

1 BIDMAS



- a) Work out $(-3)^2 - 2(4 - 7)^3 \div 9$
b) Put two pairs of brackets in to make this true. $6 + 4 \times 5 - 3 \div 2 = 35$

a) $9 - 2 \times (-27) \div 9 = 9 + 6 = 15$
b) $10 \times 3.5 = 35$
b) $(6 + 4) \times (5 - 3 \div 2) = 35$

2 Listing factors



- a) A number between 20 and 100 has exactly five factors. Find the number and list its factors.
b) How many factors does $2^4 \times 5^2$ have? Explain how you know.

a) 1, 3, 9, 27, 81
b) $2^a \times 5^b$: a is 0 to 4, b is 0 to 2
a) 81 b) $5 \times 3 = 15$

3 Prime factors



- a) Write 3920 as a product of its prime factors in index form.
b) Use your answer to write $\sqrt{3920}$ in the form $a\sqrt{b}$, where b is prime.

a) $2^4 \times 5 \times 7^2$
b) $\sqrt{2^4 \times 7^2 \times 5} = 2^2 \times 7 \times \sqrt{5}$
b) $28\sqrt{5}$

4 HCF and LCM



- a) Two numbers, both bigger than 6, have an HCF of 6 and an LCM of 72. Find the two numbers.
b) $A = 2^a \times 3^4$ and $B = 2^5 \times 3^b$. Their HCF is 72 and their LCM is 2592. Find a and b.

a) 6×3 and 6×4
b) $72 = 2^3 \times 3^2$, $2592 = 2^5 \times 3^4$
a) 18 and 24 b) $a = 3$, $b = 2$

5 Squares and square roots



- a) Work out $\sqrt{0.0016} \times \sqrt{250\,000}$
b) Two square numbers differ by 45. Find all three pairs.

a) $0.04 \times 500 = 20$
b) $45 = 1 \times 45 = 3 \times 15 = 5 \times 9$
b) $7^2 - 2^2$, $9^2 - 6^2$, $23^2 - 22^2$

Number revision mat answers

Extend

6 Cubes and cube roots



- a) Work out $\sqrt[3]{-0.008} + \sqrt[3]{\frac{27}{64}}$
b) Three consecutive whole numbers are each cubed. The cubes add up to 216. Find the three numbers.

a) $-0.2 + 0.75 = 0.55$
b) $27 + 64 + 125 = 216$
a) 0.55 b) 3, 4 and 5

7 Estimating roots



- a) Show that $\sqrt{200}$ lies between 14.1 and 14.2
b) n is a whole number and $5 < \sqrt{n} < 5.5$. How many values can n take?

a) $14.1^2 = 198.81$, $14.2^2 = 201.64$
b) $25 < n < 30.25$: 26 to 30
b) 5 values

8 Index laws



- a) Simplify $(2x^3y^{-2})^4 \times 3x^{-5}y^{10}$
b) Solve $2^{3x+1} = 4^{x+3}$

a) $16x^{12}y^{-8} \times 3x^{-5}y^{10} = 48x^7y^2$
b) $4^{x+3} = 2^{2x+6}$, so $3x+1 = 2x+6$
b) $x = 5$

9 Fractional indices



- a) Work out $32^{0.6} \times 4^{-1.5}$
b) Solve $9^x = \frac{1}{3\sqrt{3}}$

a) $2^3 \times 2^{-3} = 2^0$
b) $3^{2x} = 3^{-1.5}$
a) 1 b) $x = -\frac{3}{4}$

10 Using a calculator



- Use your calculator for this box.
a) Work out $(3.8 + 1.65^2)^{\frac{2}{3}}$. Give your answer to 3 significant figures.
b) $a^{2.5} = 40$. Find a to 3 significant figures.

a) $6.5225^{\frac{2}{3}} = 3.49094...$
b) $a = 40^{0.4} = 4.37345...$
a) 3.49 b) 4.37