

1

(a)

[illegible]

(b)

.....

.....

.....

.....

(c)

[illegible]

5

- (a)

This image shows a full page of white paper with ten horizontal dashed lines, typical of primary school handwriting practice paper. The lines are evenly spaced and extend across the entire width of the page. There is no text or other markings on the paper.

- (b)

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. At the bottom center, there is a small circle containing the number 2.

1 A coin is biased so that the probability of obtaining a head when it is thrown is 0.4. The coin is thrown repeatedly until the first head is obtained.

(a) Find the probability that the first head is obtained on the 5th throw. [1]

(b) Find the probability that the first head is obtained after the 6th throw. [2]

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- 2

- (a)

[4]

[illegible]

- (b)

[3]

[illegible]

- 6 For a randomly chosen person, their next birthday is equally likely to occur on any day of the week, independently of any other person’s birthday.
- (a) Find the probability that, out of 10 randomly chosen people, none of them will have their next birthday on a Saturday or Sunday. [1]

- (b) Find the probability that, out of 10 randomly chosen people, fewer than 3 will have their next birthday on a Wednesday. [3]

- (c) Use a suitable approximation to find the probability that, out of 392 randomly chosen people, more than 65 will have their next birthday on a Friday. [5]

[illegible]

- 4

Last Saturday, 600 competitors took part. The times taken to complete the puzzle were normally distributed with mean 32.4 minutes and standard deviation 2.5 minutes.

- (a) How many competitors would you expect to have times within 1.2 minutes of the mean time? [4]

[illegible]

In this Saturday's event, 60% of the competitors had times less than 36.0 minutes.

- (b)** 9 competitors who took part in this Saturday's event are selected at random.

Find the probability that at least 2 and fewer than 8 of these competitors had times less than 36.0 minutes. [3]

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[illegible]

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- 6

- (a)** Show that $P(X = 2) = \frac{3}{7}$.

[illegible]

- (b)** Draw up the probability distribution table for X .

This image shows a full page of white paper with horizontal dashed lines, typical of primary school handwriting practice paper. The lines are evenly spaced and run across the entire width of the page. There are no margins, text, or other markings present.

[3]

Additional page

If you use the following page to complete the answer to any question, the question number must be clearly shown.

[illegible]