Lesson 9

Mean

Goals

- Comprehend the words "mean" and "average" as a measure of center that summarizes the data using a single number.
- Explain (using words and other representations) how to calculate the mean for a numerical data set.
- Interpret diagrams that represent finding the mean as a process of leveling out the data to find a "fair share."

Learning Targets

- I can explain how the mean for a data set represents a "fair share."
- I can find the mean for a numerical data set.

Lesson Narrative

In this lesson, students find and interpret the **mean** of a distribution as the amount each member of the group would get if everything is distributed equally. This is sometimes called the "leveling out" or the "fair share" interpretation of the mean.

Here students do not yet make an explicit connection between the mean and the idea of "typical," or between the mean and the center of a distribution. These connections will be made in upcoming lessons.

Student Learning Goal

Let's explore the mean of a data set and what it tells us.

Access for Students with Diverse Abilities

- Action and Expression (Activity 1, Activity 2)

Access for Multilingual Learners

- MLR3: Critique, Correct, Clarify (Activity 2)

Instructional Routines

- MLR3: Critique, Correct, Clarify

Required Materials

Materials to Gather

- Snap cubes: Activity 1
- Straightedges: Activity 1

Lesson Timeline

Warm-up	Activity 1	Activity 2	Lesson Synthesis	Cool-down
5 min	15 min	15 min	10 min	5 min

Assessment

Warm-up

Close to Four

5 min

Activity Narrative

The purpose of this *Warm-up* is to prepare students to find the mean of a data set. While the goal of the activity is for students to create an expression with a value close to 4, the discussions should focus on the reasoning and strategies that students used to create their expression. Students should notice that they would get the same result if they divided the value of the entire expression in the numerator by 4 as they would if they divided each number in the numerator by 4 because there are 4 numbers in the numerator.

During the partner discussions, identify students with different strategies for creating an expression with a value of 4. Ask them to share during the whole-class discussion.

Launch

Arrange students in groups of 2. Give students 1 minute of quiet work time, and then 2 minutes to share their response with a partner. Follow with a whole-class discussion. If students finish early finding a solution close to 4, challenge them to find numbers that result in exactly 4.

Student Task Statement

Use the digits 0–9 to write an expression with a value as close as possible to 4. Each digit can be used only one time in the expression.

Sample response:

$$(\boxed{2} + \boxed{8} + \boxed{5} + \boxed{1} \div 4)$$

Because the expression should be close to 4, the total inside the parentheses should be close to 16.

Activity Synthesis

Poll the class on whether the value of their expression is exactly 4 or is close to 4. Ask selected students to share their strategy for creating an expression with a value of 4. Record and display their responses for all to see.

As students share their reasoning, consider asking some of these questions:

- *"How did you decide on the value inside the parentheses?"*

  To get a final result of 4, we want the parentheses to have a total of 16.

- *"How might your strategy change if the divisor was a different number, say, 6 or 10?"*

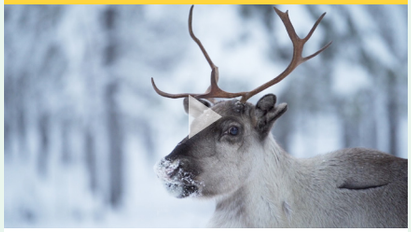
  The total for the parentheses would need to be 4 times the divisor. For example, if it was 6, then the sum of the values inside the parentheses should be 24.

- *"How might your strategy change if the parentheses had more numbers or fewer numbers inside them?"*

  The total would still need to be 16, so if there were more numbers, they would have to be smaller. If there were fewer numbers, they would have to be greater.

Inspire Math

Sami Reindeer Herders video



Go Online

Before the lesson, show this video to reinforce the real-world connection.

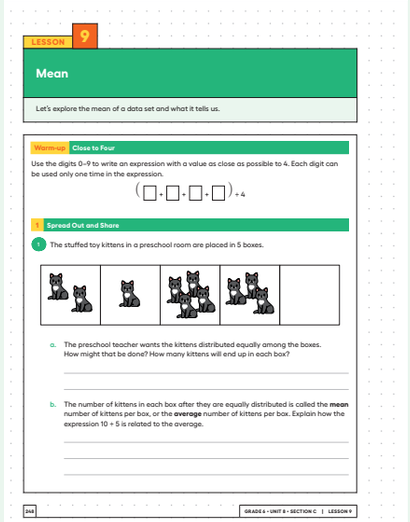
ilclass.com/l/614218

Please log in to the site before using the QR code or URL.

