

Name

Class



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Probability tree diagrams

(9 – 1) Topic booklet

HIGHER

These questions have been collated from previous years GCSE Mathematics papers.

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must **show all your working out.**
- If the question is a **1F** question you are not allowed to use a calculator.
- If the question is a **2F** or a **3F** question, you may use a calculator to help you answer.

Information

- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

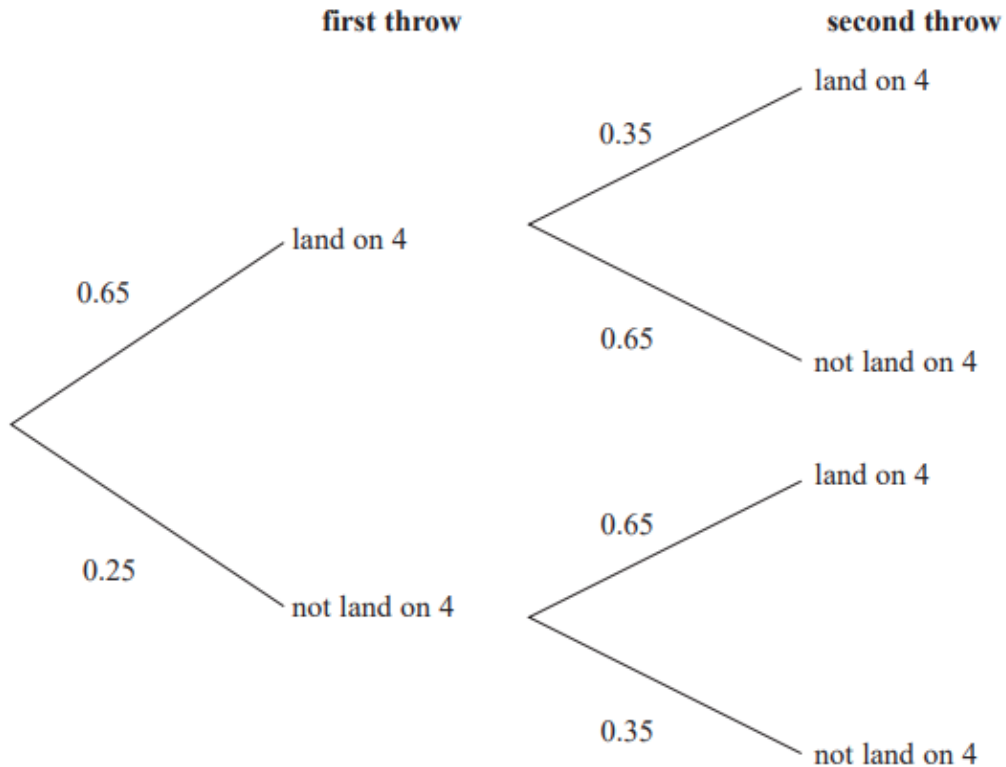
Answer ALL questions

Write your answers in the space provided.

You must write down all the stages in your working.

- 4 When a biased 6-sided dice is thrown once, the probability that it will land on 4 is 0.65
The biased dice is thrown twice.

Amir draws this probability tree diagram.
The diagram is **not** correct.

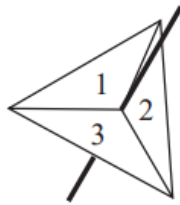


Write down **two** things that are wrong with the probability tree diagram.

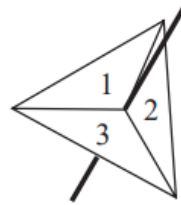
1.....

2.....

