

6. The time taken, in minutes, by children to complete a mathematical puzzle is assumed to be normally distributed with mean μ and standard deviation σ . The puzzle can be completed in less than 24 minutes by 80% of the children. For 5% of the children it takes more than 28 minutes to complete the puzzle.

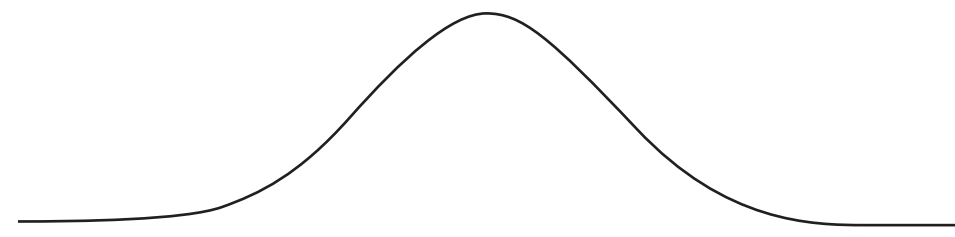
(a) Show this information on the Normal curve below. (2)

(b) Write down the percentage of children who take between 24 minutes and 28 minutes to complete the puzzle. (1)

(c) (i) Find two equations in μ and σ .
(ii) Hence find, to 3 significant figures, the value of μ and the value of σ . (7)

A child is selected at random.

(d) Find the probability that the child takes less than 12 minutes to complete the puzzle. (3)



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7. In a large company,

78% of employees are car owners,
30% of these car owners are also bike owners,
85% of those who are not car owners are bike owners.

(a) Draw a tree diagram to represent this information.

(3)

An employee is selected at random.

(b) Find the probability that the employee is a car owner or a bike owner but not both.

(2)

Another employee is selected at random.

Given that this employee is a bike owner,

(c) find the probability that the employee is a car owner.

(3)

Two employees are selected at random.

(d) Find the probability that only one of them is a bike owner.

(3)



