5.11 Tree Diagrams: 1-hour Pack

EDEXCEL 1ST0 · Calculator allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A bag contains 2 yellow and 6 white cubes. A person takes one at random, notes its colour, replaces it, then takes a second.

(a) Work out the probability that both are yellow.

(b) Work out the probability that the two objects are different colours.

Give each answer as a fraction in its simplest form.

(Total for Question 1 is 5 marks)

2 A bag contains 4 orange and 6 white beads. A person takes one at random, notes its colour, replaces it, then takes a second.

(a) Work out the probability that the two objects are the same colour.

(b) Work out the probability that the two objects are different colours.

Give each answer as a fraction in its simplest form.

(Total for Question 2 is 6 marks)

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3 A bag contains 5 white and 3 red counters. A person takes one at random, notes its colour, replaces it, then takes a second.
(a) Work out the probability that exactly one is white.
(b) Work out the probability that both are red.
Give each answer as a fraction in its simplest form.

(Total for Question 3 is 5 marks)

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4 A bag contains 2 red and 4 blue sweets. A person takes one at random, notes its colour, does NOT replace it, then takes a second.
(a) Work out the probability that both are red.
(b) Work out the probability that at least one is red.
Give each answer as a fraction in its simplest form.

(Total for Question 4 is 5 marks)

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5 A bag contains 7 black and 5 orange marbles. Two are taken at random without replacement. Work out the probability that they are different colours. Give your answer as a fraction in its simplest form.

(Total for Question 5 is 3 marks)

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6 A bag contains 2 pink and 7 green sweets. A person takes one at random, notes its colour, does NOT replace it, then takes a second.

(a) Work out the probability that exactly one is pink.

(b) Work out the probability that both are green.

Give each answer as a fraction in its simplest form.

(Total for Question 6 is 5 marks)

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7 A bag contains 3 blue and 6 yellow sweets. A person takes one at random, notes its colour, does NOT replace it, then takes a second.

(a) Work out the probability that both are blue.

(b) Work out the probability that at least one is blue.

Give each answer as a fraction in its simplest form.

(Total for Question 7 is 5 marks)

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8 A bag contains 2 orange and 5 pink marbles. A person takes one at random, notes its colour, does NOT replace it, then takes a second.
(a) Work out the probability that the two objects are the same colour.
(b) Work out the probability that the two objects are different colours.
Give each answer as a fraction in its simplest form.

(Total for Question 8 is 6 marks)

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9 A bag contains 6 yellow and 3 orange sweets. A person takes one at random, notes its colour, does NOT replace it, then takes a second.
(a) Work out the probability that both are yellow.
(b) Work out the probability that at least one is yellow.
Give each answer as a fraction in its simplest form.

(Total for Question 9 is 5 marks)

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10 A bag contains 4 blue and 6 red sweets. Two are taken at random without replacement. Work out the probability that the second is red. Give your answer as a fraction in its simplest form.

(Total for Question 10 is 3 marks)

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11 A bag contains 2 black and 5 yellow cubes. A person takes one at random, notes its colour, replaces it, then takes a second.

(a) Work out the probability that both are black.

(b) Work out the probability that at least one is black.

Give each answer as a fraction in its simplest form.

(Total for Question 11 is 5 marks)

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12 A bag contains 4 black and 7 orange marbles. A person takes one at random, notes its colour, replaces it, then takes a second.

(a) Work out the probability that exactly one is black.

(b) Work out the probability that both are orange.

Give each answer as a fraction in its simplest form.

(Total for Question 12 is 5 marks)

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Mark scheme · 5.11 Tree Diagrams: 1-hour Pack

Question 1

correct branch probabilities multiplied	**M1**
1/16 oe	**A1**
correct branch probabilities multiplied	**M1**
all required routes added (or complement used)	**M1**
3/8 oe	**A1**

Answer: (a) 1/16; (b) 3/8

Question 2

correct branch probabilities multiplied	**M1**
all required routes added (or complement used)	**M1**
13/25 oe	**A1**
correct branch probabilities multiplied	**M1**
all required routes added (or complement used)	**M1**
12/25 oe	**A1**

Answer: (a) 13/25; (b) 12/25

Question 3

correct branch probabilities multiplied	**M1**
all required routes added (or complement used)	**M1**
15/32 oe	**A1**
correct branch probabilities multiplied	**M1**
9/64 oe	**A1**

Answer: (a) 15/32; (b) 9/64

Question 4

correct branch probabilities multiplied (second branch denominators reduced by 1)	**M1**
1/15 oe	**A1**
correct branch probabilities multiplied (second branch denominators reduced by 1)	**M1**
all required routes added (or complement used)	**M1**
3/5 oe	**A1**

Answer: (a) 1/15; (b) 3/5

Question 5

7/12 x 5/11 for one order	**M1**
adds the two orders	**M1**
35/66 oe	**A1**

Answer: 35/66

Question 6

correct branch probabilities multiplied (second branch denominators reduced by 1)	**M1**
all required routes added (or complement used)	**M1**
7/18 oe	**A1**
correct branch probabilities multiplied (second branch denominators reduced by 1)	**M1**
7/12 oe	**A1**

Answer: (a) 7/18; (b) 7/12

Question 7

correct branch probabilities multiplied (second branch denominators reduced by 1)	**M1**
1/12 oe	**A1**
correct branch probabilities multiplied (second branch denominators reduced by 1)	**M1**
all required routes added (or complement used)	**M1**
7/12 oe	**A1**

Answer: (a) 1/12; (b) 7/12

Question 8

correct branch probabilities multiplied (second branch denominators reduced by 1)	**M1**
all required routes added (or complement used)	**M1**
11/21 oe	**A1**
correct branch probabilities multiplied (second branch denominators reduced by 1)	**M1**
all required routes added (or complement used)	**M1**
10/21 oe	**A1**

Answer: (a) 11/21; (b) 10/21

Question 9

correct branch probabilities multiplied (second branch denominators reduced by 1)	**M1**
5/12 oe	**A1**
correct branch probabilities multiplied (second branch denominators reduced by 1)	**M1**
all required routes added (or complement used)	**M1**
11/12 oe	**A1**

Answer: (a) 5/12; (b) 11/12

Question 10

considers both possible first colours	**M1**
multiplies and adds branch probabilities	**M1**
3/5 oe	**A1**

Answer: 3/5

Question 11

correct branch probabilities multiplied	**M1**
4/49 oe	**A1**
correct branch probabilities multiplied	**M1**
all required routes added (or complement used)	**M1**
24/49 oe	**A1**

Answer: (a) 4/49; (b) 24/49

Question 12

correct branch probabilities multiplied	**M1**
all required routes added (or complement used)	**M1**
56/121 oe	**A1**
correct branch probabilities multiplied	**M1**
49/121 oe	**A1**

Answer: (a) 56/121; (b) 49/121

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