Normal Distribution – 2021 AS Nov S1

1. Nov/2021/Paper_9709/51/7

The times, in minutes, that Karli spends each day on social media are normally distributed with mean 125 and standard deviation 24.

(a) **(i)** On how many days of the year (365 days) would you expect Karli to spend more than 142 minutes on social media? [5]

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(ii) Find the probability that Karli spends more than 142 minutes on social media on fewer than 2 of 10 randomly chosen days. [3]

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(b) On 90% of days, Karli spends more than t minutes on social media.

Find the value of t. [3]

2. Nov/2021/Paper_9709/52/6

The times taken, in minutes, to complete a particular task by employees at a large company are normally distributed with mean 32.2 and standard deviation 9.6.

(a) Find the probability that a randomly chosen employee takes more than 28.6 minutes to complete the task. [3]

(b) 20% of employees take longer than t minutes to complete the task.

Find the value of t. [3]

(c) Find the probability that the time taken to complete the task by a randomly chosen employee differs from the mean by less than 15.0 minutes. [4]

3. Nov/2021/Paper_9709/53/4

Raj wants to improve his fitness, so every day he goes for a run. The times, in minutes, of his runs have a normal distribution with mean 41.2 and standard deviation 3.6.

(a) Find the probability that on a randomly chosen day Raj runs for more than 43.2 minutes. [3]

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(b) Find an estimate for the number of days in a year (365 days) on which Raj runs for less than 43.2 minutes. [2]

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(c) On 95% of days, Raj runs for more than t minutes.

Find the value of t. [3]