Full Name: …….. **Date: 28 November 2024**

Short Assessment

Time Allowed: 25 minutes **Total Marks: 26**

1.

There are 12 chocolates in a box.
8 of the chocolates have soft centres and 4 of the chocolates have hard centres.
Kyla takes at random a chocolate from the box and eats it.
She then takes at random another chocolate from the box and eats it.

(a) Draw a probability tree diagram.

(3)

(b) Calculate the probability that at least one of the chocolates Kyla eats has a soft centre.

……

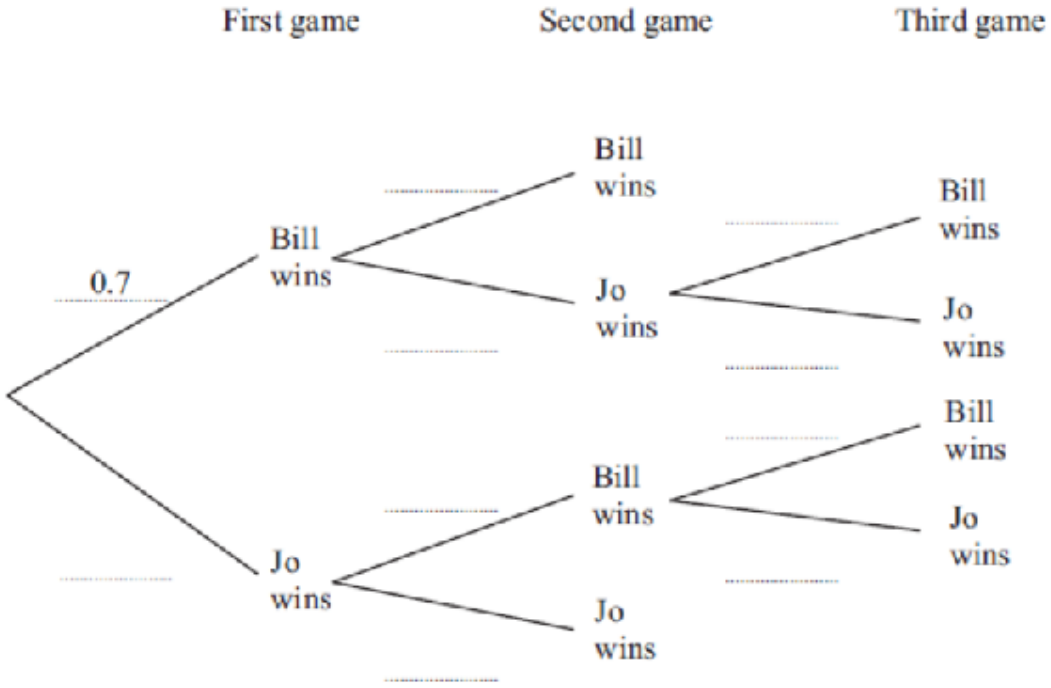
(3)

2.

Bill and Jo play some games of table tennis.
The probability that Bill wins the first game is 0.7
When Bill wins a game, the probability that he wins the next game is 0.9
When Jo wins a game, the probability that she wins the next game is 0.6

The first person to win two games wins the match.

(a) Complete the probability tree diagram.



(3)

(b) Calculate the probability that Jo wins the match.

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(3)

3.

$$f(x) = x^2$$
$$g(x) = x - 3$$

(a) (i) Find $gf(x)$

.....

(ii) Find $g^{-1}(x)$

.....

(2)

(b) Solve the equation $gf(x) = g^{-1}(x)$

.....

(3)

4.

$f(x) = (x - 1)^2$

(a) Find f(8)

.....

(1)

$g(x) = \dfrac{x}{x-1}$

(b)

Solve the equation $g(x) = 1.2$

.....

(2)

(c)

Express the inverse function g^{-1} in the form $g^{-1}(x) = ...$

$g^{-1}(x) =$.....

(3)

5.

Solve,

$$x^2 + 6x - 40 > 0$$

There is more space on the next page to do this question.

(3)

- End of Test -