Building on Student Thinking

Some students may think that they need to use all of the digits from 0 to 9. Tell them that only 4 digits need to be used, although they are welcome to try to find a good solution using 2-digit numbers if they want to.

Student Workbook



LESSON 9

Mean

Let's explore the mean of a data set and what it tells us.

Warm-up Close to Four

Use the digits 0–9 to write an expression with a value as close as possible to 4. Each digit can be used only one time in the expression.

$(\square + \square + \square + \square) \div 4$

1 Spread Out and Share

1. The stuffed toy kittens in a preschool room are placed in 5 boxes.

a. The preschool teacher wants the kittens distributed equally among the boxes. How might that be done? How many kittens will end up in each box?

b. The number of kittens in each box after they are equally distributed is called the **mean** number of kittens per box, or the **average** number of kittens per box. Explain how the expression 10 ÷ 5 is related to the average.

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Activity 1
Spread Out and Share

15 min

Activity Narrative

There is a digital version of this activity.

This activity introduces students to the concept of **mean** or **average** in terms of equal distribution or fair share. The two contexts chosen are simple and accessible, and include both discrete and continuous values. Diagrams are used to help students visualize the distribution of values into equal amounts.

In the digital version of the activity, students use an applet to rearrange the cats in boxes. The applet allows students to drag images of cats into different boxes to evenly distribute them. Use the digital version if there isn't enough available physical equipment for students to experiment in small groups, or if time is limited and students can access the applet readily on devices.

As students work, identify those with very different ways of arranging cats into boxes to obtain a mean of 6 cats. Also look for students who determine the redistributed work hours differently. For example, some students may do so by moving the number of hours bit by bit, from a server with the most hours to the one with the fewest hours, and continue to adjust until all servers have the same number. Others may add all the hours and divide the sum by the number of servers.

Launch

Arrange students in groups of 2. Provide access to straightedges.

Prepare a collection of objects such as snap cubes, stickers, or other desirable objects so that each group could have 10. Give a majority of the objects to 1 group, 1 or 2 objects to a few other groups, and leave most groups with none. Ask students,

💬 *"What do you think about how I've given out these things?"*

Listen for someone to say that it is "not fair." Then ask,

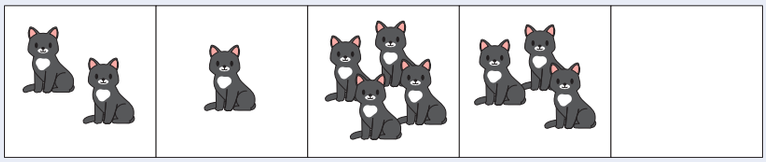
💬 *"How could we pass these out so that it is fair?"*

Redistribute the objects using a suggested method so that each group has 10 objects to use for the first question.

Give students 3–4 minutes of quiet work time to complete the first set of questions and 1–2 minutes to share their responses with a partner. Since there are many possible correct responses to the question about the boxes in a second room, consider asking students to convince their partner that the distribution that they came up with indeed has an average of 3 kittens per box. Then, give students 4–5 minutes to work together on the second set of questions.

Student Task Statement

1. The stuffed toy kittens in a preschool room are placed in 5 boxes.



a. The preschool teacher wants the kittens distributed equally among the boxes. How might that be done? How many kittens will end up in each box?

Sample response: Add up the numbers of kittens (a total of 10) and divide that number by 5, which results in 2 kittens per box.

b. The number of kittens in each box after they are equally distributed is called the **mean** number of kittens per box, or the **average** number of kittens per box. Explain how the expression 10 ÷ 5 is related to the average.

The expression is the total number of kittens divided by the number of boxes, which is the number of kittens in each box after they are evenly distributed.

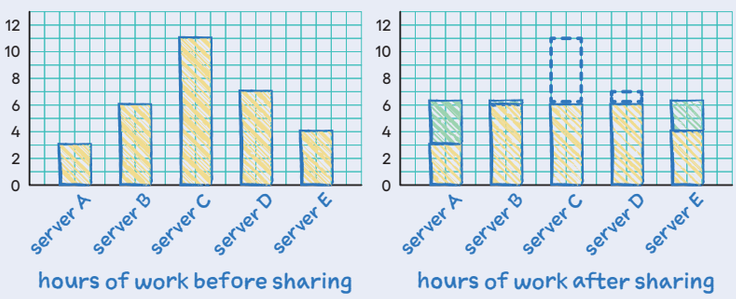
c. Another preschool room has 6 boxes. No 2 boxes have the same number of kittens, and there is an average of 3 kittens per box. Draw or describe at least 2 different arrangements of kittens that match this description.

