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## <u>AQA – Exponential distributions – A2 Further Mathematics Statistics</u>

1.

June/20	20/Paper_3/No.6 The distance, $X$ metres, between successive breaks in a water pipe is modelled by an exponential distribution. The mean of $X$ is 25
	The distance between two successive breaks is measured. A water pipe is given a 'Red' rating if the distance is less than $d$ metres.
	The government has introduced a new law changing $d$ to 2
	Before the government introduced the new law, the probability that a water pipe is given a 'Red' rating was 0.05
(a)	Explain whether or not the probability that a water pipe is given a 'Red' rating has increased as a result of the new law.
	[4 marks]
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Find the probability density function of the random variable $X$ .	[2 ma
	,
After investigation, the distances between successive breaks in water pipes to have a standard deviation of 5 metres.	are to
Explain whether or not the use of an exponential model in parts (a) and (b)	)
is appropriate.	[2 ma