Speed, Distance & Time: Hard Practice Paper 7 Answers

Q#	Answer	Explanation
1	A	The homeward leg is the falling part of the line, between 2 and 3 hours, where the distance drops from 24 km back to 0. That is 24 kilometres in one hour, so 24 km/h.
2	C	The faster train must cover both lengths, which is 180 + 120 = 300 metres, but only gains 30 − 20 = 10 metres each second because they travel the same way. So it takes 300 ÷ 10 = 30 seconds.
3	B	At an average of 48 km/h the whole 120 km must take 120 ÷ 48 = 2.5 hours. The first half already used 60 ÷ 40 = 1.5 hours, leaving 1 hour for the last 60 km, which needs 60 km/h.
4	D	Every section is the same distance, so the fastest is the one that took the least time. The shortest time is 12.8 seconds, in the second hundred metres.
5	C	The gap closes at 70 + 80 = 150 kilometres each hour, so they meet after 300 ÷ 150 = 2 hours. In that time the first car has travelled 70 × 2 = 140 kilometres.
6	C	In one hour the car covers 108,000 metres, and an hour holds 3,600 seconds, so it travels 108,000 ÷ 3,600 = 30 metres each second. In five seconds that is 30 × 5 = 150 metres.
7	B	The two stops take 15 + 15 = 30 minutes, so he cycled for 3 hours 30 minutes, which is 3.5 hours. His cycling speed was 63 ÷ 3.5 = 18 km/h.
8	D	The car covered 150 km in the four hours shown. Average speed uses the whole time, stops included, so it is 150 ÷ 4 = 37.5 km/h.
9	E	To make up the lost time it must cover the 180 km in 3 hours less 36 minutes, which is 2 hours 24 minutes, or 2.4 hours. The speed needed is 180 ÷ 2.4 = 75 km/h.

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10	B	Running opposite ways round the track, between them they cover 5 + 3 = 8 metres each second. They meet once they have covered the whole lap between them, which takes 400 ÷ 8 = 50 seconds.
11	D	Dividing distance by time gives 120 ÷ 2 = 60, then 180 ÷ 3 = 60 and 150 ÷ 2.5 = 60 kilometres each hour. Journey Z gives 200 ÷ 4 = 50 km/h, so it is the odd one out.
12	A	Each kilometre takes 1/40 of an hour for the slow car and 1/60 for the fast one, a difference of 1/40 − 1/60 = 1/120 of an hour for every kilometre. To build up a whole hour of difference takes 120 kilometres.
13	E	She covers 200 ÷ 21 metres each second, which is about 9.52. In an hour that is roughly 9.52 × 3600 = 34272 metres, which is about 34 kilometres.
14	E	The timetable allows 44 ÷ 55 = 0.8 hours, which is 48 minutes. The bus actually takes 44 ÷ 40 = 1.1 hours, which is 66 minutes, so it is 66 − 48 = 18 minutes late.
15	A	At the slower speed the ride takes 36 ÷ 12 = 3 hours, and at the faster one 36 ÷ 18 = 2 hours. The saving is 3 − 2 = 1 hour.

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