Number Properties: Medium Practice Paper 8 Answers

Q#	Answer	Explanation
1	A	Six is 2 × 3, so a number divides by 6 only if it divides by 2 and by 3. Dividing by 2 means the number is even, and dividing by 3 means its digits add to a multiple of 3.
2	C	Work through the multiples of 6: 12, 18, 24, 30, 36, 42, 48, 54, 60. The first one that also divides by 4 and by 5 is 60, since 60 ÷ 4 = 15 and 60 ÷ 5 = 12.
3	B	The factors of 30 pair up: 1 with 30, 2 with 15, 3 with 10, and 5 with 6. Four pairs make 8 factors, so Ben is the one who is right.
4	E	Check the small cubes: 8 and 27 are not squares. But 64 is 8 × 8, so it is a square, and it is also 4 × 4 × 4, so it is a cube.
5	C	The primes in that range are 41, 43, 47, 53 and 59, which is five numbers. Others look prime but are not: 49 is 7 × 7 and 51 is 3 × 17.
6	C	The multiples of 7 between 80 and 100 are 84, 91 and 98. Only 91 of those is odd, and 7 × 13 = 91.
7	C	Add the three regions inside the circles: 2 factors of 20 that are not even, 4 numbers that are both, and 6 even numbers that are not factors of 20. Then 2 + 4 + 6 = 12.
8	A	Try dividing 91 by each prime in turn. It is not even and does not end in 0 or 5, but 91 ÷ 7 = 13. Both 7 and 13 are prime, so those are the two numbers.
9	C	20 squared is 20 × 20 = 400 and 15 squared is 15 × 15 = 225. Taking one from the other, 400 − 225 = 175.
10	B	The cell sits in the “Even” row and the “Not prime” column, so the number has to be even and not prime. Of the options only 4 fits, since it is even and has the factors 1, 2 and 4.
11	D	Check each one: 120 ÷ 8 = 15, 120 ÷ 12 = 10, 120 ÷ 15 = 8 and 120 ÷ 20 = 6. But 16 × 7 = 112 and 16 × 8 = 128, so 16 does not divide 120 exactly.

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12	C	Half of 45 is 22.5, so the two numbers sit either side of it, at 22 and 23. Check: 22 + 23 = 45, so the larger one is 23.
13	C	The factors are 1, 2, 4, 7, 14 and 28. Adding them gives 1 + 2 + 4 + 7 + 14 + 28 = 56, which is twice 28 — that is what makes 28 a perfect number.
14	B	Exactly two factors means the number is prime, and the primes between 50 and 60 are 53 and 59. The digits of 53 add to 5 + 3 = 8, so 53 is the number.
15	C	Numbers leaving 4 over when shared among 6 go 4, 10, 16, 22, 28, 34, 40 and 46. Leaving 3 over when shared among 5 means the number ends in 3 or 8, and only 28 does both. Check: 28 shared among 6 is 4 each with 4 left over, and among 5 is 5 each with 3 left over.

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