CA Content Standards:

Grade 5 SDAP 1.1, Grade 6 SDAP 1.1, Grade 6 SDAP 1.2, Grade 6 SDAP 1.3

Objective:

Students will be able to understand the concept of mean and compute the mean within a given set of data using multiple approaches.

Vocabulary: **do not give vocabulary to students until after they've generated a working description of mean**

mean/average: a value that represents the measure of center for a set of data when the data is evened out.

averaging: evening out the values in each group so they have the same amount.

*students will generate this description during the course of the lesson

outlier: a piece of data that is not representative of most of the other pieces of data

*discuss concept of measures of central tendency as they pertain to the lesson.

Example 1 (We Do): Find the mean of the data set $\{3, 2, 5, 6\}$

Concrete/Build It	**Semi-Concrete/Draw It**
• Students will build the data set using concrete manipulatives.	• Students will "even out groups using addition and subtraction. $\{3, 2, 5, 6\}$

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$$\begin{array}{cccc} 3 & 2 & 5 & 6 \\ & +1 & & -1 \\ \end{array}$$

$$\begin{array}{cccc} 3 & 3 & 5 & 5 \\ \end{array}$$

$$\begin{array}{cccc} +1 & +1 & -1 & -1 \\ \end{array}$$

$$\begin{array}{cccc} 4 & 4 & 4 & 4 \\ \end{array}$$

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• Instruct students to "even out" the groups so that groups have the same amount. There will be 4 groups because there are 4 pieces of data.

*you must add the same amount you subtract, or you change the data set.

∴ average is 4.

• Average is the amount in each group.
  ∴ average is 4.
• Students will then work together to generate their own working description of mean.
• Students should then duplicate the activity while writing step-by-step notes.

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Example 3 (We Do):

Find the mean of the data set: $\{13, 8, 3, 18, !14\}$	

Find the mean of the data set: $\{13, 8, 3, 18, !14\}$

$$
\begin{array}{ccccc}
13 & 8 & 3 & 18 & 14 \\
 & & +7 & -7 & \\
13 & 8 & 10 & 11 & 14 \\
 & +2 & & -2 & \\
13 & 10 & 10 & 11 & 12 \\
-2 & +1 & +1 & & \\
11 & 11 & 11 & 11 & 12 \\
 & & & & -1 \\
11 & 11 & 11 & 11 & 11 \\
+\frac{1}{5} & +\frac{1}{5} & +\frac{1}{5} & +\frac{1}{5} & +\frac{1}{5}
\end{array}
$$

∴ average is $11\frac{1}{5}$

You Try 3:

Find the mean of the data set: $\{18, 23, 14\}$

$$
\begin{array}{ccc}
18 & 23 & 14 \\
 & -4 & +4 \\
18 & 19 & 18 \\
 & -1 & \\
18 & 18 & 18 \\
+\frac{1}{3} & +\frac{1}{3} & +\frac{1}{3}
\end{array}
$$

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Example 4 (We Do):

Find the mean of the data set: $\{\ \ ,58,\ |\ ,87,\ |\ \}$

33　　58　　21　　87　　26

　　　　　　+20　-20

33　　58　　41　　67　　26

+10　-10　+15　-15

43　　48　　56　　52　　26

　　　　　　-8　　-8　　+16

　43　　48　　48　　44　　42

　　　　　　-4　　　　　+4

　43　　48　　44　　44　　46

　　　　-2　　+1　　+1

　43　　46　　45　　45　　46

+2　　-1　　　　　　　-1

45　　45　　45　　45　　45

∴ average is 45.

Example 5~Challenge (We Do):

Find the missing number in the data set with a mean of 10; $\underline{\ \ }\{5, 7, 10, 13\}$

Build It

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	Draw It
	$\{5, 7, 10, 13\}$ ((
	5 7 10 13 ___
	10 10 10 10 10
	-5 -3 +3 <u>+5</u>
	5 7 10 13 <u>15</u>
	! the missing piece of data is 15.

You Try~Challenge 4:

...ssing number in the data set with a mean of

..5, 30, __, 32, 18}

Draw It

$\{20, 25, 30, \_, 32, 18\}$

20   25   30   ___   32   18

?5   25   25   25   25   25

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