

# Thinking Task!

Paul

- A set of five integers  $\{17, \underline{12}, 10, 21, n\}$  has the property that the median is equal to their arithmetic mean.

- Determine all possible values of n.

~~If median = 12~~ ~~If median = 15~~

$n = 0$

$n = 15$

$0, 10, 12, 17, 21 = 60$

~~If median = 17~~

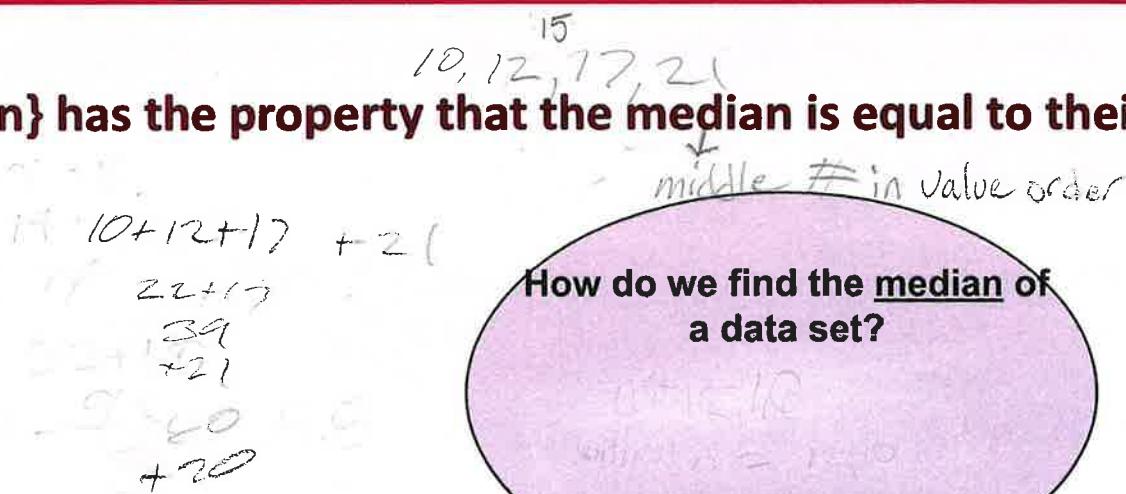
$n = 25$

~~If median = 13~~

~~$10, 12, 17, 21, 25 = 85$~~

$5, 10, 12, 17, 21$

$n = 0, 15, 25$



How do we find the median of a data set?

Median = Sum of terms  
average # of terms

How do we find the mean of a data set?

$\frac{85}{5}$

Maybe only 3 ways

Which **Math Practice Standards** are you using to work on this thinking task?

We can submit our work/answers online for this one for a chance to be featured on a math blog!

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- A set of five integers  $\{17, 12, 10, 21, n\}$  has the property that the median is equal to their arithmetic mean.
- Determine all possible values of  $n$ .

What if  $n=15$

mean  $\frac{17+12+10+21+15}{5} = \frac{75}{5} = 15$

median  $10, 12, 15, 17, 21$

mean  $\frac{17+12+10+21+25}{5} = \frac{85}{5} = 17$

Median  $10, 12, 17, 21, 25$

The Possible Values of  $n$  are  
 $\{n | n = 0, 15, 25\}$   
 define variable  
 such that  
 Set builder notation  
 describe set how

mean = median  
 possible values  
 $0 \in \{n\}$   
 0

How do we find the median of a data set?  
 the middle number when the data is in order from least to greatest  
 $0, 10, 12, 17, 21$   
 $n?$   $n=0$   
 $0, 10, 12, 17, 21$  median if  $n$  is less than 12  
 $n?$

How do we find the mean of a data set?

The formula for calculating the arithmetic mean is to add up the # in a set & divide by the total quantity of numbers in the set  $\frac{17+12+10+21+n}{5}$

mean =  $\frac{17+12+10+21+n}{5} = \frac{60}{5}$   
 (average)

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# Thinking Task!

$\{ \dots -3, -2, -1, 0, 1, 2, 3, \dots \}$

- A set of five integers  $\{17, 12, 10, 21, n\}$  has the property that the median is equal to their arithmetic mean.
- Determine all possible values of  $n$ .

10, 12, 17, 21, ?

Define

How do we find the median of a data set?

the middle number when the data is ordered from low to high.

$$\begin{aligned} 10 + 12 + 17 + 21 + 15 &= 75 \\ 5 &= 15 \quad (10 + 12 + 17 + 21) = 60 \\ &\quad 5 \\ 10, 12, 15, 17, 21 & \qquad \text{median} \\ 0, 10, 12, 17, 21 & \end{aligned}$$

$$= \frac{60}{5} = 12 \quad \text{mean}$$

$$\begin{aligned} 10 + 12 + 17 + 21 + 25 &= 85 \\ 5 &= 17 \quad \{n | n = 0, 15, 25\} \\ 10, 12, 17, 21, 25 & \end{aligned}$$

the possible values of  $n$  are

define variable  
 $\{n | n = 0, 15, 25\}$   
 such that

Set builder notation

How do we find the mean of a data set?

the average add up all the terms is a set then divide by the number of terms

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