

# AI1110

## Assignment 3

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# Outline

- 1 Question
- 2 Solution
- 3 Answer

## Exercise 13.1.9

Mother, father and son line up at random for a family picture.

E: son on one end,

F: father in middle.

Compute  $P(E/F)$ .

# Solution

Given events,

E : son on one end

F : father in middle

We denote mother, father and son with M, F and S respectively.

We have,

$$\text{Total number of arrangements possible} = 3! \quad (1)$$

$$= 6 \quad (2)$$

$$P(E \cap F)$$

M—F—S  
S—F—M

no. of favourable outcomes = 2

$$\therefore P(E \cap F) = \frac{2}{6} = \frac{1}{3}$$

$P(F)$ 

Favourable outcomes are same as in  $P(E \cap F)$

$$\therefore P(F) = \frac{1}{3}$$

# Answer

$$P(E/F) = \frac{P(E \cap F)}{P(F)} \quad (3)$$

$$= \frac{(1/3)}{(1/3)} \quad (4)$$

$$= 1 \quad (5)$$