



In this worksheet you will practise solving exponential equations by applying logarithms to isolate the unknown. Work through the questions carefully and show all working.

Easy Questions

1. Solve $2^x = 8$.
2. Solve $3^x = 27$.
3. Solve $5^{x-1} = 125$.
4. Solve $10^{2x} = 1000$.
5. Solve $2^{x+2} = 32$.

Intermediate Questions

6. Solve $2^x = 7$.
7. Solve $3^{2x} = 20$.
8. Solve $4^{x+1} = 50$.
9. Solve $5^{3x-2} = 80$.
10. Solve $7^x = 150$.
11. Solve $2^{2x+3} = 40$.
12. Solve $3^{x-1} = 15$.
13. Solve $6^{2x} = 100$.
14. Solve $2^{x-2} = 10$.
15. Solve $9^x = 30$.
16. Solve $3^{2x+1} = 100$.
17. Solve $8^{x-1} = 60$.
18. Solve $5^{x+2} = 350$.
19. Solve $4^x = 18$.
20. Solve $2^{3x} = 45$.

Hard Questions

21. Solve $2^{2x+1} = 3^{x-1}$.

22. Solve $5^{x+3} = 2^{2x}$.

23. Solve $3^x = 4^{1-x}$.

24. Solve $7^{2x} = 5^{x+2}$.

25. Solve $6^{x+1} = 2^{x-1}3^{2x}$.

26. Solve $10^x = 3^{x+1}$.

27. Solve $2^{x+2} = 3^{2x-1}$.

28. Solve $5^{2x+1} = 3^{x-2}$.

29. Solve $2^{x+3} = 3 \cdot 5^x$.

30. Solve $7^{x-1} = 2^{x+2}$.