Indices

Part A Practice with Integers

Work out the value of the following indices.

1. 2^3	**2.** 9^2	**3.** 3^3	**4.** 5^3	**5.** 2^6
6. 10^4	**7.** 4^4	**8.** 7^3	**9.** 2^8	**10.** 5^5

Part B Tricky base numbers

1. $(\frac{1}{2})^3$	**2.** $(-4)^2$	**3.** $(0.5)^3$	**4.** $(\frac{3}{4})^2$	**5.** $(-2)^6$
6. $(0.2)^4$	**7.** $(-3)^3$	**8.** $(-\frac{1}{4})^2$	**9.** $(-0.1)^2$	**10.** 0^3

Part C Negative indices

Remember, you should expect most of your answers to be fractions.

1. 4^{-2}	**2.** 9^{-2}	**3.** 4^{-3}	**4.** 5^{-1}	**5.** 2^{-7}
6. 10^{-1}	**7.** 4^{-1}	**8.** 8^{-3}	**9.** 1^{-11}	**10.** 0^5
11. $(\frac{1}{2})^{-2}$	**12.** $(-4)^{-1}$	**13.** $(0.5)^{-4}$	**14.** $(\frac{3}{4})^{-3}$	**15.** $(-2)^{-3}$

Part D Equations

Work out the value of x in the equations below.

1. $49 = 7^x$	**2.** $25 = x^2$	**3.** $121 = 11^x$	**4.** $400 = x^2$
5. $\frac{1}{4} = \frac{1}{2}^x$	**6.** $\frac{1}{4} = 2^x$	**7.** $\frac{1}{8} = x^{-3}$	**8.** $1/49 = x^{-2}$
9. $36 = 2^2 \times 3^x$	**10.** $250 = 2 \times 5^x$	**11.** $88 = 11^1 \times 2^x$	**12.** $200 = 2^x \times 5^2$
13. $999 = 37^1 \times 3^x$	**14.** $1024 = 2^x$	**15.** $343 = 7^x$	**16.** $480 = 2^x \times 3^1 \times 5^1$

Part E Square roots and other fractional indices

Calculate the following:

1. $4^{1/2}$	**2.** $27^{1/3}$	**3.** $64^{1/2}$	**4.** $64^{1/3}$	**5.** $1000^{1/3}$
6. $125^{1/3}$	**7.** $81^{1/2}$	**8.** $81^{1/4}$	**9.** $900^{1/2}$	**10.** $8000^{1/3}$
11. $8^{2/3}$	**12.** $16^{3/4}$	**13.** $100^{3/2}$	**14.** $49^{3/2}$	**15.** $9^{5/2}$
16. $(1/4)^{1/2}$	**17.** $(0.01)^{1/2}$	**18.** $(0.36)^{1/2}$	**19.** $(9/16)^{1/2}$	**20.** $(-8)^{1/3}$