Sample response: The kittens could be distributed among the 6 boxes in the order: 2, 5, 1, 3, 0, 7, and 6, 2, 4, 5, 0, 1. Because there are 6 boxes and an average of 3 kittens in each box, there are a total of 18 kittens. Any distribution that has a total of 18 kittens will have an average of 3 kittens in each box.

2. Five servers are scheduled to work the number of hours shown. They decide to share the workload, so each one would work equal hours.

Server A: 3 **Server B:** 6 **Server C:** 1 **Server D:** 7 **Server E:** 4

a. On the first grid, draw 5 bars whose heights represent the hours worked by Servers A, B, C, D, and E. Then, think about how you would rearrange the hours so that each server gets a fair share. On the second grid, draw a new graph to represent the rearranged hours. Be prepared to explain your reasoning.



Access for Students with Diverse Abilities (Activity 1, Student Task)

Action and Expression: Develop Expression and Communication. Give students access to snap cubes or blocks.

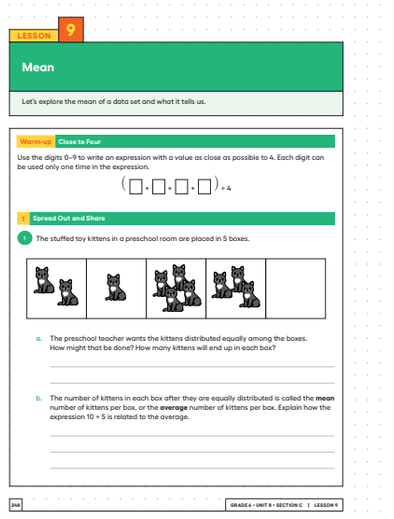
Supports accessibility for: Conceptual Processing, Organization

Building on Student Thinking

In the first room, to get each box to have the same number of cats, some students might add new cats, not realizing that to "distribute equally" means to rearrange and reallocate existing quantities, rather than adding new quantities. Clarify the meaning of the phrase for these students.

Some students may not recognize that the hours for the servers could be divided so as to not be whole numbers. For example, some may try to give 4 servers 6 hours and 1 server has 7 hours. In this case, the time spent working is still not really divided equally, so ask the student to think of dividing the hours among the servers more evenly if possible.

Student Workbook


LESSON 9

Mean

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Warm-up Close to Four

Use the digits 0–9 to write an expression with a value as close as possible to 4. Each digit can be used only one time in the expression.

$(\square \cdot \square \cdot \square \cdot \square)_{+4}$

1 Spread Out and Share

1. The stuffed toy kittens in a preschool room are placed in 5 boxes.

a. The preschool teacher wants the kittens distributed equally among the boxes. How might that be done? How many kittens will end up in each box?

b. The number of kittens in each box after they are equally distributed is called the **mean** number of kittens per box, or the **average** number of kittens per box. Explain how the expression 10 ÷ 5 is related to the average.

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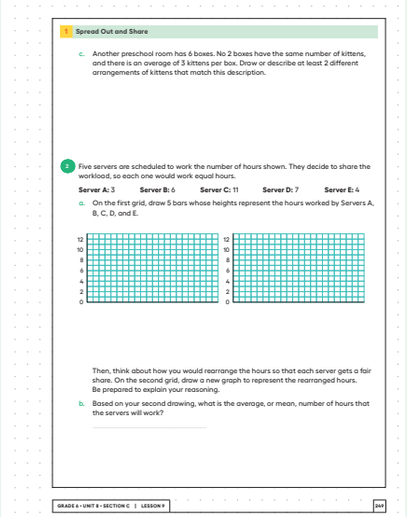
Student Workbook


1 Spread Out and Share

c. Another preschool room has 6 boxes. No 2 boxes have the same number of kittens, and there is an average of 3 kittens per box. Draw or describe at least 2 different arrangements of kittens that match this description.

2 Five servers are scheduled to work the number of hours shown. They decide to share the workload, so each one would work equal hours.

Server A: 3 Server B: 6 Server C: 11 Server D: 7 Server E: 4

a. On the first grid, draw 5 bars whose heights represent the hours worked by Servers A, B, C, D, and E.

Then, think about how you would rearrange the hours so that each server gets a fair share. On the second grid, draw a new graph to represent the rearranged hours. Be prepared to explain your reasoning.

b. Based on your second drawing, what is the average, or mean, number of hours that the servers will work?

