

Range of a set of numbers.

the distance between the maximum & minimum numbers

TO FIND THE RANGE:

$$\text{HIGHEST} - \text{LOWEST} = \text{RANGE}$$

$$5, -12, 17, 8, 35$$

$$35 - -12 = 47$$

MEAN (AVERAGE) = \bar{x}

add up all the numbers
how many numbers are in the set

2 7 12 18 23 28

$$\bar{x} = \frac{2+7+12+18+23+28}{6} = \frac{90}{6} = 15$$

(2-15)

STANDARD DEVIATION: (σ)

- measures how spread out a group of numbers is
- always a positive number
- small σ means not spread out very much

FORMULA:

set of numbers: $(x_1, x_2, x_3 \dots x_n)$

$$\sigma = \sqrt{\frac{(x_1 - \bar{x})^2 + (x_2 - \bar{x})^2 + (x_3 - \bar{x})^2 + \dots + (x_n - \bar{x})^2}{n}}$$

ex) $-3, -1, 2, 5, 12$

$$\frac{(-3) + (-1) + 2 + 5 + 12}{5} = \frac{15}{5}$$

$$\bar{x} = 3$$

$$\frac{(-3-3)^2 + (-1-3)^2 + (2-3)^2 + (5-3)^2 + (12-3)^2}{5}$$

$$\sqrt{\frac{36 + 16 + 1 + 4 + 81}{5}} = \sqrt{\frac{138}{5}} = \sqrt{27.6} = 5.25$$

$\frac{\text{Range}}{6}$ guess for σ .

Percentiles: what percent of the total lies at or below the number.

ex) 1, 4, 3, 12, 17

POSITION
TOTAL #'s

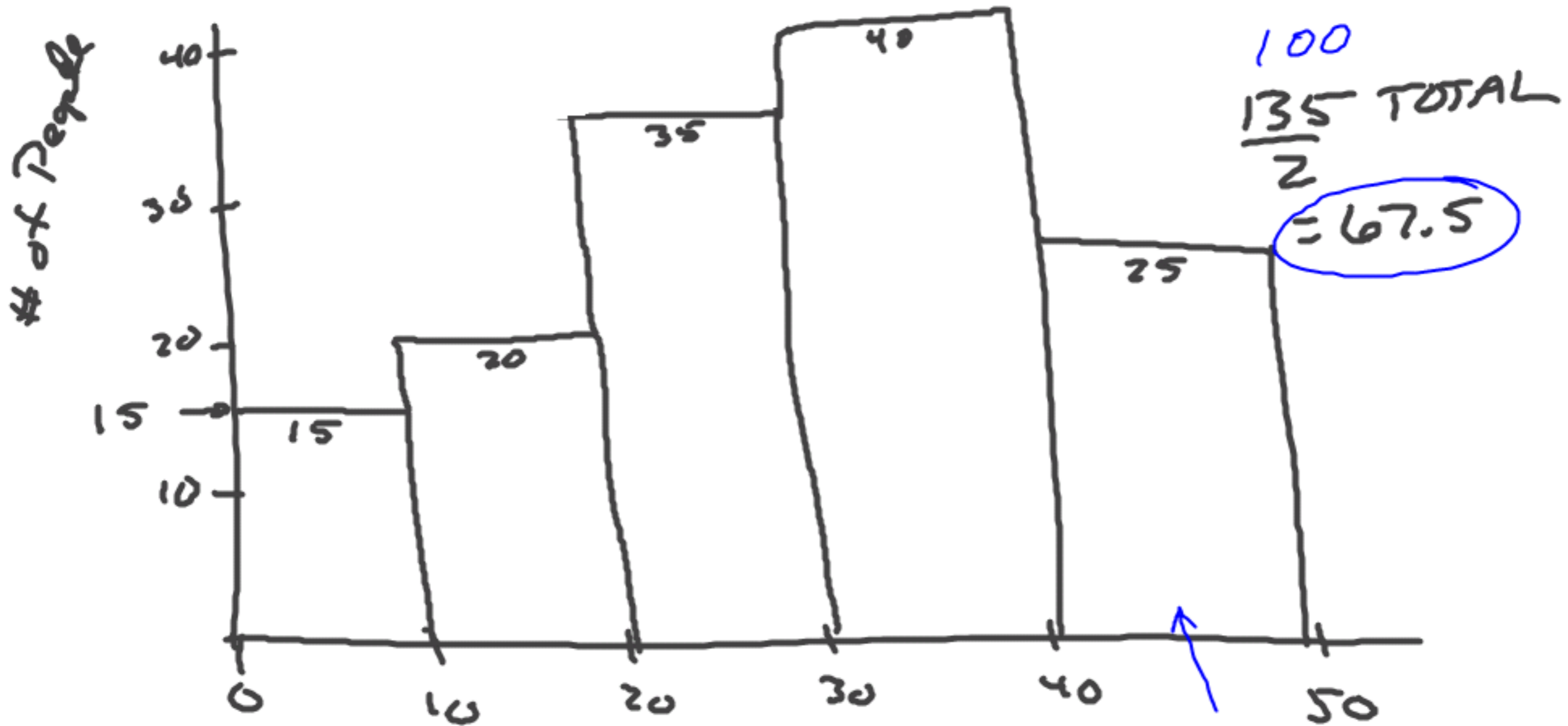
-4	1	3	12	17
1/5	2/5	3/5	4/5	5/5
20%	40%	60%	80%	100%

Steps:
① Put numbers from lowest to highest

Which number is the 60th percentile? 3
12 is what percentile?
80th

2	5	7	12	16	25	32	49
$\frac{1}{8}$	$\frac{2}{8}$	$\frac{3}{8}$	$\frac{5}{8}$	$\frac{5}{8}$	$\frac{6}{8}$	$\frac{7}{8}$	$\frac{8}{8}$
.125	.25	.375	.5	.625	.75	.875	1.0
12.5%	25%	37.5%	50%	62.5%	75%	87.5%	100%

↓
 "MEDIAN"



TEST SCORES
 What range = 50th percentile = 20-30
 (MEDIAN)