

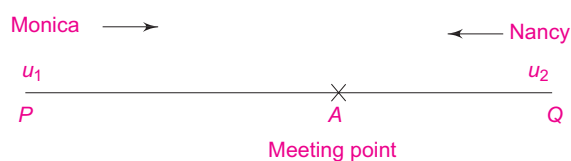
- |          |          |          |          |          |          |          |          |
|----------|----------|----------|----------|----------|----------|----------|----------|
| 113. (d) | 114. (d) | 115. (c) | 116. (a) | 193. (b) | 194. (c) | 195. (b) | 196. (c) |
| 117. (b) | 118. (c) | 119. (a) | 120. (c) | 197. (b) | 198. (d) | 199. (a) | 200. (c) |
| 121. (a) | 122. (d) | 123. (b) | 124. (a) | 201. (d) | 202. (b) | 203. (c) | 204. (a) |
| 125. (c) | 126. (a) | 127. (c) | 128. (d) | 205. (c) | 206. (b) | 207. (c) | 208. (d) |
| 129. (b) | 130. (a) | 131. (b) | 132. (d) | 209. (a) | 210. (c) | 211. (d) | 212. (a) |
| 133. (b) | 134. (a) | 135. (a) | 136. (a) | 213. (b) | 214. (c) | 215. (d) | 216. (b) |
| 137. (d) | 138. (c) | 139. (a) | 140. (a) | 217. (a) | 218. (c) | 219. (c) | 220. (b) |
| 141. (a) | 142. (c) | 143. (b) | 144. (d) | 222. (c) | 223. (b) | 224. (c) | 225. (d) |
| 145. (d) | 146. (a) | 147. (c) | 148. (a) | 226. (b) | 227. (d) | 228. (c) | 229. (a) |
| 149. (a) | 150. (c) | 151. (d) | 152. (a) | 230. (d) | 231. (a) | 232. (a) | 233. (b) |
| 153. (b) | 154. (b) | 155. (d) | 156. (a) | 234. (b) | 235. (b) | 236. (d) | 237. (c) |
| 157. (a) | 158. (b) | 159. (b) | 160. (c) | 238. (d) | 239. (d) | 240. (d) | 241. (c) |
| 161. (c) | 162. (c) | 163. (a) | 164. (a) | 242. (c) | 243. (c) | 244. (a) | 245. (c) |
| 165. (b) | 166. (c) | 167. (b) | 168. (c) | 246. (c) | 247. (d) | 248. (c) | 249. (b) |
| 169. (c) | 170. (c) | 171. (a) | 172. (a) | 250. (b) | 251. (c) | 252. (c) | 253. (c) |
| 173. (b) | 174. (d) | 175. (c) | 176. (d) | 254. (b) | 255. (b) | 256. (c) | 257. (c) |
| 177. (a) | 178. (a) | 179. (c) | 180. (d) | 258. (c) | 259. (d) | 260. (a) | 261. (d) |
| 181. (b) | 182. (a) | 183. (c) | 184. (d) | 262. (d) | 263. (a) | 264. (c) | 265. (a) |
| 185. (b) | 186. (b) | 187. (d) | 188. (a) | 266. (c) | 267. (d) | 268. (b) | 269. (d) |
| 189. (d) | 190. (c) | 191. (a) | 192. (c) | 270. (c) |          |          |          |



## Explanatory Notes

### SECTION—I

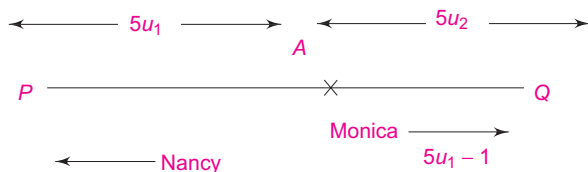
1 (d) Let  $u_1$  and  $u_2$  be the initial speeds in miles/h of Monica and Nancy respectively.



From the problem,

$$5u_1 + 5u_2 = 50$$

$$\therefore u_1 + u_2 = 10 \quad (1)$$



$$\begin{aligned} \text{i.e., } 5u_2 / (u_1 - 1) &= 5u_1 / (u_2 + 1) \\ 5u_2^2 + 5u_2 &= 5u_1^2 - 5u_1 \\ u_2^2 + u_2 &= u_1^2 - u_1 \\ u_1 + u_2 &= u_1^2 - u_2^2 \\ &= (u_1 + u_2)(u_1 - u_2) \end{aligned}$$

$$u_1 - u_2 = 1 \quad (2)$$

From (1) and (2),

we get  $u_1 = 5\frac{1}{2}$  miles/h

and  $u_2 = 4\frac{1}{2}$  miles/h

Answer is (d).

2 (c) Let  $u$  be the speed of  $N$ .

Then  $(u + 12)$  will be the speed of  $M$ .

To travel 24 km,  $N$  takes  $24/u$  hours and  $M$  takes  $24/(u + 12)$  hours.

But  $N$  takes  $14/5$  hours more than  $M$

$$24/u = 24/(u + 12) + 1\frac{4}{5}$$

$$\text{i.e., } 120(u + 12) = 120u + 9u(u + 12)$$

$$9u^2 + 108u = 1440$$

$$\text{i.e., } u^2 + 12u - 160 = 0$$

Solving, we get  $u = 8$

Speed of  $N = 8$  kmph

Speed of  $M = 20$  kmph

3 (a) Let  $u_1$  and  $u_2$  be the speeds in kmph and let  $u_1$  be the greater speed i.e.,  $u_1 > u_2$

From the given problem,

$$2/u_2 = 2/u_1 + 1/60$$

$$\text{i.e., } 2/u_2 - 2/u_1 = 1/60$$

$$(u_1 - u_2)/u_1u_2 = 1/120$$

$$u_1u_2 = 120(u_1 - u_2) \quad (1)$$

The faster runner covers  $(u_1 - u_2)$  km more than the slower in 1 hour.