TOPIC: MEDIAN

Finding the Median

◆ Recall: Measures of Center (like mean) *summarize* a data set in ONE central value. The median is another M.O.C.

► To find the **median**, sort the data from *smallest* to *largest*, then find the _____ number.

EXAMPLE Find the median of each set of numbers.

$(\boldsymbol{A})$ $\{5, 10, 14, 12, 3\}$

n = ____ **[ODD | EVEN]**

Median = _____ value = ____

$(\boldsymbol{B})$ $\{5, 10, 14, 12, 3, 76\}$

n = ____ **[ODD | EVEN]**

Median = _____ of 2 middle #s = ____

PRACTICE A real estate analyst is studying house prices in a neighborhood. Find the median of the data below.

Home Prices (in thousands)								
320	275	310	290	305	295	285	315	300

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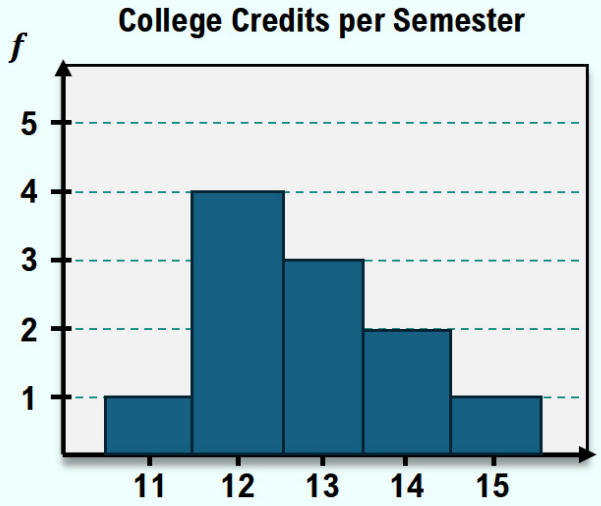
EXAMPLE

The histogram below shows the number of college credits a sample of students are taking in a given semester. Find the median number of credits.



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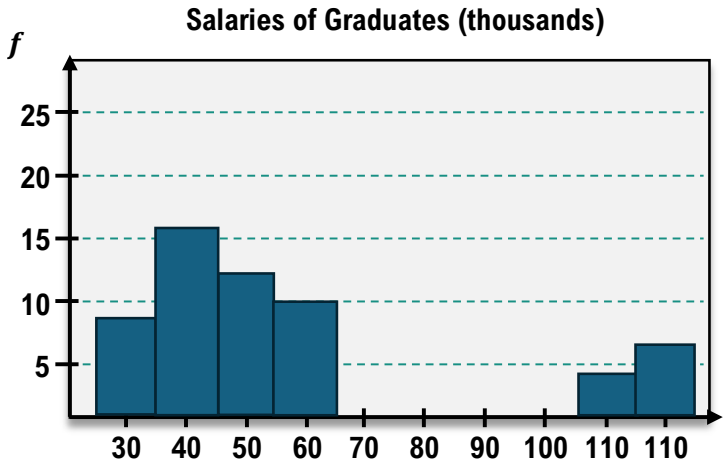
Mean vs Median

◆ Despite mean & median being Measures of Center, they have distinct pros & cons.

EXAMPLE What are the advantages & disadvantages of using mean vs. median in the data sets below?

Mean / "Average"		Median / "Middle"	
$(A)\ \{5, 10, 12, 14, 3\}$	$(B)\ \{5, 10, 12, 14, 3, 76\}$	$(A)\ \{5, 10, 12, 14, 3\}$	$(B)\ \{5, 10, 12, 14, 3, 76\}$
$\frac{5+10+12+14+3}{5}$	$\frac{5+10+12+14+3}{}$	$\{3, 5, \mathbf{10}, 12, 14\}$	$\{3, 5, \mathbf{10}, \mathbf{12}, 14, 76\}$
$= \frac{44}{5} = \mathbf{8.8}$	$\bar{x} = \frac{\sum x}{n}$		
Best: Data is symmetric **[WITH | WITHOUT]** outliers		Best: Data is symmetric **[WITH | WITHOUT]** outliers	
[PRO | CON] Uses _____ value(s) in data set **[PRO | CON]** One *extreme* val. changes mean by ___ *("not resistant")*		**[PRO | CON]** Uses _____ value(s) in data set **[PRO | CON]** One *extreme* val. changes mean by ___ *("resistant")*	

EXAMPLE Without calculating, determine if the mean or median best represents the center of the graphed data.



(A) Mean

(B) Median

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EXAMPLE

The sample below shows the prices (in thousands of US dollars) of 8 homes in a city. Find the mean and median price. Which of the two is more representative of the sample?

Home Prices (Thousands of $)							
275	229	850	240	305	287	310	342

EXAMPLE

The histogram below shows the annual salaries of several CEOs. Estimate the mean and median of the data set. Which is the most appropriate measure of the center of the data?