5 Amanda has two fair 3-sided spinners.



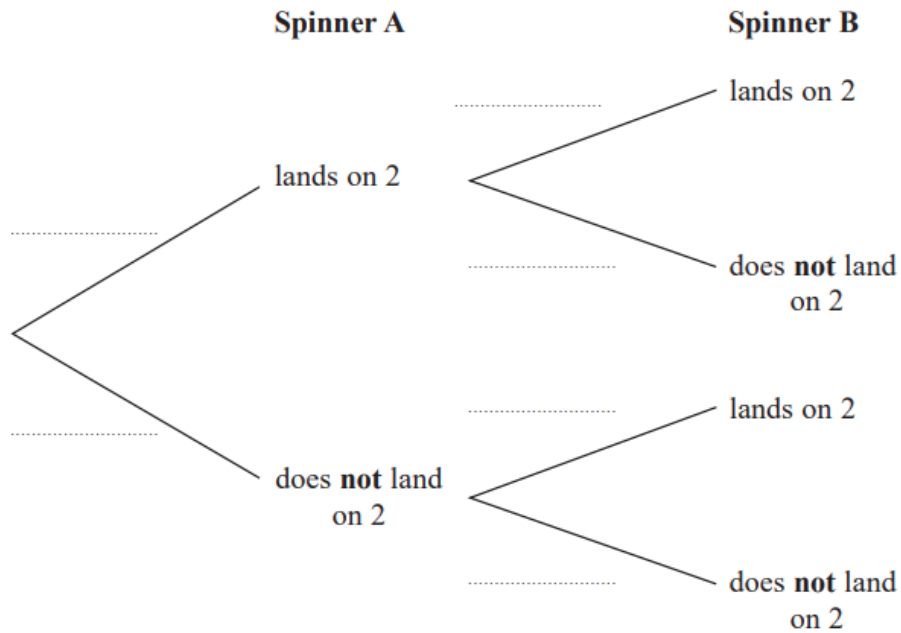
Spinner A



Spinner B

Amanda spins each spinner once.

(a) Complete the probability tree diagram.



(2)

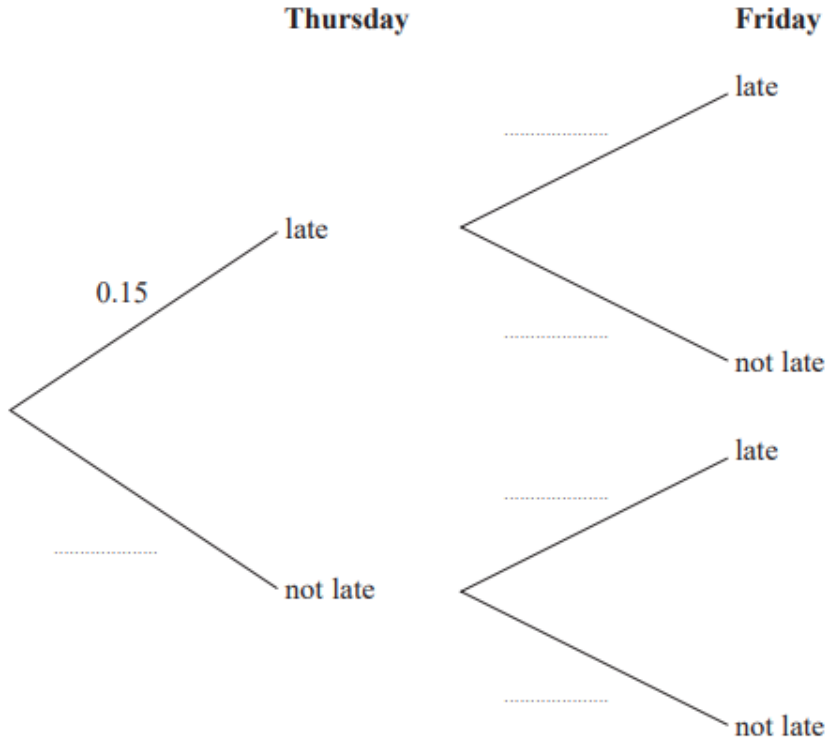
(b) Work out the probability that Spinner A lands on 2 and Spinner B does **not** land on 2

.....
(2)

10 Mary travels to work by train every day.

The probability that her train will be late on any day is 0.15

(a) Complete the probability tree diagram for Thursday and Friday.



