

A Maths Question, PSLE 2009

6 friends decided to rent computers from 2.00 p.m. to 4.30 p.m. While 4 of them were playing, the other two would watch. If the cycle continues, and each of them played for equal number of minutes, how many minutes will each person get to play?

Writing

From 2.00 p.m. to 4.30 p.m. → 2 h 30 min = 150 min

Out of 6 friends, 2 of them will watch. The number of such 2-friend pair is

$$\frac{6 \times 5}{2 \times 1} = 15 \text{ (pairs)}$$

150 min ÷ 15 = 10 min → Each pair of friends must watch for 10 min.

Out of 6 friends, A, B, C, D, E and F, look at any person, let say A.

Out of 15 pairs, A must watch in 5 pairs as shown in the table below.

$5 \times 10 \text{ min} = 50 \text{ min}$ → A must watch for 50 min

$150 \text{ min} - 50 \text{ min} = 100 \text{ min}$ → A will get to play for 100 min.

	Watch		Play					
10 min	A	B		C	D	E	F	
10 min	A	C		B	D	E	F	
10 min	A	D		B	C	E	F	
10 min	A	E		B	C	D	F	
10 min	A	F		B	C	D	E	
10 min	B	C	A		D	E	F	
10 min		D	A	C	E	F		
10 min		E	A	C	D	F		
10 min		F	A	C	D	E		
10 min	C	D	A	B		E	F	
10 min		E	A	B	D		F	
10 min		F	A	B	D	E		
10 min	D	E	A	B	C		F	
10 min		F	A	B	C	E		
10 min	E	F	A	B	C	D		
150 min								

Ans. 100 minutes