FOUNDATION & HIGHER

SAME AT BOTH TIERS

Name ..... Class .....

N4: Factors, multiples and primes

Primes, HCF, LCM and prime factorisation

20 marks · 25 minutes · Non-calculator

1) Here is a list of numbers: 12, 17, 21, 27, 31, 36

From the list, write down

(a) the prime numbers

.....

(1)

(b) the multiples of 3

.....

(1)

(c) a square number

.....

(1)

[Question 1: 3 marks]

2) Write 360 as a product of its prime factors. Use index notation.

.....

[Question 2: 3 marks]

3) Find the highest common factor (HCF) of 84 and 120

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[Question 3: 2 marks]

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4) Find the lowest common multiple (LCM) of 84 and 120

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[Question 4: 2 marks]

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

(a) Find the HCF of A and B. Leave your answer as a product of primes or as a number.

.....

(1)

(b) Find the LCM of A and B.

.....

(1)

[Question 5: 2 marks]

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6) List all the factors of 30

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[Question 6: 2 marks]

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7) Bus A leaves the station every 12 minutes. Bus B leaves every 18 minutes. Both leave together at 9:00 am. When do they next leave together?

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[Question 7: 2 marks]

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8) Is 91 a prime number? Give a reason.

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[Question 8: 1 marks]

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9) Explain why $2^5 \times 3$ is not a multiple of 9

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[Question 9: 1 marks]

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10) What is the smallest whole number you can multiply 360 by to get a square number?

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[Question 10: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	(a) 17, 31 (b) 12, 21, 27, 36 (c) 36	B1 each.
2	$2^3 \times 3^2 \times 5$	Factor tree or repeated division (M1); all primes correct (M1); index form (A1).
3	12	Prime factors of both (M1); A1.
4	840	Prime factors or listing multiples (M1); A1.
5	(a) $2^2 \times 3 \times 5 = 60$ (b) $2^3 \times 3^2 \times 5^2 = 1800$	B1 each.
6	1, 2, 3, 5, 6, 10, 15, 30	B2 (B1 for 6 or 7 correct with no extras).
7	9:36 am	LCM 36 (M1); A1.
8	No, $91 = 7 \times 13$	B1.
9	It has only one factor of 3; $9 = 3^2$	B1.
10	10	$360 = 2^3 \times 3^2 \times 5$ (M1); need one more 2 and one more 5, so 10 (A1).