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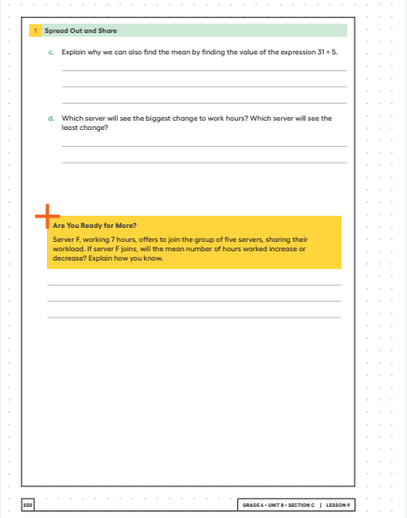
Student Workbook


1 Spread Out and Share

c. Explain why we can also find the mean by finding the value of the expression 31 ÷ 5.

d. Which server will see the biggest change to work hours? Which server will see the least change?

Are You Ready for More?

Server F, working 7 hours, offers to join the group of five servers, sharing their workload. If server F joins, will the mean number of hours worked increase or decrease? Explain how you know.

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b. Based on your second drawing, what is the average, or mean, number of hours that the servers will work? 6.2 hours

The mean number of hours is 6.2 because there is a total of 31 hours divided among 5 servers.

c. Explain why we can also find the mean by finding the value of the expression 31 ÷ 5.

The expression shows all the hours being added and divided by 5, which gives us the fair share for each server. $\frac{(3+6+11+7+4)}{5} = 6.2$

d. Which server will see the biggest change to work hours? Which server will see the least change?

Server C will see the biggest change; their work hours will drop by close to 5 hours. Server B will barely see a difference; their work hours will increase only by $\frac{1}{5}$ of an hour or 12 minutes.

Are You Ready for More?

Server F, working 7 hours, offers to join the group of five servers, sharing their workload. If server F joins, will the mean number of hours worked increase or decrease? Explain how you know.

Increase

Since the average was 6.2 hours and Server F has 7 hours, it will increase everyone else's hours to even things out again.

Activity Synthesis

Invite several students with different arrangements of cats in the second room with 6 boxes to share their solutions and how they know the mean number of cats for their solutions is 3. Make sure everyone understands that their arrangement is correct as long as it had a total of 18 kittens and 6 boxes and no 2 boxes have the same number of cats. Show that the correct arrangements could redistribute the 18 cats such that there are 3 cats per box.

Then, select previously identified students to share how they found the redistributed work hours if the workers were to spread the workload equally. Start with students who reallocated the hours incrementally (from one server to another server) until the hours level out, and then those who added the work hours and divided the sum by 5.

Students should see that the mean can be interpreted as what each member of the group would get if everything is distributed equally, without changing the sum of values.

Activity 2
Getting to School

15 min

Activity Narrative

In this activity, students calculate the mean of a data set and interpret it in the context of the given situation. The first data set students see here has a dozen values, discouraging students from redistributing the values incrementally and encouraging them to use a more efficient method. In the second question, students analyze the values in data sets and use the structure to decide whether or not it makes sense that a given mean would match the data set.

As students work and discuss, notice the reasons that they give for why the data sets in the second question could or could not be Tyler's data set. Identify students who recognize that the mean of a data set cannot be expected to be higher or lower than most of the values of the data set, and that a fair-share value would have a value that is roughly in the middle of data values.

Launch

Keep students in groups of 2. Give them 6–7 minutes of quiet work time, and then time to discuss their responses with their partner.

Student Task Statement

For the past 12 school days, Mai has recorded how long her bus rides to school take in minutes.

9 8 6 9 10 7 6 12 9 8 10 8

1. Find the mean for Mai's data. Show your reasoning. 8.5 minutes

   The mean is found by summing the minutes of travel and dividing by the number of rides: (9 + 8 + 6 + 9 + 10 + 7 + 6 + 12 + 9 + 8 + 10 + 8) ÷ 12 = 8.5

2. In this situation, what does the mean tell us about Mai's trip to school?

   Sample response: The mean tells us that if the minutes of travel were all leveled out across the 12 days, Mai's trip to school would take 8.5 minutes each day.

3. For 5 days, Tyler has recorded how long his walks to school take in minutes. The mean for his data is 11 minutes. Without calculating, predict if each of the data sets shown could be Tyler's. Explain your reasoning.
   - Data set A: 11, 8, 7, 9, 8
   - Data set B: 12, 7, 13, 9, 14
   - Data set C: 11, 20, 6, 9, 10
   - Data set D: 8, 10, 9, 11, 11

   Sample response: Data set A and Data set D could not be Tyler's data, since all of the numbers in each set are either at or below 11. Data set B and Data set C could be Tyler's data, since the numbers in each set are distributed around 11.

