

Chapter 17 Exercise 17.1

- Q. 1.** (i) 00:25 (iv) 14:26
 (ii) 15:56 (v) 07:28
 (iii) 23:55 (vi) 12:00

- Q. 2.** (i) 2.12 pm (iv) 11.46 am
 (ii) 10.10 pm (v) 6.36 pm
 (iii) 12.15 am (vi) 8.31 pm

- Q. 3.** (i) 2hrs 30 mins
 (ii) 4 hrs 20 mins
 (iii) 1 hour 12 mins
 (iv) 10 hours 50 mins
 (v) 5 mins
 (vi) 2 hrs 16 mins

- Q. 4.** (i) $2 \times 60 = 120$
 (ii) $600 + 40 = 640$
 (iii) $2 \times 60 \times 60 = 7200$
 (iv) $3 \times 60 \times 60 + \frac{7}{8} \times 60 \times 60 = 13,950$
 (v) $1.5 \times 24 \times 60 \times 60 = 129,600$

- Q. 5.** A $12:05 + 0:52 = 12:57$
 B $13:05 + 1:15 = 14:20$
 C $08:14 + 2:47 = 10:61 = 11:01$
 D $18:35 + 4:37 = 22:72 = 23:12$
 E $22:20 + 3:04 = 25:24$
 $= 01:24$ (next day)
 F $15:02 + 1:15 = 16:17$
 G $23:41 + 25:28 = 48:68$
 $= 49:09 = 01:09$ (two days later)
 H $00:10 + 02:10 = 02:20$
 I $23:05 + 02:36 = 25:41$
 $= 01:41$ (next day)
 J $14:23 + 42:00 = 56:23$
 $= 08:23$ (two days later)

- Q. 6.** A $11:56 - 00:36 = 11:20$
 B $07:40 - 02:24 = 05:16$
 C $13:14 - 01:23$
 $= 12:74 - 01:23 = 11:51$

D $20:12 - 05:19$
 $= 19:72 - 05:19 = 14:53$

E $04:08 - 03:38$
 $= 03:68 - 03:38 = 00:30$

F $09:47 - 03:45 = 06:02$

G $02:41 - 03:29$
 $= 26:41 - 03:29$
 $= 23:12$ (previous day)

H $00:10 - 10:09$
 $= 24:10 - 10:09$
 $= 14:01$ (previous day)

I $23:05 - 07:00 = 16:05$

J $19:42 - 09:00 = 10:42$

Q. 7. A $11:53 - 10:47$
 $= 1 \text{ hr } 06 \text{ mins}$

B $09:14 - 08:03$
 $= 1 \text{ hour } 11 \text{ mins}$

C $22:18 - 21:21$
 $= 21:78 - 21:21 = 57 \text{ mins}$

D $15:06 - 12:48$
 $= 14:66 - 12:48 = 2 \text{ hrs } 18 \text{ mins}$

E $00:45 - 22:56$
 $= 24:45 - 22:56$
 $= 23:105 - 22:56$
 $= 1 \text{ hr } 49 \text{ mins}$

F $08:41 - 04:55$
 $= 07:101 - 04:55$
 $= 3 \text{ hrs } 46 \text{ mins}$

G $20:12 - 18:11 = 2 \text{ hrs } 01 \text{ min}$

H $23:31 - 12:44$
 $= 22:91 - 12:44 = 10 \text{ hrs } 47 \text{ mins}$

I $22:07 - 19:46$
 $= 21:67 - 19:46$
 $= 2 \text{ hrs } 21 \text{ mins}$

J $03:51 - 23:57$
 $= 27:51 - 23:57$
 $= 26:111 - 23:57$
 $= 3 \text{ hrs } 54 \text{ mins}$

Q. 8. (i) $15:45 - 09:00 = 6 \text{ hrs } 45 \text{ mins}$

(ii) $15:45 - 09:00 = 06:45$

$06:45 - 01:00 = 05:45$

Ans: 5 hrs 45 mins

Q. 9. (i) $16:55 - 08:45 = 08:10 = 8 \text{ hrs}$

$10 \text{ mins} = 8 \times 60 + 10 = 490 \text{ mins}$

$490 \div 35 = 14$

Answer: 14 engines

(ii) $14 \times \frac{4}{31} = 1.8064\dots$

$\therefore \text{Ans} = 14 + 1 = 15 \text{ engines}$

OR

$490 \div 31 = 15.8064\dots$

$\Rightarrow 15 \text{ engines}$

Q. 10. $9 \times 35 = 315 = 5 \text{ hrs } 15 \text{ mins}$

$5 \text{ hrs } 15 \text{ mins} + 10 \text{ mins} + 30 \text{ mins}$
 $= 5 \text{ hrs } 55 \text{ mins}$

