Example - Normal table

$X \sim N(0,1)$

Calculate:

a) $P(X \leq 0.13)$

b) $P(X < -0.2)$

c) $P(-1 < X \leq 0.4)$

d) $P(-1.5 \leq X \leq -1)$

Example - Normal Table

Say $Z \sim N(0,1)$. If $P(Z > a) = 0.2$ find a.

What if $P(Z > a) = 0.6$?

Example - Grading

Suppose that a professor finds a way to transform the grades in his class so that their distribution is $N(0,1)$. Suppose he then gives the final mark according to the following system:

Range	$X > 1.5$	$0.5 < X \leq 1.5$	$-1 < X \leq 0.5$	$-2 < X \leq -1$	$X \leq -2$
Grade	A	B	C	D	F

a) What percentage of students will get A?

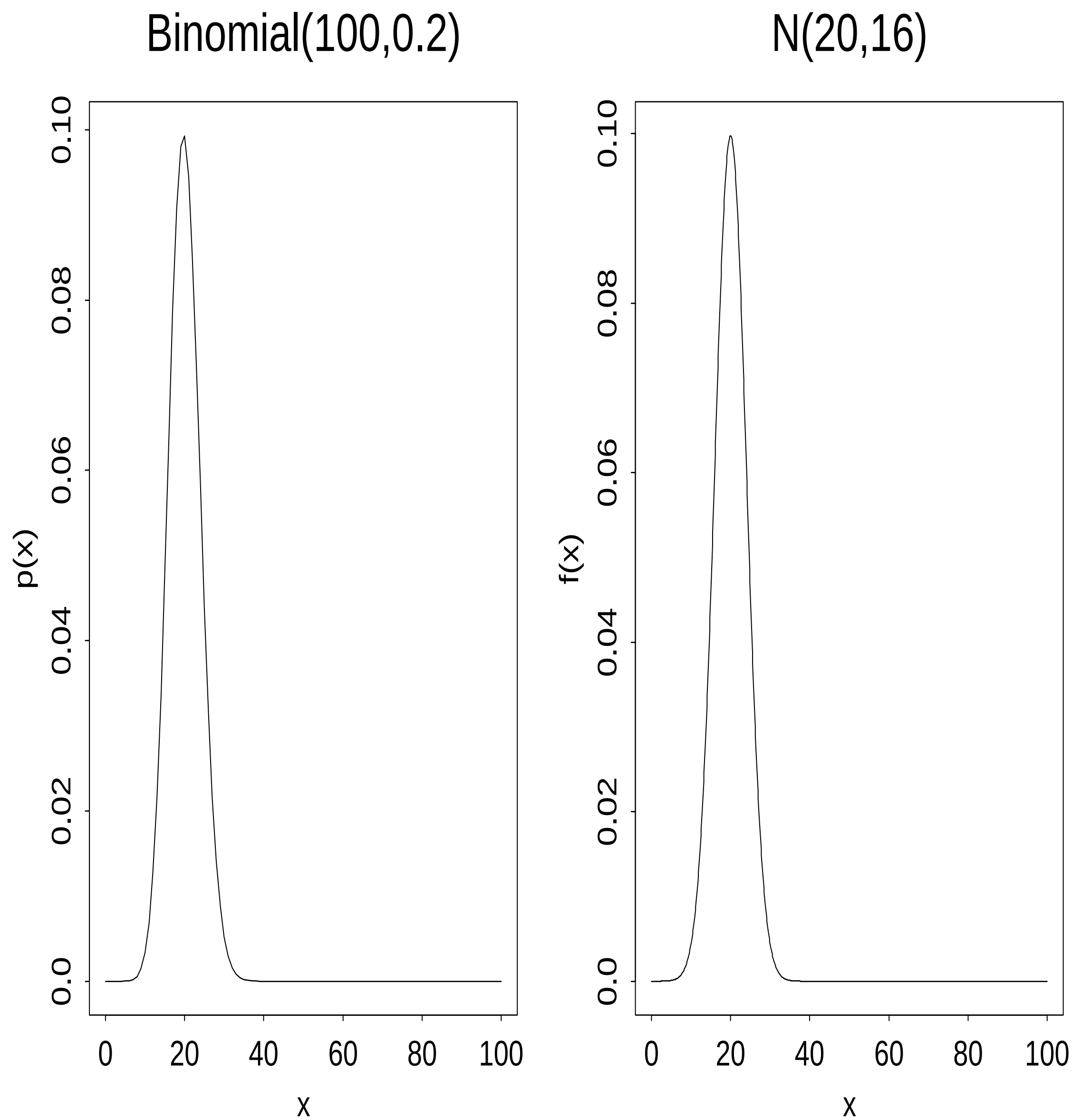
b) What percentage of the students will get C?

c) What percentage of the students will fail?

Example - Standardized normal

Say $X \sim N(\mu, 2)$. If $P(X \leq 0.5) = 0.8$ find μ.

Example - Normal approximation of a Binomial



Example - Normal approximation of a Binomial

A factory which produces light bulbs estimates that the probability of a light bulb lighting continuously more than a week is 36%. What is the chance that out of 100 bulbs tested, the number of bulbs still working after a week is between 24 and 42 inclusive.

Example - Normal approximation of a Binomial

A batch of $n = 80$ items is taken from a manufacture process. The process creates a fraction $p = 0.16$ of defectives. What is the probability that a batch with 80 independent items will contain exactly 20 defectives?