Instructional Routines

MLR3: Critique, Correct, Clarify

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Access for Multilingual Learners (Activity 2)

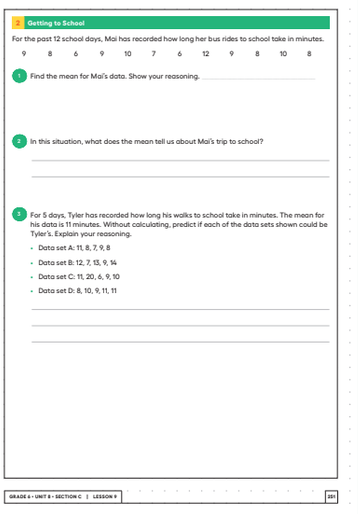
MLR3: Critique, Correct, Clarify. This activity uses the *Critique, Correct, Clarify* math language routine to advance representing and conversing as students critique and revise mathematical arguments.

Access for Students with Diverse Abilities (Activity 2, Student Task)

Action and Expression: Provide Access for Physical Action. Provide access to tools and assistive technologies such as a calculator or software to compute the means.

Supports accessibility for: Visual-Spatial Processing, Conceptual Processing, Organization

Student Workbook


2 Getting to School

For the past 12 school days, Mai has recorded how long her bus rides to school take in minutes.

9 8 6 9 10 7 6 12 9 8 10 8

1 Find the mean for Mai's data. Show your reasoning.

2 In this situation, what does the mean tell us about Mai's trip to school?

3 For 5 days, Tyler has recorded how long his walks to school take in minutes. The mean for his data is 11 minutes. Without calculating, predict if each of the data sets shown could be Tyler's. Explain your reasoning.

- Data set A: 11, 8, 7, 9, 8
- Data set B: 12, 7, 13, 9, 14
- Data set C: 11, 20, 6, 9, 10
- Data set D: 8, 10, 9, 11, 11

Activity Synthesis

Select a couple of students to share how they found the mean of Mai's travel times.

Then, focus the discussion on the second task and on what values could be reasonably expected of a data set with a particular mean. Ask students how they decided to rule out or keep certain sets of data as potentially belonging to Tyler. If not mentioned by students, highlight that the mean of a data set would be a value in the middle of the range of numbers in order for it to be a fair-share value. This is why the mean can be used to describe the center of a distribution.

Use *Critique, Correct, Clarify* to give students an opportunity to improve a sample written response to which data set could be Tyler's by correcting errors, clarifying meaning, and adding details.

- Display this first draft:

  "Tyler's data set is C because it has 11 in it and has some numbers on each side."

  Ask,

- 💬 ***"What parts of this response are unclear, incorrect, or incomplete?"***

  As students respond, annotate the display with 2–3 ideas to indicate the parts of the writing that could use improvement.

- Give students 2–4 minutes to work with a partner to revise the first draft.
- Select 1–2 individuals or groups to read their revised draft aloud slowly enough to record for all to see. Scribe as each student shares, then invite the whole class to contribute additional language and edits to make the final draft even more clear and more convincing.

Tell students that Tyler's data set is B when it is calculated. Data set C is close, but has a mean a little greater than 11.

Point out that, unlike hours of work or cats in crates, the times of travel here cannot actually be redistributed. The interpretation of mean translates into a thought experiment:

Imagine another student travels to school for 12 days and has the same total travel time as Mai, but their travel time is the same each day. Then each day their travel time is the mean of Mai's travel times.

Lesson Synthesis

The purpose of this discussion is to talk about students' understanding of mean. Here are some questions to support the discussion:

- *"Suppose that a data set contains the amounts of money in five piggy banks. What would the mean of this data set tell us?"*

  If all of the money were pooled together and then redistributed so that all 5 banks have the same amount, then the amount in each bank at the end is the mean.

- *"Why might it make sense to think of the mean as a 'fair share'?"*

  Often we think of "fair" as meaning each member of the group gets the same amount. The mean is the amount each member gets when the total is redistributed in this way.

- *"How do we find the mean of a data set?"*

  Add all the values together, and then divide by the number of values.

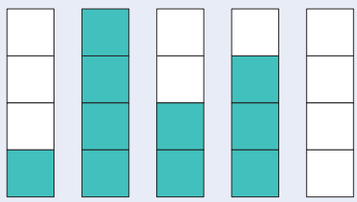
- *"How can we interpret the mean of the heights of students in a class?"*

  If there were another class with the same number of students who are all the same height, the mean is how tall they would be so that their total height matches the total height of the students in the original class.