$08:55 + 05:55 = 13:110 = 14:50$

Q. 11. (i) $22:15 - 06:30 = 21:75 - 06:30$

$= 15:45 = 15 \text{ hrs } 45 \text{ mins}$

(ii) $15 \times 60 + 45 = 900 + 45 = 945 \text{ mins}$

$945 \div 45 = 21 \text{ trains}$

(iii) $12:15 - 06:30 = 11:75 - 06:30$

$= 05:45 = 5 \text{ hrs } 45 \text{ mins}$

$5 \times 60 + 45 = 345 \text{ mins}$

$345 \div 45 = 7.6$

$\Rightarrow 7 \text{ trains.}$

Exercise 17.2

Q. 1. (i) The 1200 bus

(ii) 1 hr 30 mins

(iii) $10:45 - 09:25 = 1 \text{ hr } 20 \text{ mins}$

(iv) 1730

Q. 2. (i) 08:30

(ii) 50 mins

(iii) $11:00 - 0:45 = 10:15$

$10:15 - 01:15 = 09:00$

(iv) $07:00 - 02:00 = 05:00$

Q. 3. (i) The 10:00 Sunday train

(ii) The 20:50 train

(iii) 2 hr 7 mins.

(iv) Sunday, 10:00

Q. 4. (i) 3 mins

(ii) Dalkey, killiney

(iii) 23 mins

(iv) 6 minutes

(v) 19:15

(vi) Shankill, Bray

Q. 5. (i) The 09:00 and 13:00 train

(ii) The 09:00 and 14:00 train.

(iii) The 11:00 train. (second)

(iv) 11:00 train 46 mins

(v) $11:56 - 09:58 = 1 \text{ hour } 58 \text{ minutes}$

Q. 6. (i) 53 minutes

(ii) $XXXX = 09:52 + 00:20 = 10:12$

$yyyy = 10:12 + 00:16 = 10:28$

(iii) Wicklow, Greystones.

(iv) 20 minutes

(v) 69 minutes.

Exercise 17.3

Q. 1. A $\frac{100}{5} = 20 \text{ km/hr}$

B $\frac{250}{4} = 62.5 \text{ km/hr}$

C $\frac{450}{8} = 56.25 \text{ km/hr}$

D $\frac{900}{6} = 150 \text{ km/hr}$

E $\frac{12}{0.5} = 24 \text{ km/hr}$

F $\frac{100}{\left(\frac{1}{3}\right)} = 300 \text{ km/hr}$

G $1,100 \div 75 = 14 \frac{2}{3} \text{ m/s OR } 880 \text{ m/min}$

H $3,000 \div 900 = 3 \frac{1}{3} \text{ m/s}$

$\left(1 \frac{1}{4} \text{ mins} = 75 \text{ secs}\right)$

- Q. 2.** A $\frac{100}{100} = A = 1 \text{ hr}$
 B $\frac{150}{75} = 2 \text{ hours}$
 C $\frac{3000}{60} = 50 \text{ hours}$
 D $\frac{9}{0.5} = 18 \text{ hours}$
 E $\frac{8,800}{100} = E = 88 \text{ hrs}$
 F $\frac{6,000}{12000} = F = \frac{1}{2} \text{ hr}$
 G $\frac{1500}{80} = 18.75 \text{ seconds}$
 H $\frac{180,000}{\left(33,333 \frac{1}{3}\right)} = H = 5.4 \text{ hours}$

- Q. 3.** A $2.25 \times 50 = 112.5 \text{ km}$
 B $7\frac{1}{3} \times 120 = 880 \text{ km}$
 C $3\frac{1}{6} \times 24 = 76 \text{ km}$
 D $2.5 \times 95 = 237.5 \text{ km}$
 E $\frac{21}{60} \times 85 = 29.75$

Q. 4. $200 \div 5 = 40 \text{ secs.}$

- Q. 5.** (i) $1.5 \times 60 = 90 \text{ km}$
 (ii) $150 \div 60 = 2\frac{1}{2} \text{ hours}$

