

1. The employees of a company are classified as management, administration, or production. The following table shows the number of employees in each category and whether or not they live close to the company or some distance away.

	Live Close	Live some distance away
Management	6	14
Administration	25	10
Production	45	25

An employee is chosen at random. Find the probability that this employee,

- a. Is an administrator (2)
- b. Lives close to the company, given that the employee is a manager (2)

Of the managers, 90% are married, as are 60% of the administrators and 80% of the production employees.

- c. Construct a tree diagram containing all the probabilities. (3)
- d. Find the probability that an employee chosen at random is married (2)

An employee is selected at random and found to be married.

- e. Find the probability that this employee is in production (2)

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

## Solutions

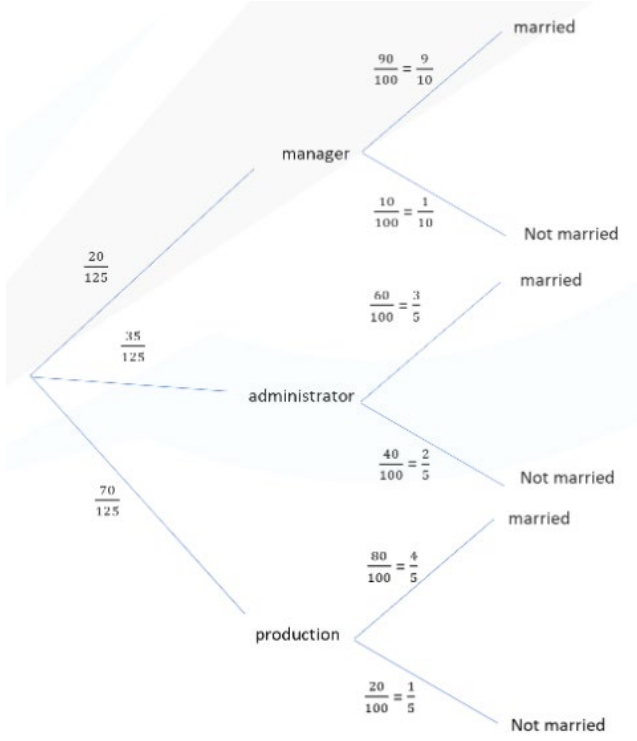
1a.

$P = \frac{35}{125}$	<b>M1</b>
$P = \frac{7}{25}$	<b>M1</b>

1b.

$P(A \mid B) = \frac{\frac{6}{20}}{\frac{125}{20}}$	<b>M1</b>
$= \frac{6}{20} = \frac{3}{10}$	<b>M1</b>

1c.

	
Shape of branches and labels	<b>M1</b>
All three correct first event branch values	<b>M1</b>
All correct second event branch values	<b>M1</b>

1d.

$P = \frac{9}{10} \times \frac{21}{125} + \frac{3}{5} \times \frac{35}{125} + \frac{4}{5} \times \frac{70}{125}$	<b>M1</b>
$P = 0.76$	<b>M1</b>

1e.

$P(A \mid B) = \frac{\frac{56}{125}}{0.76} = \frac{56}{0.76}$	<b>M1</b>
$= 0.589$	<b>M1</b>

