# Lesson 2: Measuring Wood Blocks and Planning a Bathroom

## SPECIFIC OBJECTIVES
## Use addition and subtraction of fractions and accurate tape measure skills to find sums and differences of materials' measurements.

By the end of this lesson you will understand that...

- Fractions contain a numerator and a denominator
- The numerator is the top number in the fraction, the denominator, the bottom number.
- Adding and subtracting fractions requires finding a common denominator
- Mixed numbers consist of a whole number added to a fraction
- There are at least two ways to add and subtract mixed numbers

By the end of this lesson you will be able to...

- Correctly add and subtract fractions with different denominators
- Correctly add and subtract mixed numbers

### Problem Situation #1: Measuring Wood Blocks

As you know, being able to measure accurately is an important skill for any carpenter or construction worker. This lesson gives you a chance to practice your measuring skills.

1. Individually measure each block and fill in their lengths in the table below. Be sure to include units.

| Block | A | B | C | D |
|-------|---|---|---|---|
| Length | | | | |

2. Compare your measured lengths with those of your group mates. Do they match? If not, work together to determine the correct length of each block. Update your table if necessary.

3. Put the four blocks together and individually <u>estimate</u> how long the total length of the blocks is (use visual cues in the room to help you come up with your estimate. Do *NOT* measure or calculate). Write your estimate below and then move on to Question 4.

4. Calculate the length of all four blocks (A + B + C + D). <u>*Do not use a calculator*</u> and show your work in the space below.

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5. If you finish before the others in your group, work with them until everyone in the group has finished problem #4.

6. Now, <u>individually measure</u> the total length of all four blocks. Write the measurement in the space below.

| *Total Measured Length* | |
|---|---|
| | |

7. Compare your measured length in #6 with that of your group mates. Does it match? If not, work together to determine the correct total measured length. Update your answer in #6 if necessary.

8. Compare your measured length in #6 with your calculated length in #4. Does it match? Why or why not?

9. Calculate how much longer the longest block is than the shortest block. *Do not use a calculator* and show your work in the space below.

10. If you finish before the others in your group, work with them until everyone in the group has finished problem #9.

11. Put the longest and shortest blocks side by side (or on top of each other) and individually measure the difference in length. Write the measurement in the space below.

| *Length difference between shortest and longest block* | |
|---|---|
| | |

12. Compare your measured length in #11 with that of your group mates. Does it match? If not, work together to determine the correct total measured length. Update your answer in #11 if necessary.

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13. Compare your measured length in #11 with your calculated length in #9. Does it match? Why or why not?

**Problem Situation #2: Planning out a bathroom**
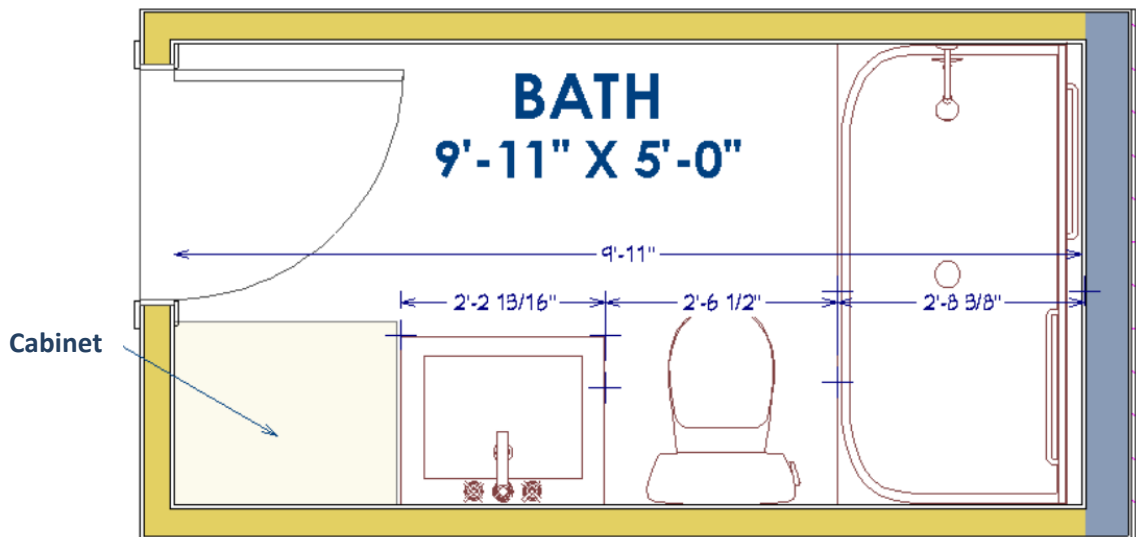


You are working on renovating your bathroom and you are planning to install a new cabinet as shown in the image above.

14. _Without using a calculator_, calculate the maximum width of the cabinet you can install. Be sure to show your work and include units in your answer.

15. Now, _take out your calculator_ and confirm your answer for #14 is correct. Write down exactly what you typed into your calculator in the space below (including units).

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**MAKING CONNECTIONS**

Record the important mathematical ideas from the discussion.

## Practice:

Pg 20    #1

Pg 21    #8

Pg 22    #19

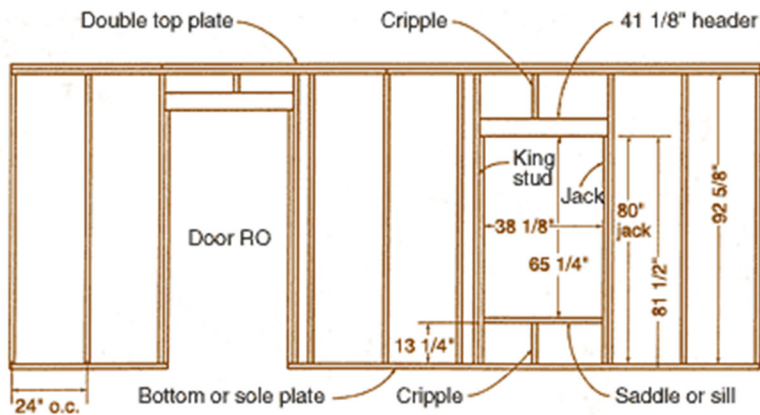Pg 22    # 25

Pg 23    #27 and 28

Pg 25    # 3

Pg 26   # 7

Pg 26   # 8

Pg 28   #17

The drawing below shows a wall frame with a 38 1/8" x 65 ¼" window opening.  How much smaller do you need to make the opening if the window you are installing is 36 3/16" x 62 3/8", and you are required to leave a ½" gap between the window and the opening on each side?

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The following questions refer to the kitchen elevation shown below.

What is the width of the right upper cabinet?

If the window is centered between the upper cabinets as shown, how much wall space is there between the window and each wall cabinet?

What is the distance from the top of the wall cabinet to the ceiling?

What is the distance between the upper cabinets and the top of the lower cabinets?