R Handout - Normal Distributions

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Wood-Burning Example

Suppose that the amount of wood that I burn per day is approximately normally distributed with a mean of 16 ft^3 and a standard deviation of 4 ft^3. Use this information to answer the questions below.

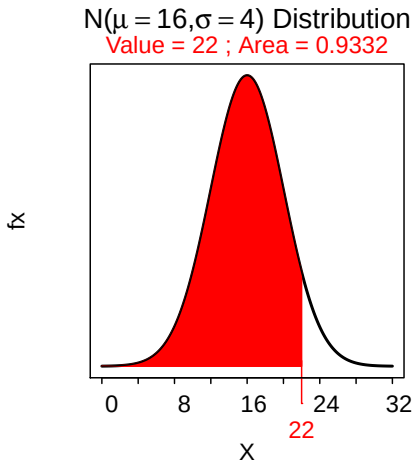
1. What is an individual?
2. What is the variable and what type of variable is it?
3. On what proportion of days do I burn less than 22 ft^3 of wood?
4. On what proportion of days do I burn more than 15 ft^3 of wood?
5. On what proportion of days do I burn between 11 and 26 ft^3 of wood?
6. What is the amount of wood burned per day such that I burn less than that amount on 10% of the days?
7. What is the amount of wood burned per day such that I burn more than that amount on 20% of the days?
8. What are the most common 50% of amounts of wood burned per day?

Always First Command

```
> library(NCStats)
```

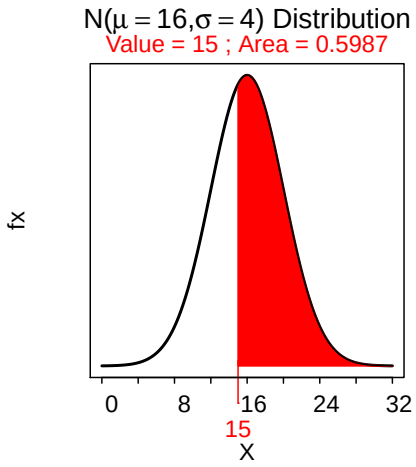
Forward, Less-Than

```
> ( distrib(22,mean=16,sd=4) )
[1] 0.9332
```



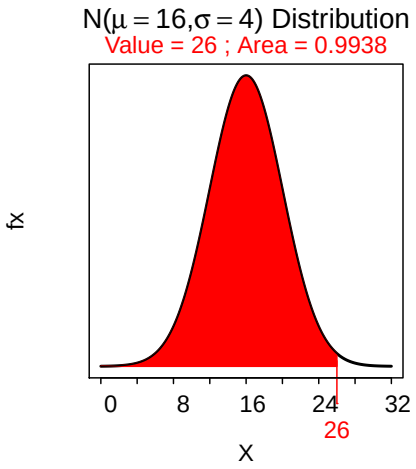
Forward, Greater-Than

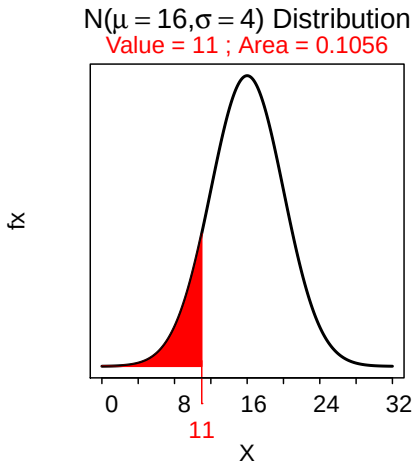
```
> ( distrib(15,mean=16,sd=4,lower.tail=FALSE) )
[1] 0.5987
```



Forward, Between

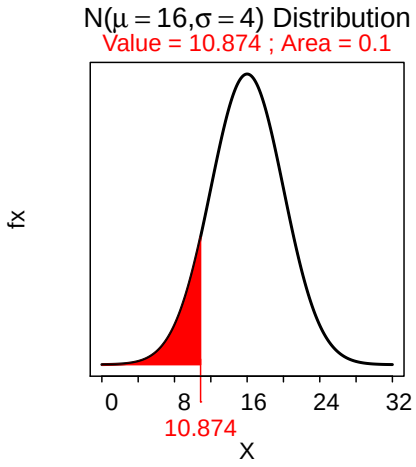
```
> ( ab <- distrib(26,mean=16,sd=4) )
[1] 0.9938
> ( a <- distrib(11,mean=16,sd=4) )
[1] 0.1056
> ab-a
[1] 0.8881
```





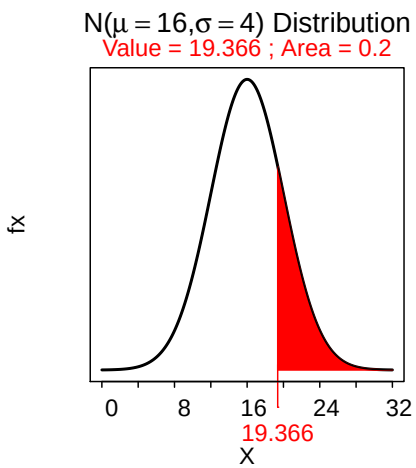
Reverse, Less-Than

```
> ( distrib(0.1,mean=16,sd=4,type="q") )
[1] 10.87
```



Reverse, Greater Than

```
> ( distrib(0.20,mean=16,sd=4,type="q",lower.tail=FALSE) )
[1] 19.37
```



Reverse, Between

```
> ( distrib(0.25,mean=16,sd=4,type="q") )
[1] 13.3
> ( distrib(0.25,mean=16,sd=4,type="q",lower.tail=FALSE) )
[1] 18.7
```