

Problem Solving & Word Problems: Hard Practice Paper

8 Answers

Q#	Answer	Explanation
1	E	A quarter of 360 is $360 \div 4 = 90$ pupils for netball, and an eighth is $360 \div 8 = 45$ for hockey. The difference is $90 - 45 = 45$ pupils.
2	D	The money is split into $2 + 3 + 7 = 12$ parts, so one part is $840 \div 12 = 70$ pounds. Cara has $7 - 2 = 5$ parts more than Anna, which is $5 \times 70 = 350$ pounds.
3	B	The six numbers total $6 \times 14 = 84$, and the seven numbers must total $7 \times 15 = 105$. The number added is therefore $105 - 84 = 21$.
4	C	Plan A costs $800 \times 2 = 1600$ pence of calls, so $10 + 16 = 26$ pounds. Plan B costs 800 pence of calls, so $20 + 8 = 28$ pounds. Plan C stays at £25, which is the cheapest of the three.
5	A	Two hours 30 minutes is 2.5 hours, so the speed is $45 \div 2.5 = 18$ kilometres each hour. Checking, $18 \times 2.5 = 45$.
6	E	The girls who play are a quarter of the 60%, and a quarter of 60 is $60 \div 4 = 15$. So 15% of the school is girls who play an instrument.
7	C	The tank holds $2 \times 1.5 \times 0.8 = 2.4$ cubic metres. Each cubic metre is 1,000 litres, so it holds $2.4 \times 1000 = 2400$ litres, and $2,400 \div 40 = 60$ minutes.
8	B	Working backwards, the £21 is half of what was left after the book, so that was $21 \times 2 = 42$ pounds. Before the book he had $42 + 15 = 57$ pounds, and that was three quarters of the start. One quarter is $57 \div 3 = 19$, so he began with $19 \times 4 = 76$ pounds.
9	E	There are 66 multiples of 3 up to 200, since $3 \times 66 = 198$. Those that are also multiples of 5 are the multiples of 15, and there are 13 of them because $15 \times 13 = 195$. Taking them out leaves $66 - 13 = 53$.
10	A	The swimming bar reads 50 pupils out of the 200. Since $50 \div 200 = 0.25$, that is 25 per cent, or a quarter of them.

11	D	In 4 years each is 4 years older, so their ages will add up to $64 + 8 = 72$. At that point the son is one share and the father three, making 4 shares, so the son will be $72 \div 4 = 18$ and is now $18 - 4 = 14$.
12	B	Adding the two lists gives $32 + 24 = 56$ names, but there are only 50 pupils. The $56 - 50 = 6$ extra names are the pupils who appear on both lists.
13	C	Four minutes is $4 \times 60 = 240$ seconds, which holds $240 \div 2 = 120$ lots of two seconds. Each lot gives 3 pages, so the printer prints $120 \times 3 = 360$ pages.
14	D	They leave together again after a number of minutes that is in both the 12 and the 20 times tables. The lowest such number is 60, so the next time is one hour later, at 08:00.
15	A	Selling the mugs brings in $120 \times 3.50 = 420$ pounds, so the profit is $420 - 300 = 120$ pounds. Compared with what he paid, $120 \div 300 = 0.4$, which is a profit of 40 per cent.