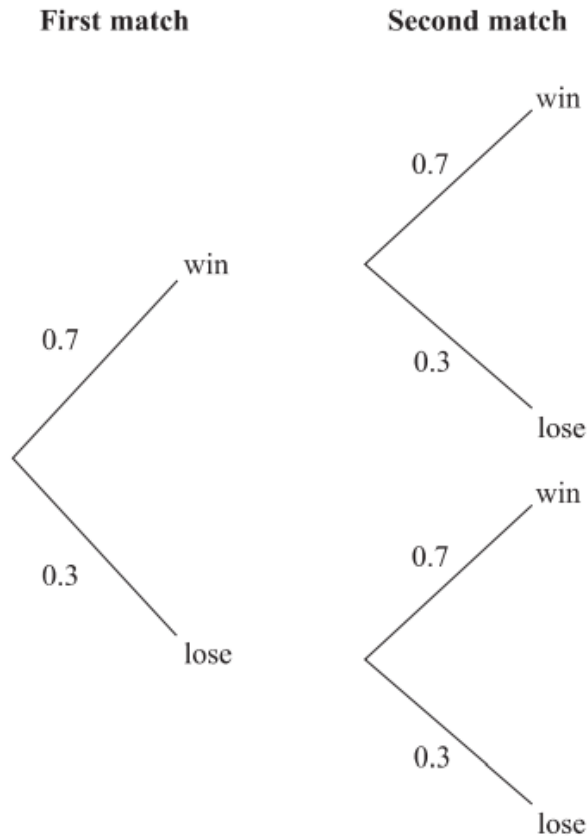
(2)

(b) Work out the probability that her train will be late on at least one of these two days.

(3)

11 Finlay plays two tennis matches.

The probability that he will win a match and the probability that he will lose a match are shown in the probability tree diagram.



(a) Work out the probability that Finlay wins both matches.

.....
(2)

(b) Work out the probability that Finlay loses at least one match.

.....
(2)

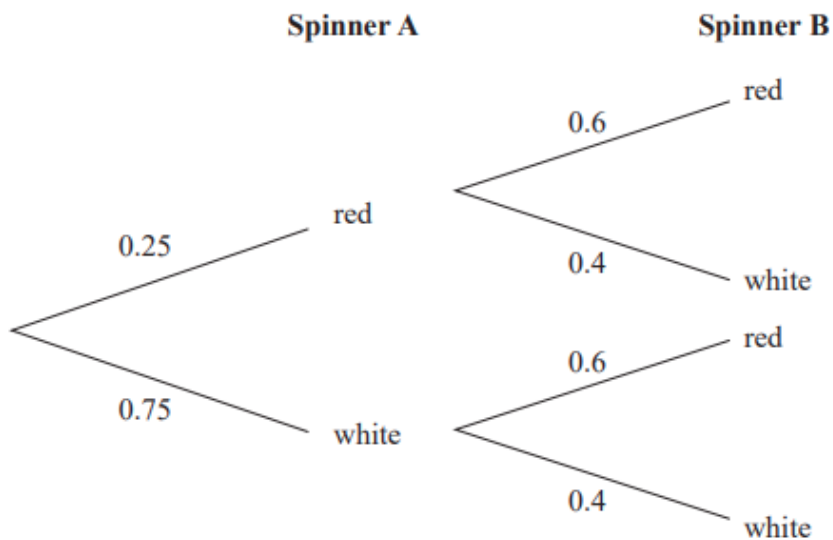
12 Alan has two spinners, spinner A and spinner B.

Each spinner can land on only red or white.

The probability that spinner A will land on red is 0.25

The probability that spinner B will land on red is 0.6

The probability tree diagram shows this information.



Alan spins spinner A once and he spins spinner B once.
He does this a number of times.

