Simplify the following expressions:

1. 5^3

2. 2^4

3. 10^2

4. 6^3

5. 4^5

6. $(3^2)^2$

7. $9^{3/2}$

8. $16^{1/4}$

9. $(2^3)^2$

10. 7^0

Solve for the missing values:

21. $x^2 = 49$

22. $x^3 = 27$

23. $x^4 = 81$

24. $x^2 = 121$

25. $x^3 = 125$

26. $x^2 = 169$

27. $x^2 = 196$

28. $x^3 = 64$

29. $x^4 = 16$

30. $x^2 = 256$

Evaluate the square roots:

11. $\sqrt{49}$

12. $\sqrt{81}$

13. $\sqrt{144}$

14. $\sqrt{225}$

15. $\sqrt{400}$

16. $\sqrt{900}$

17. $\sqrt{1024}$

18. $\sqrt{1}$

19. $\sqrt{0}$

20. $\sqrt{625}$

X	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6	9	12	15	18	21	24	27	30	33	36
4	0	4	8	12	16	20	24	28	32	36	40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12	18	24	30	36	42	48	54	60	66	72
7	0	7	14	21	28	35	42	49	56	63	70	77	84
8	0	8	16	24	32	40	48	56	64	72	80	88	96
9	0	9	18	27	36	45	54	63	72	81	90	99	108
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110	121	132
12	0	12	24	36	48	60	72	84	96	108	120	132	144

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Word Problems:

31. A square field has an area of 144 square feet. What is the length of one side?

32. A cube has a volume of 512 cubic inches. What is the length of one side?

33. If a number squared equals 196, what is the number?

34. A ladder is leaning against a wall. The bottom is 9 feet from the wall, and the ladder reaches a height of 12 feet. What is the length of the ladder?

35. The area of a square is 225 square meters. Find the length of one side.

36. A factory produces 10^4 parts each day. How many parts are made in a week?

37. The population of a city is approximately 10^6 people. How many people live in the city?

38. If you save $\$2^5$ each week, how much will you have in 6 weeks?

39. A bacteria culture doubles every hour. If you start with 2^3 bacteria, how many will there be after 5 hours?

40. The speed of light is about 3×10^8 meters per second. How far does light travel in 10 seconds?
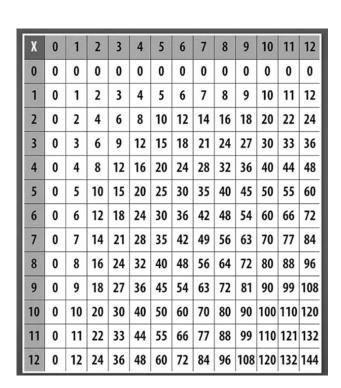
ANSWER KEY

Simplify the following expressions:

1. 5^3 — 125
2. 2^4 — 16
3. 10^2 — 100
4. 6^3 — 216
5. 4^5 — 1024
6. $(3^2)^2$ — 81
7. $9^{3/2}$ — 27
8. $16^{1/4}$ — 2
9. $(2^3)^2$ — 64
10. 7^0 — 1

Solve for the missing values:

21. $x^2 = 49$ — 7
22. $x^3 = 27$ — 3
23. $x^4 = 81$ — 3
24. $x^2 = 121$ — 11
25. $x^3 = 125$ — 5
26. $x^2 = 169$ — 13
27. $x^2 = 196$ — 14
28. $x^3 = 64$ — 4
29. $x^4 = 16$ — 2
30. $x^2 = 256$ — 16

Evaluate the square roots:

11. $\sqrt{49}$ — 7
12. $\sqrt{81}$ — 9
13. $\sqrt{144}$ — 12
14. $\sqrt{225}$ — 15
15. $\sqrt{400}$ — 20
16. $\sqrt{900}$ — 30
17. $\sqrt{1024}$ — 32
18. $\sqrt{1}$ — 1
19. $\sqrt{0}$ — 0
20. $\sqrt{625}$ — 25

X	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6	9	12	15	18	21	24	27	30	33	36
4	0	4	8	12	16	20	24	28	32	36	40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12	18	24	30	36	42	48	54	60	66	72
7	0	7	14	21	28	35	42	49	56	63	70	77	84
8	0	8	16	24	32	40	48	56	64	72	80	88	96
9	0	9	18	27	36	45	54	63	72	81	90	99	108
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110	121	132
12	0	12	24	36	48	60	72	84	96	108	120	132	144

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ANSWER KEY

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40. The speed of light is about 3×10^8 meters per second. How far does light travel in 10 seconds?

31. 12 feet

32. 8 inches

33. 14

34. 15 feet

35. 15 meters

36. 70,000

37. 1,000,000

38. $32 × 6 = $192

39. 256 bacteria

40. 3×10^9 meters

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