Q. 6. $750 \div 150 = 5 \text{ m/s}$

Q. 7. $10 \div 2.5 = 4 \text{ km/hr}$

- Q. 8.** (i) $210 \div 90 = 2\frac{1}{3} \text{ hours (2 hrs 20 mins)}$
 (ii) $1 \text{ hr } 50 \text{ mins} = 1\frac{5}{6} \text{ hrs}$
 $90 \times 1\frac{5}{6} = 165 \text{ km}$

- Q. 9.** (i) $4950 \div 4.5 = 1,100 \text{ km/hr}$
 (ii) $4950 \div 990 = 5 \text{ hrs} + 17:15 = 22:15$

Q. 10. $20 \div 10 + 20 \div 8 = 2 + 2.5 = 4.5 \text{ hrs}$

Q. 11. $18 \text{ km/hr} = 18,000 \div (60 \times 60) = 5 \text{ m/s}$

Q. 12. $7.5 \text{ m/s} = 450 \text{ m/min} = 27,000 \text{ m/hr}$
 $= 27 \text{ km/hr}$

Q. 13. $150 \text{ m/min} = 9000 \text{ m/hr} = 9 \text{ km/hr}$

Q. 14. $150,000,000 \text{ km} \div 300,000 \text{ km}$
 $= 500 \text{ seconds.}$

- Q. 15.** (i) $200 \div 4 = 50 \text{ km/hr}$
 (ii) $45 \div 1.25 = 36 \text{ km/hr}$
 (iii) $200 + 45 = 245 \text{ km}$
 (iv) $4 + 1.25 = 5.25 \text{ or } 5 \text{ hr } 15 \text{ mins}$
 (v) $\frac{245}{5.25} = 46\frac{2}{3} \text{ km/hr}$

- Q. 16.** (i) $50 \times 4\frac{12}{60} = 50 \times 4.2 = 210 \text{ km}$
 (ii) $300 \div 60 = 5 \text{ hrs}$
 (iii) $210 + 300 = 510 \text{ km}$
 (iv) $4:2 + 5 = 9.2 = 9 \text{ hrs } 12 \text{ mins}$
 (v) $510 \div 9.2 = 55 \text{ km/hr}$

- Q. 17.** (i) $50 \div 1\frac{1}{3} = 37.5 \text{ km/hr}$
 (ii) $10 \div 15 = \frac{2}{3} \text{ hr} = 40 \text{ mins.}$
 (iii) $50 + 10 = 60 \text{ km.}$
 (iv) $1\frac{1}{3} + \frac{2}{3} = 2 \text{ hrs.}$
 (v) $\Rightarrow \frac{60}{2} = 30 \text{ km/hr.}$

Revision Exercises

- Q. 1.** (a) $16:40 - 09:10 = 7 \text{ hrs } 30 \text{ mins}$
 (b) $3 \times 60 = 180$
 $180 \div 9 = 20$
 (c) $35 + 4 \times 20 = 115 \text{ mins} = 1 \text{ hr } 55 \text{ mins}$

- Q. 2.** (a) 11:25, 17:50
 $17:50 - 11:25 = 06:25$
 $= 6 \text{ hrs } 25 \text{ mins}$

(b) Copy and complete this table:

12-hr clock	7.00 p.m.	4.00 p.m.	10.20 p.m.
24-hr clock	19:00	16:00	22:20

12-hr clock	6.30 a.m.	11.40 a.m.	11.40 p.m.
24-hr clock	06:30	11:40	23:40

- (c) (i) $24 \text{ mins } 192 \text{ secs}$
 $= 27 \text{ mins } 12 \text{ secs}$
 (ii) $21 \text{ mins } 147 \text{ secs}$
 $= 23 \text{ mins } 27 \text{ secs}$
 (iii) $50 \text{ mins } 39 \text{ secs.}$

Q. 3. (a)

Event	Man enters house	Man leaves house	Man is arrested
12-hr clock	11.30 a.m.	12.20 p.m.	1.05 p.m.
24-hr clock	11:30	12:20	13:05

(b)

Event	Put to sea	Engine failure	SOS sent	Rescued
Day	Mon	Mon	Tue	Tue
Time	21:30	23:45	00:25	01:20