Lesson Summary

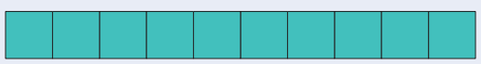
Sometimes a general description of a distribution does not give enough information, and a more precise way to talk about center or spread would be more useful. The **mean,** or **average**, is a number we can use for the center to summarize a distribution.

We can think about the mean in terms of "fair share" or "leveling out." That is, a mean can be thought of as a number that each member of a group would have if all the data values were combined and distributed equally among the members.

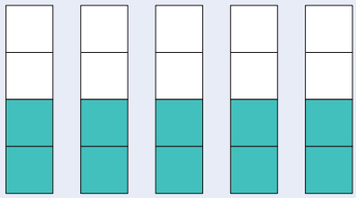


For example, suppose there are 5 containers, each of which has a different amount of water: 1 liter, 4 liters, 2 liters, 3 liters, and 0 liters.

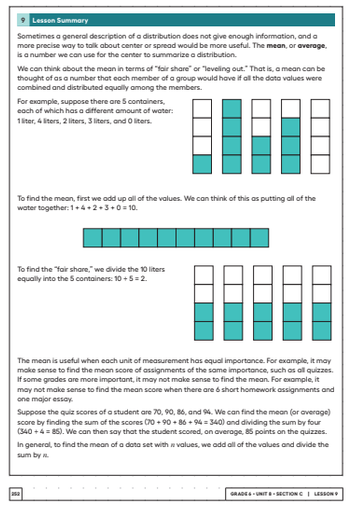
To find the mean, first we add up all of the values. We can think of this as putting all of the water together: 1 + 4 + 2 + 3 + 0 = 10.



To find the "fair share," we divide the 10 liters equally into the 5 containers: 10 ÷ 5 = 2.



Student Workbook



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We can think about the mean in terms of "fair share" or "leveling out." That is, a mean can be thought of as a number that each member of a group would have if all the data values were combined and distributed equally among the members.

For example, suppose there are 5 containers, each of which has a different amount of water: 1 liter, 4 liters, 2 liters, 3 liters, and 0 liters.

To find the mean, first we add up all of the values. We can think of this as putting all of the water together: 1 + 4 + 2 + 3 + 0 = 10.

To find the "fair share," we divide the 10 liters equally into the 5 containers: 10 ÷ 5 = 2.

The mean is useful when each unit of measurement has equal importance. For example, it may make sense to find the mean score of assignments of the same importance, such as all quizzes. If some grades are more important, it may not make sense to find the mean. For example, it may not make sense to find the mean score when there are 6 short homework assignments and one major essay.

Suppose the quiz scores of a student are 70, 90, 86, and 94. We can find the mean (or average) score by finding the sum of the scores (70 + 90 + 86 + 94 = 340) and dividing the sum by four (340 ÷ 4 = 85). We can then say that the student scored, on average, 85 points on the quizzes.

In general, to find the mean of a data set with n values, we add all of the values and divide the sum by n.

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Responding To Student Thinking

Points to Emphasize
If students struggle with finding the mean, use future data sets in upcoming activities to practice the skill. For example, use the data in this activity: Unit 8, Lesson 10, Activity 1 Travel Times (Part 1)

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In general, to find the mean of a data set with n values, we add all of the values and divide the sum by n.

Cool-down

Finding Means

5 min

Student Task Statement

1. Last week, the daily low temperatures for a city, in degrees Celsius, were 5, 8, 6, 5, 10, 7, and 1. What was the average low temperature? Show your reasoning.

   6 degrees Celsius

   The sum of the temperatures divided by the total number of recorded temperatures is (5 + 8 + 6 + 5 + 10 + 7 + 1) ÷ 7 = 6.

2. The mean of four numbers is 7. Three of the numbers are 5, 7, and 7. What is the fourth number? Explain your reasoning.

   9

   Sample reasoning: The 4 numbers must be distributed evenly around 7. Because 2 of the numbers are 7, and the third number is two less than 7, the fourth number must be 2 more than 7.

Lesson 9

Practice Problems

6 Problems

Problem 1

A preschool teacher is rearranging four boxes of playing blocks so that each box contains an equal number of blocks. Currently Box 1 has 32 blocks, Box 2 has 18, Box 3 has 41, and Box 4 has 9.

Select **all** the ways in which the teacher could make each box have the same number of blocks.

