Number Properties: Hard Practice Paper 5 Answers

Q#	Answer	Explanation
1	D	105 = 15 × 7 and 135 = 15 × 9, so 15 divides both. Nothing larger works, since 7 and 9 have no common factor, so the HCF is 15.
2	C	60 ÷ 4 = 15, 60 ÷ 6 = 10 and 60 ÷ 10 = 6, so 60 is a multiple of all three. 30 fails because 30 ÷ 4 is not a whole number.
3	B	The factors of 16 are 1, 2, 4, 8 and 16, which is 5 factors. The others have 6 (12), 6 (20), 8 (24) and 6 (32).
4	B	The primes between 30 and 50 are 31, 37, 41, 43 and 47, which is 5 numbers.
5	C	HCF × LCM gives the product of the two numbers: 9 × 90 = 810. So the other number is 810 ÷ 18 = 45. Check: the HCF of 18 and 45 is 9 and the LCM is 90.
6	A	A number divisible by both 4 and 5 must be a multiple of 20. The first three-digit multiple of 20 is 100, since 20 × 5 = 100.
7	A	The square root of 144 is 12 and the square root of 25 is 5. Subtracting gives 12 − 5 = 7.
8	A	Working each one out: −3 + 8 = 5, −10 + 12 = 2, 4 − 9 = −5, −6 + 7 = 1 and 2 − 11 = −9. The largest answer is 5.
9	B	15 × 15 = 225, so 225 is a square number in that range. The nearest other squares are 14 × 14 = 196 and 16 × 16 = 256.
10	E	Numbers leaving 3 left over when divided by 8 are 3, 11, 19, 27 and 35. Of these, only 35 is a multiple of 5.
11	D	A number divisible by 3, 4 and 5 must be a multiple of 60. Of the options, only 120 works: 120 ÷ 3 = 40, 120 ÷ 4 = 30 and 120 ÷ 5 = 24.
12	B	The multiples of 12 are 12, 24, 36, 48, ... and the first one that is a square number is 36, because 36 = 6 × 6.

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13	C	A number with exactly two factors is prime. The primes up to 30 are 2, 3, 5, 7, 11, 13, 17, 19, 23 and 29, which is 10 numbers.
14	D	The factors of 28 apart from itself are 1, 2, 4, 7 and 14. Adding them: 1 + 2 + 4 + 7 + 14 = 28, so 28 is a perfect number.
15	C	The temperature must rise from −5°C to 3°C, which is 8 degrees. At 2 degrees per hour that takes 4 hours, so it reaches 3°C at 10 am.

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