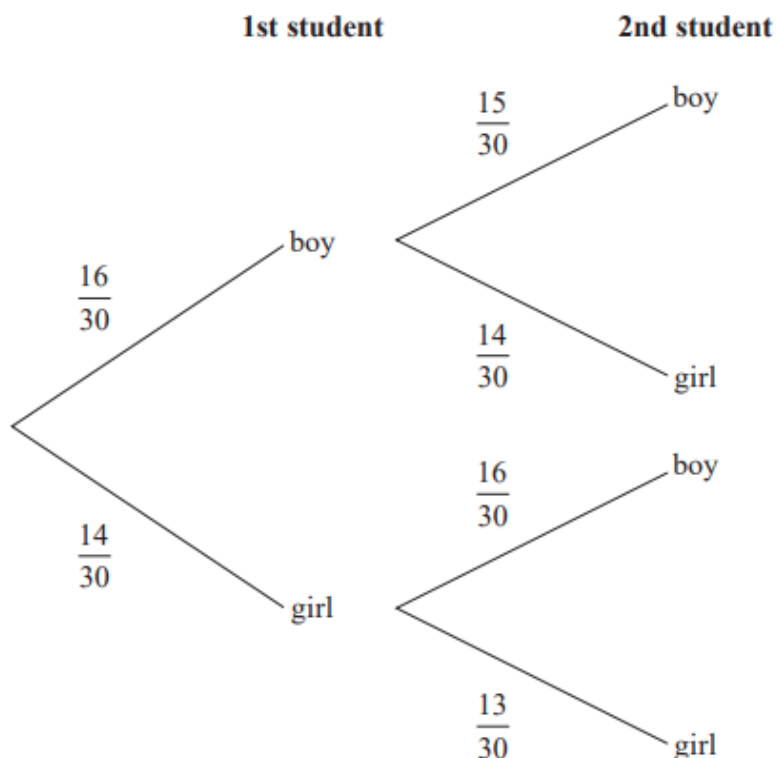
The number of times **both** spinners land on red is 24

Work out an estimate for the number of times **both** spinners land on white.

- 12 There are 30 students in Mr Lear's class.
16 of the students are boys.

Two students from the class are chosen at random.

Mr Lear draws this probability tree diagram for this information.



- (a) Write down **one** thing that is wrong with the probabilities in the probability tree diagram.

(1)

Owen and Wasim play for the school football team.

The probability that Owen will score a goal in the next match is 0.4

The probability that Wasim will score a goal in the next match is 0.25

Mr Slater says,

“The probability that both boys will score a goal in the next match is $0.4 + 0.25$ ”

- (b) Is Mr Slater right?

Give a reason for your answer.

(1)

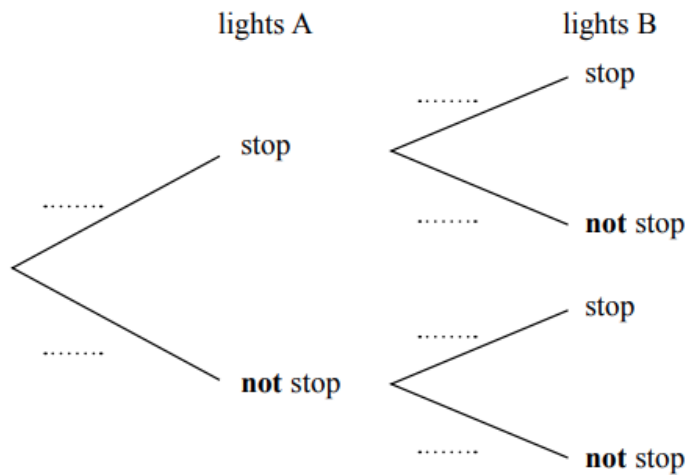
12 A and B are two sets of traffic lights on a road.

The probability that a car is stopped by lights A is 0.4

If a car is stopped by lights A, then the probability that the car is **not** stopped by lights B is 0.7

If a car is **not** stopped by lights A, then the probability that the car is **not** stopped by lights B is 0.2

(a) Complete the probability tree diagram for this information.



(2)

Mark drove along this road.

He was stopped by just one of the sets of traffic lights.

(b) Is it more likely that he was stopped by lights A or by lights B?

You must show your working.

(3)

17 There are 9 counters in a bag.

7 of the counters are green.

2 of the counters are blue.

Ria takes at random two counters from the bag.

Work out the probability that Ria takes one counter of each colour.

You must show your working.

20 Alfie has 11 cards.

He has

3 blue cards

7 green cards

and 1 white card.

Alfie takes at random 2 of these cards.

Work out the probability that he takes cards of different colours.