A. Remove all the blocks and make four equal piles of 25, then put each pile in one of the boxes.

B. Remove 7 blocks from Box 1 and place them in Box 2.

C. Remove 21 blocks from Box 3 and place them in Box 4.

D. Remove 7 blocks from Box 1 and place them in Box 2, and remove 21 blocks from Box 3 and place them in Box 4.

E. Remove 7 blocks from Box 1 and place them in Box 2, and remove 16 blocks from Box 3 and place them in Box 4.

Problem 2

In a round of mini-golf, Clare records the number of strokes it takes to hit the ball into the hole of each green.

2 3 1 4 5 2 3 4 3

She said that, if she redistributed the strokes on different greens, she could tell that her average number of strokes per hole is 3. Explain how Clare is correct.

Sample explanation: For both of the greens where she got 4 strokes, moving 1 stroke to the two greens where she got 2 strokes means that all 4 four of those greens now take 3 strokes. Likewise, moving 2 strokes from the green where it took her 5 strokes to the green where she got 1 stroke would also mean 3 strokes for each green.

Problem 3

Three sixth-grade classes raised $25.50, $49.75, and $37.25 for their classroom libraries. They agreed to share the money raised equally. What is each class's equal share? Explain or show your reasoning.

$37.50

Sample explanation: The total raised is $112.50, and one-third of that is $37.50.

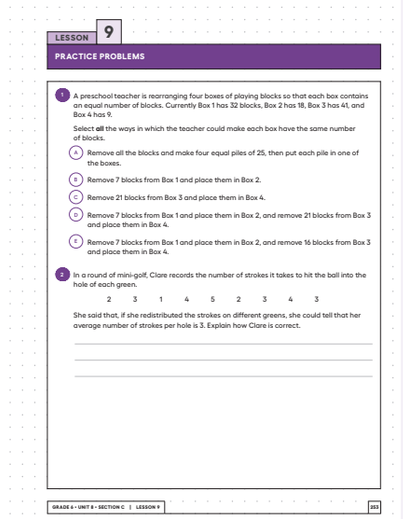
Problem 4

In her English class, Mai's teacher gives 4 quizzes each worth 5 points. After 3 quizzes, she has the scores 4, 3, and 4. What does she need to get on the last quiz to have a mean score of 4? Explain or show your reasoning.

5

Sample explanation: To get a mean of 4, one point needs to be redistributed to the score of 3, so the last quiz must be a 5 so that it can share one point and still be at the mean itself.

Student Workbook


LESSON 9

PRACTICE PROBLEMS

1. A preschool teacher is rearranging four boxes of playing blocks so that each box contains an equal number of blocks. Currently Box 1 has 32 blocks, Box 2 has 18, Box 3 has 41, and Box 4 has 9.

Select **all** the ways in which the teacher could make each box have the same number of blocks.

A. Remove all the blocks and make four equal piles of 25, then put each pile in one of the boxes.

B. Remove 7 blocks from Box 1 and place them in Box 2.

C. Remove 21 blocks from Box 3 and place them in Box 4.

D. Remove 7 blocks from Box 1 and place them in Box 2, and remove 21 blocks from Box 3 and place them in Box 4.

E. Remove 7 blocks from Box 1 and place them in Box 2, and remove 16 blocks from Box 3 and place them in Box 4.

2. In a round of mini-golf, Clare records the number of strokes it takes to hit the ball into the hole of each green.

2 3 1 4 5 2 3 4 3

She said that, if she redistributed the strokes on different greens, she could tell that her average number of strokes per hole is 3. Explain how Clare is correct.

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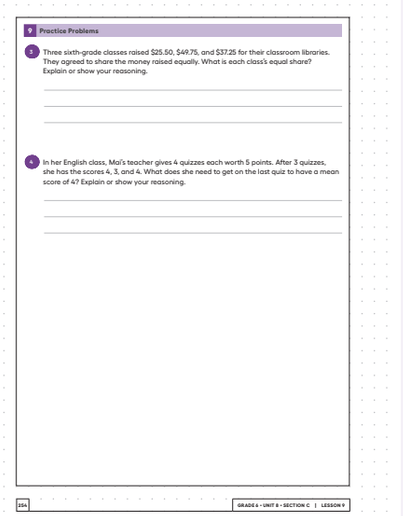
Student Workbook


9 Practice Problems

3. Three sixth-grade classes raised $25.50, $49.75, and $37.25 for their classroom libraries. They agreed to share the money raised equally. What is each class's equal share? Explain or show your reasoning.

4. In her English class, Mai's teacher gives 4 quizzes each worth 5 points. After 3 quizzes, she has the scores 4, 3, and 4. What does she need to get on the last quiz to have a mean score of 4? Explain or show your reasoning.

