

Exponential Problems #3

These start at Achieved, and go through to Excellence

1. Solve $x^3 = 27$

2. Solve $2^x = 32$

3. Solve $20 - 2^x = 4$

4. Solve $5m^3 = 40$

5. Solve $3^{x-1} = 81$

6. Solve $\frac{1}{4} 2^x = 16$

7. Solve $\frac{5^k}{2} = 12.5$

8. Solve $4^{x+1} \geq 64$

9. Solve $9^k = 27$

10. Solve $2^x \times 9 = 6^x$

11. Solve $\frac{4^x}{8^x} = \frac{1}{8}$

12. Solve $5^{n+7} = 25^{n+1}$

13. Solve $\sqrt{3}^n = 27$

14. Solve $\frac{6^{x+1}}{3^x} = 48$

15. Solve $2^{x^2} = 4^{x+4}$

16. Solve $\frac{3^n}{20} > 4$ where n is integer

Exponential Problems #3 – Answers

These start at Achieved, and go through to Excellence

1. Solve $x^3 = 27$ $3^3 = 27$ $x = 3$
2. Solve $2^x = 32$ $2^5 = 32$ $x = 5$
3. Solve $20 - 2^x = 4$ $16 = 2^x$ $2^4 = 16$ $x = 4$
4. Solve $5m^3 = 40$ $m^3 = 40 \div 5$ $2^3 = 8$ $m = 2$
5. Solve $3^{x-1} = 81$ $3^{x-1} = 3^4$ $x - 1 = 4$ $x = 5$
6. Solve $\frac{1}{4} 2^x = 16$ $2^x = 16 \times 4$ $2^6 = 64$ $x = 6$
7. Solve $\frac{5^k}{2} = 12.5$ $5^k = 25$ $k = 2$
8. Solve $4^{x+1} \geq 64$ $4^{x+1} \geq 4^3$ $x + 1 \geq 3$ $x \geq 2$
9. Solve $9^k = 27$ $3^{2k} = 3^3$ $2k = 3$ $k = 1.5$
10. Solve $2^x \times 9 = 6^x$ $2^x \times 9 = 2^x \times 3^x$ $x = 2$
11. Solve $\frac{4^x}{8^x} = \frac{1}{8}$ $4^x \times 8 = 8^x$ $4^x \times 8 = 4^x \times 2^x$ $x = 3$
12. Solve $5^{n+7} = 25^{n+1}$ $5^{n+7} = 5^{2n+2}$ $n + 7 = 2n + 2$ $n = 5$
13. Solve $\sqrt{3}^n = 27$ $(\sqrt{3} \times \sqrt{3})^3 = 27$ $\sqrt{3}^6 = 3^3$ $n = 6$
14. Solve $\frac{6^{x+1}}{3^x} = 48$ $\frac{6^x \times 6}{3^x} = 48$ $\frac{6^x}{3^x} = 48 \div 6$ $2^x = 8$
 $x = 3$
15. Solve $2^{x^2} = 4^{x+4}$ $2^{x^2} = 2^{2x+8}$ $x^2 = 2x + 8$ $x = 4, -2$
16. Solve $\frac{3^n}{20} > 4$ (n is integer) $3^n > 80$ $3^n \geq 81$ $n \geq 4$ or $n > 5$