GCSE HIGHER · REVISION MAT 3

Factors, multiples and primes

1 Write 72 as a product of prime factors.

2 Find the highest common factor of 42 and 70.

3 Explain why the HCF of two different prime numbers is always 1.

4 Two cogs have 18 and 24 teeth.

After how many turns of the smaller cog are both back at the start?

5 $A = 2 \times 3^3 \times 5$ and $B = 2^2 \times 3 \times 5^2$

Show that the LCM of A and B is 2700.

6 84 red and 126 blue sweets are shared into identical bags with none left.

What is the greatest number of bags?

What is in each bag?

7 Explain why $2^4 \times 3^2$ is a square number but $2^5 \times 3^3$ is not.

8 Find the smallest multiple of 5 that has exactly 6 factors.

Mr&Mrs MATHS

ANSWERS · REVISION MAT 3

Factors, multiples and primes

1 $2^3 \times 3^2$

2 14

3 A prime's only factors are 1 and itself, so 1 is the only common factor.

4 LCM(18, 24) = 72

4 turns (the larger turns 3 times)

5 $2^2 \times 3^3 \times 5^2$

$= 4 \times 27 \times 25 = 2700$

6 HCF(84, 126) = 42

42 bags, each with 2 red and 3 blue

7 Square numbers have even powers in their prime factorisation; 5 and 3 are odd.

8 Try 5, 10, 15: 2 or 4 factors

20: 1, 2, 4, 5, 10, 20

20

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