

1 BIDMAS



- a) Work out $4 + 18 \div (7 - 4)^2 \times 6$
b) Put one pair of brackets in to make this true. $36 \div 3 + 6 \times 2 = 8$

a) $4 + 18 \div 9 \times 6 = 4 + 12 = 16$

b) $36 \div (3 + 6) \times 2 = 8$

2 Listing factors



- a) List all the factors of 72.
b) A number between 40 and 60 has exactly three factors. What is the number?

a) 1, 2, 3, 4, 6, 8,
9, 12, 18, 24, 36, 72

b) 49 (1, 7, 49)

3 Prime factors



- a) Write 540 as a product of its prime factors in index form.
b) $540 \times n$ is a square number. Find the smallest whole number n can be.

a) $2^2 \times 3^3 \times 5$

b) 3 and 5 need even powers

b) $n = 3 \times 5 = 15$

4 HCF and LCM



- a) $A = 2^3 \times 3^2 \times 7$ and $B = 2^2 \times 3^4 \times 5$. Find the HCF and the LCM of A and B . Leave them in index form.
b) Two runners start a lap together. One laps in 84 seconds, the other in 90 seconds. After how many minutes are they next level at the start?

a) HCF $2^2 \times 3^2$, LCM $2^3 \times 3^4 \times 5 \times 7$

b) LCM = 1260 s = 21 minutes

5 Squares and square roots



- a) Write down the square numbers between 150 and 250.
b) A square tile has an area of 324 cm^2 . Work out its perimeter.

a) 169, 196, 225

b) $\sqrt{324} = 18$, $4 \times 18 = 72 \text{ cm}$

Number revision mat answers

Higher A

6 Cubes and cube roots



- a) Work out $\sqrt[3]{-125} + 4^3$
b) Find a number bigger than 1 that is a square number and a cube number.

a) $-5 + 64 = 59$

b) $64 = 8^2 = 4^3$ (or 729)

7 Estimating roots



- a) $\sqrt{130}$ lies between two whole numbers next to each other. Which numbers?
b) Estimate $\sqrt{83}$ to 1 decimal place.

a) $121 < 130 < 144$, so 11 and 12

b) 83 is just above $81 = 9^2$

b) $\sqrt{83} \approx 9.1$

8 Index laws



- a) Simplify $\frac{12a^5b^3}{3a^2b}$
b) Find the value of n . $\frac{5^7 \times 5^n}{5^3} = 5^{12}$

a) $4a^3b^2$

b) $7 + n - 3 = 12$

b) $n = 8$

9 Fractional indices



- a) Work out $27^{-\frac{2}{3}}$
b) Solve $8^x = \frac{1}{4}$

a) $\sqrt[3]{27} = 3$, $3^2 = 9$, so $\frac{1}{9}$

b) $2^{3x} = 2^{-2}$

a) $\frac{1}{9}$ b) $x = \frac{-2}{3}$

10 Using a calculator



Use your calculator for this box.

- a) Work out $\frac{(4.7 + 2.38)^2}{\sqrt{19.6 - 3.85}}$ Write down all the figures.
b) Work out $2.5^4 - \sqrt[3]{-4.913}$

a)

$50.1264 \div \sqrt{15.75} = 12.6306656...$

b) $39.0625 - (-1.7)$

b) 40.7625