(c) (i) 13 mins

(ii) $12:50 - 12:48 = 00:02$ $\therefore AAAA = 12:33 + 00:02 = 12:35$

$12:50 - 12:48 = 00:02$ $\therefore BBBB = 13:03 - 0:02 = 13:01$

$12:56 - 12:54 = 00:02$ $\therefore CCCC = 13:13 - 00:02 = 13:11$

$\therefore DDDD = 13:11 - 00:04 = 13:07$

(iii) $13:00 - 00:05 = 12:55$

$\therefore 12:37$

Q. 4. (a) $60 \div 2 - 5 = 24$

(b) (i) 30 mins

(ii) 28 mins

(iii) $60 + 25 = 85$ mins

(iv) 5 hrs 50 mins

(v) $59 + 8 = 67$ mins = 1 hr 07 mins

(vi) $\frac{67}{350} \approx 0.19$

\therefore More than $\frac{1}{10}$ (or 0.1)

(vii) $59 + 30 + 10 + 8 + 20 = 127$ mins

2 hr 7 min

2 hr 7 mins - True

(c) (i) $1550 + 00:25 = 16:15$

(ii) $18:17 - 00:25 = 17:52$

(iii) $13:45 + 00:25 = 14:10$

\therefore Needs to take the 13:05 hrs

Q. 5. (a) $6 \div \frac{1}{3} = 18$ km/hr

(b) (i) 2 hrs 30 mins

(ii) $180 \div 2.5 = 72$ km/hr

(c) (i) Cork + Donegal

(ii) Belfast

(iii) $180 \div 60 = 3$ hrs

(iv) $140 \div 6 = 23\frac{1}{3}$ km/hr

(v) $\frac{190}{57} = 3\frac{1}{3}$ hrs = 3 hrs 20 min \rightarrow 10:50

3:20

13:70

Ans 14:10

(vi) $4 \times 65 = 260$ km

$390 - 260 = 130$ km

$130 \div 2 = 65$ km/hr

Q. 6. (a) (i) 11 mins

(ii) Every 20 mins

(iii) AAAA = 15:01

BBBB = 15:37

(iv) Howth + Sutton

(v) $1.5 \div 2$ mins

= 0.75 km/min

= 45 km/hr

(vi) $4 \times 65 = 260$ km

$390 - 260 = 130$ km

$130 \div 2 = 65$ km/hr

(b)

Event	Time	Duration
Getting ready	07:10–08:05	55 mins
Going to school	08:05–09:15	1 hr 10 mins
School day	09:15–15:50	6 hrs 35 mins
Sport	15:50–17:50	$1\frac{1}{4}$ hrs
Going home after school	17:05–18:00	55 mins

Q. 7. (a) $1 \text{ m/s} = 3.6 \text{ km/hr}$
 (b) (i) $160 \div 48 = 3\frac{1}{3} \text{ hr} = 3 \text{ hrs } 20 \text{ mins}$
 (ii) $15:25 - 10:45 = 4 \text{ hrs } 40 \text{ mins}$
 $= 4\frac{2}{3} \text{ hrs}$
 $4\frac{2}{3} \times 48 = 224 \text{ km.}$
 $7.2 \times 2 = 14.4$
 $30 - 14.4 = 15.6$
 $15.6 \div 3 = 5.2 \text{ km/hr}$

Q. 8. (a) $63 \div 2.25 = 28 \text{ km/hr}$
 (b) $22:27 \Rightarrow - 00:35 = 21:02$
 (i) $\therefore 21:33 \text{ bus}$
 (ii) $19:33 + 00:35 = 20:08$
 (iii) $14 \div \frac{35}{60} = 24 \text{ km/hr.}$
 (c) (i) $2\frac{1}{3} \times 55 = 128\frac{1}{3} \text{ km}$
 (ii) $06:15 + 02:20 = 08:35$
 (iii) $08:35 + 00:45 = 08:80 = 09:20$
 (iv) $100 \div 1\frac{1}{3} = 75 \text{ km/hr.}$

(v) $09:20 + 00:80$
 $= 09:100$
 $= 10:40$
 (vi) $10:40 - 06:15 = 4 \text{ hrs } 25 \text{ mins}$
 $= 4\frac{25}{60} \text{ hrs}$
 $128\frac{1}{3} + 100 = 228\frac{1}{3}$
 $228\frac{1}{3} \div 4\frac{25}{60} = 51.69$
 $\approx 52 \text{ km/hr.}$