books

