Number Properties: Medium Practice Paper 6 Answers

Q#	Answer	Explanation
1	A	Keep dividing by primes: 60 ÷ 2 = 30, then 30 ÷ 2 = 15, then 15 ÷ 3 = 5, which is prime itself. The primes used are 2, 2, 3 and 5, and 2 × 2 × 3 × 5 = 60.
2	B	Add the digits of each number. For 156 they come to 1 + 5 + 6 = 12, which divides by 3 but not by 9, so 156 behaves the same way. The digits of the other four each add to 9 or 18, so those numbers divide by 9 as well.
3	D	The factors of 20 are 1, 2, 4, 5, 10 and 20, which is six factors, not five. The other rows are right: 12 and 18 have six factors each, and 16 has five.
4	B	9 squared is 9 × 9 = 81, and 4 cubed is 4 × 4 × 4 = 64. The difference is 81 − 64 = 17.
5	A	Factors pair up, so a number with an odd number of factors must be a square. A square such as 9 has the factors 1, 3 and 9 — exactly three — because its square root is prime. The square of a number that is not prime, such as 16, has more.
6	B	A common multiple of 4 and 6 has to be in the twelve times table. Of these numbers 24, 48 and 72 all divide by 8 as well, and 64 is not a multiple of 6. That leaves 36, which does not divide exactly by 8.
7	B	The two-digit multiples of 9 below 30 are 18 and 27. Only 18 of those is even, so the number is 18.
8	C	The multiples of 6 run 6, 12, 18, 24, 30, 36, 42 and 48. The next one would be 54, which is above 50, so there are 8 of them.
9	C	Every multiple of 3 lies inside the left circle, whether or not it is a multiple of 5 too. That is the 8 in the left part and the 2 in the overlap, so 8 + 2 = 10 altogether.
10	A	Two odd numbers always add to an even one, as 3 + 5 = 8 shows. Two even numbers also add to an even number, odd times odd is odd, 2 is an even prime, and 9 is an odd square.

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11	C	5 squared is 5 × 5 = 25 and 3 cubed is 3 × 3 × 3 = 27. Adding them gives 25 + 27 = 52.
12	C	Divide by primes each time: 24 ÷ 2 = 12, then 12 ÷ 2 = 6, then 6 ÷ 2 = 3. So 24 is 2 × 2 × 2 × 3, which is four prime factors.
13	B	The smallest number in both the 4 and the 6 times tables is 12, so she buys 12 of each. That needs 12 ÷ 4 = 3 packs of cups and 12 ÷ 6 = 2 packs of saucers.
14	E	Factors pair up, so a number has an odd number of factors only when it is a square, because its square root pairs with itself. Here 16, 25, 36 and 49 are all squares, but 50 is not, so only 50 has an even number of factors.
15	C	33 ends in 3 but it is 3 × 11, so it has factors besides 1 and itself. The other four numbers are all prime, so only 33 shows that Anya is wrong.

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