Number Properties: Hard Practice Paper 6 Answers

Q#	Answer	Explanation
1	D	Write each number as prime factors: 168 is 2 × 2 × 2 × 3 × 7 and 252 is 2 × 2 × 3 × 3 × 7. The primes they share are 2, 2, 3 and 7, and 2 × 2 × 3 × 7 = 84.
2	C	List the multiples of 24: 24, 48, 72. The first of these that is also a multiple of 18 is 72, since 18 × 4 = 72.
3	B	Count the factors of each: 25 and 49 have three, 36 has nine and 64 has seven. The factors of 24 are 1, 2, 3, 4, 6, 8, 12 and 24, which is eight of them.
4	C	Multiply the primes together, a step at a time: 2 × 2 = 4, then 4 × 3 = 12, then 12 × 5 = 60 and 60 × 5 = 300.
5	A	51 looks prime, but its digits add to 6, so it divides by 3: it is 3 × 17. The other claims hold, since 64 is 8 × 8 and 4 × 4 × 4, 7 × 13 = 91, and 100 has the nine factors 1, 2, 4, 5, 10, 20, 25, 50 and 100.
6	A	Divide 500 by 18: 18 × 27 = 486, leaving 14 over. The next multiple up is 18 × 28 = 504, and 504 − 500 = 4, so 4 must be added.
7	C	Since 4 × 4 = 16, it follows that 40 × 40 = 1,600. So the square root of 1,600 is 40.
8	C	Divide 200 by 7 to see how many fit: 7 × 28 = 196, which is below 200, while 7 × 29 = 203, which is above it. So there are 28 multiples.
9	C	The numbers in exactly one circle are the 10 that are multiples of 4 alone and the 5 that are multiples of 6 alone. The 5 in the overlap are multiples of both and do not count, so the answer is 10 + 5 = 15.
10	C	For any two numbers, the HCF multiplied by the LCM gives the same answer as multiplying the numbers themselves: 12 × 72 = 864. So the other number is 864 ÷ 24 = 36.

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11	E	Break 210 down step by step: 210 ÷ 2 = 105, then 105 ÷ 3 = 35, then 35 ÷ 5 = 7, which is prime. The prime factors are 2, 3, 5 and 7, so the largest is 7.
12	D	The tile's side must divide both 96 and 72 exactly, so it is their highest common factor. Their common factors are 1, 2, 3, 4, 6, 8, 12 and 24, and the largest is 24 cm.
13	C	They meet again after the lowest common multiple of 12, 18 and 30 seconds, which is 180 seconds. Since 180 ÷ 60 = 3, that is 3 minutes, so they next flash together at 09:03.
14	A	For a four-digit number, add the 1st and 3rd digits, add the 2nd and 4th, and compare. For 2,332 that gives 2 + 3 = 5 and 3 + 2 = 5, a difference of nothing, which means it divides by 11. Check: 11 × 212 = 2,332.
15	A	The square numbers in that range are 324, which is 18 × 18, and 361, which is 19 × 19. Of those two, 324 divides by 4, since 4 × 81 = 324.

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