Exponential Problems #2

These start at Achieved, and go through to Excellence

1. Solve $\quad 4^x = 16$

2. Solve $\quad x^5 = 32$

3. Solve $\quad 3^x - 5 = 4$

4. Solve $\quad \dfrac{m^3}{3} = 9$

5. Solve $\quad 4^{x+1} = 64$

6. Solve $\quad 6^x \times 2 = 72$

7. Solve $\quad \dfrac{2^k}{10} = 6.4$

8. Solve $\quad 4 \times 3^{x+1} = 36$

9. Solve $\quad 4^k = 32$

10. Solve $\quad 10^x = 125 \times 2^x$

11. Solve $\quad \dfrac{6^x}{3^x} = 8$

12. Solve $\quad 9^{n-2} = 3^n$

13. Solve $\quad (10^n)^2 = 1{,}000{,}000$

14. Solve $\quad \dfrac{4^x}{2^{x+1}} = 16$

15. Solve $\quad 10^n = 5^{n+1} \times 3.2$

16. Solve $\quad \dfrac{120}{3^n} > 4 \quad$ where n is integer

Exponential Problems #2 – Answers

These start at Achieved, and go through to Excellence

1. Solve $\quad 4^x = 16$ $\qquad\qquad$ $4^2 = 16$ $\qquad\qquad\qquad\qquad$ $x = 2$

2. Solve $\quad x^5 = 32$ $\qquad\qquad$ $2^5 = 32$ $\qquad\qquad\qquad\qquad$ $x = 2$

3. Solve $\quad 3^x - 5 = 4$ $\qquad\qquad$ $3^x = 4 + 5$ $\qquad$ $3^2 = 9$ $\qquad$ $x = 2$

4. Solve $\quad \dfrac{m^3}{3} = 9$ $\qquad\qquad$ $m^3 = 3 \times 9$ $\qquad$ $3^3 = 27$ $\qquad$ $m = 3$

5. Solve $\quad 4^{x+1} = 64$ $\qquad\qquad$ $4^{x+1} = 4^3$ $\qquad$ $x + 1 = 3$ $\qquad$ $x = 2$

6. Solve $\quad 6^x \times 2 = 72$ $\qquad\qquad$ $6^x = 72 \div 2$ $\qquad$ $6^2 = 36$ $\qquad$ $x = 2$

7. Solve $\quad \dfrac{2^k}{10} = 6.4$ $\qquad\qquad$ $2^k = 64$ $\qquad\qquad\qquad\qquad$ $k = 6$

8. Solve $\quad 4 \times 3^{x+1} = 36$ $\qquad\qquad$ $3^{x+1} = 9$ $\qquad$ $x + 1 = 2$ $\qquad$ $x = 1$

9. Solve $\quad 4^k = 32$ $\qquad\qquad$ $2^{2k} = 2^5$ $\qquad$ $2k = 5$ $\qquad$ $k = 2.5$

10. Solve $\quad 10^x = 125 \times 2^x$ $\qquad\qquad$ $5^x \times 2^x = 5^3 \times 2^x$ $\qquad\qquad$ $x = 3$

11. Solve $\quad \dfrac{6^x}{3^x} = 8$ $\qquad\qquad$ $2^x = 2^3$ $\qquad\qquad\qquad\qquad$ $x = 3$

12. Solve $\quad 9^{n-2} = 3^n$ $\qquad\qquad$ $3^{2n-4} = 3^n$ $\qquad$ $2n - 4 = n$ $\qquad$ $n = 4$

13. Solve $\quad (10^n)^2 = 1,000,000$ $\qquad\qquad$ $10^{2n} = 10^6$ or $10^n = 1,000$ $\qquad$ $n = 3$

14. Solve $\quad \dfrac{4^x}{2^{x+1}} = 16$ $\qquad\qquad$ $\dfrac{4^x}{2^x \times 2} = 16$ $\quad$ $2^x = 32$ $\qquad$ $x = 5$

15. Solve $\quad 10^n = 5^{n+1} \times 3.2$ $\qquad\qquad$ $10^n = 5^n \times 5 \times 3.2$ $\qquad$ $10^n = 5^n \times 16$

$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad$ $5^n \times 2^n = 5^n \times 2^4$ $\qquad\qquad\qquad$ $n = 4$

16. Solve $\quad \dfrac{120}{3^n} > 4$ (n is integer) $\qquad\qquad$ $\dfrac{120}{4} > 3^n$ $\qquad$ $27 \geq 3^n$ $\qquad$ $n < 4$ or $n \leq 3$