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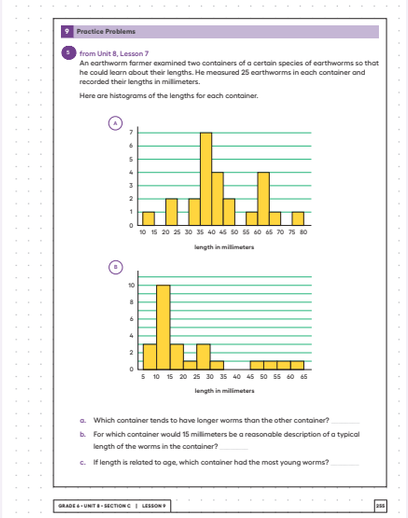
Student Workbook


9 Practice Problems

5 from Unit 8, Lesson 7

An earthworm farmer examined two containers of a certain species of earthworms so that he could learn about their lengths. He measured 25 earthworms in each container and recorded their lengths in millimeters.

Here are histograms of the lengths for each container.

A

B

a. Which container tends to have longer worms than the other container? _____

b. For which container would 15 millimeters be a reasonable description of a typical length of the worms in the container? _____

c. If length is related to age, which container had the most young worms? _____

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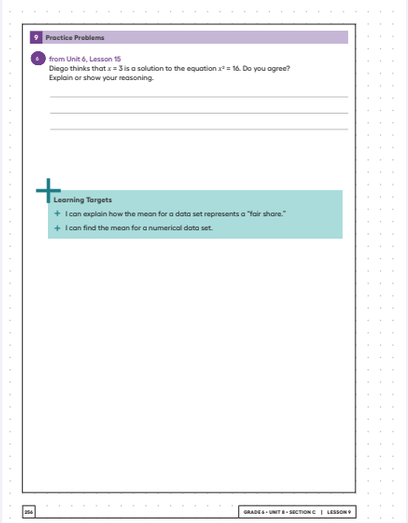
Student Workbook


9 Practice Problems

6 from Unit 6, Lesson 15

Diego thinks that $x = 3$ is a solution to the equation $x^2 = 16$. Do you agree? Explain or show your reasoning.

Learning Targets

+ I can explain how the mean for a data set represents a "fair share."
+ I can find the mean for a numerical data set.

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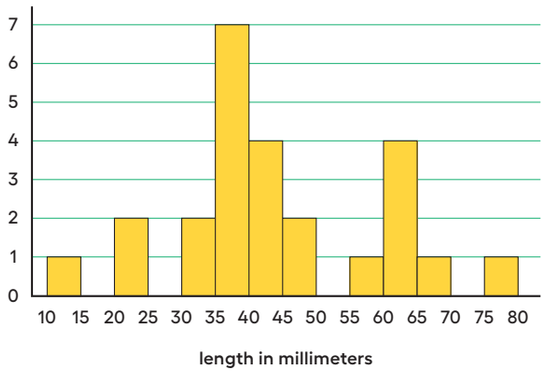
Problem 5

from Unit 8, Lesson 7

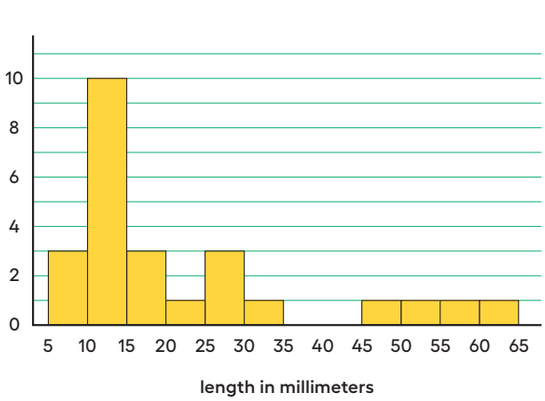
An earthworm farmer examined two containers of a certain species of earthworms so that he could learn about their lengths. He measured 25 earthworms in each container and recorded their lengths in millimeters.

Here are histograms of the lengths for each container.

A



B



a. Which container tends to have longer worms than the other container?

Container A

b. For which container would 15 millimeters be a reasonable description of a typical length of the worms in the container?

Container B

c. If length is related to age, which container had the most young worms?

Container B

Problem 6

from Unit 6, Lesson 15

Diego thinks that $x = 3$ is a solution to the equation $x^2 = 16$. Do you agree? Explain or show your reasoning.

No

Sample explanation: I disagree with Diego. I tried using 3 for x in the equation, but $3^2 = 9$, not 16.

Another sample explanation: I disagree with Diego. I know that $4^2 = 16$, so it cannot be true that $3^2 = 16$.