

**Introduction**

This packet contains a selection of bar model tasks for you to use to build your own comfort and skill with using bar models as a problem-solving tool. The tasks in this packet may also be shared with students, but as the teacher, you should choose which tasks to give and how many to give at a time. This collection was not designed to be handed to students as is. Choose tasks that will be appropriate for your students. It is not necessary to follow the order the tasks are in or to use all the tasks.

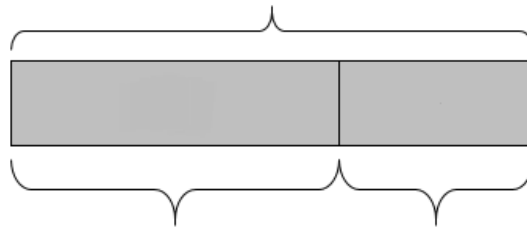
When teaching students to use bar models, it is helpful to give students the models at the beginning and later transition to having them draw them themselves. In this packet, you will find some tasks with the model already provided and others where you can draw your own model.

**Problems vs. Scenarios**

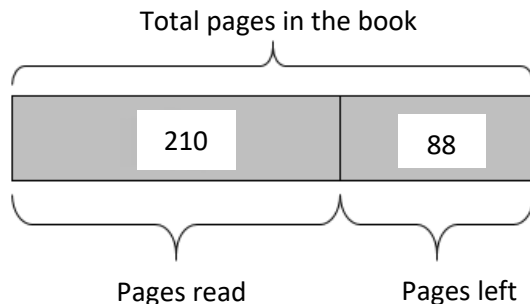
Using bar models to visualize and illustrate a task is about seeing and understanding the relationships between quantities. Leaving out the question opens up the exercise for students to more fully explore all relationships present. Therefore, the tasks in this packet are presented as scenarios instead of problems. In each scenario you will find a model (or a space to draw one) and then a space for you to list the questions you can ask and answer using the model. Students who get in the habit of making sense of the whole situation will be better equipped to make sure they answer the question that is asked when there is a question. Here is an example of what this looks like:

**Scenario:** You have read 210 pages in a book and have 88 pages left to read.

Model provided:



Model filled in:



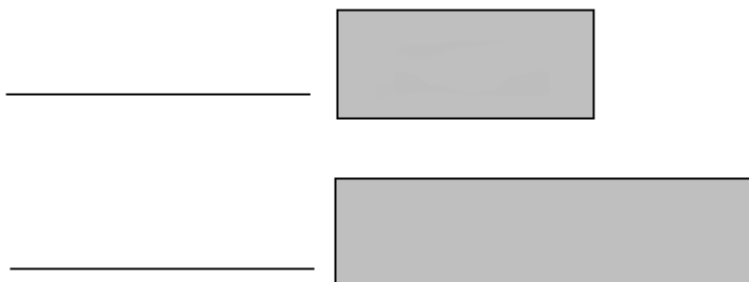
My questions and answers:

*How many pages are in the book?* 298 pages

*Have I read more or less than half of the book?* More than half

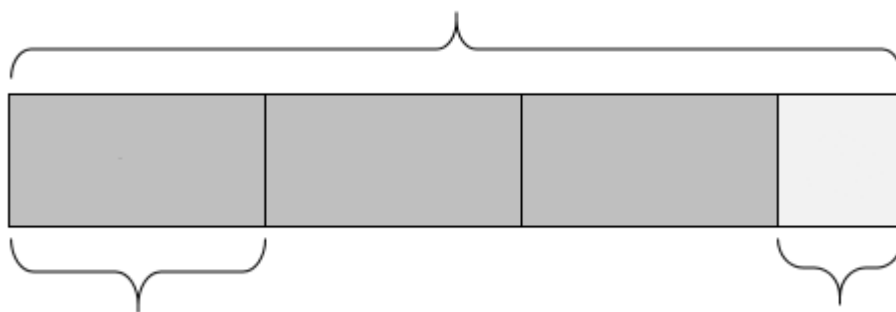
For scenarios 1–3 below, fill in all the information you can on the bar model diagram. Then use it to ask and answer as many questions as you can. (Also feel free to draw the models differently if you prefer.)

1. It takes you 45 minutes to get to work in the morning and 20 minutes longer than that to get home.



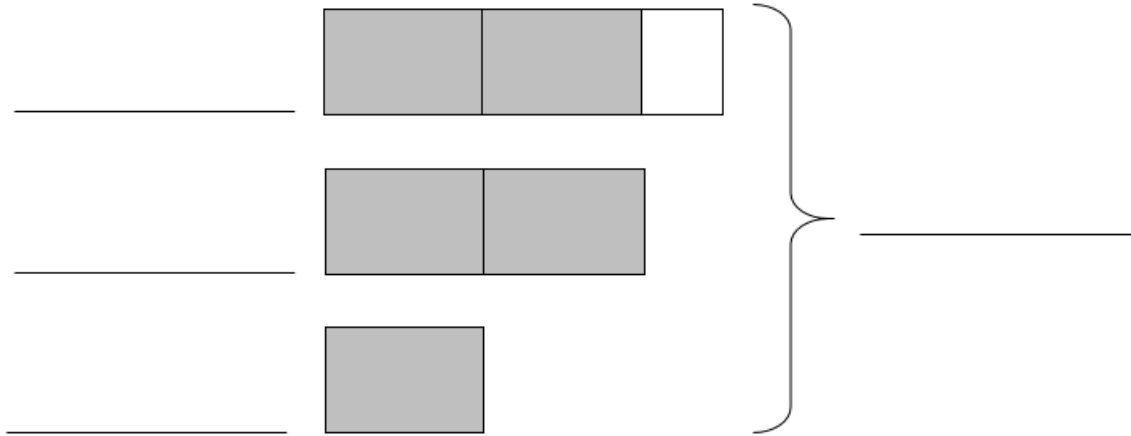
My questions and answers:

2. The cost of three large pizzas and a liter of soda is \$29. The soda costs \$2.



My questions and answers:

3. Zaman, Consuela, and Chenda collected canned goods for a food drive. Together they collected 500 cans! Zaman collected 20 more cans than Consuela. Consuela collected twice as many cans as Chenda.



My questions and answers:

For scenarios 4–9, draw a bar model yourself and then use it to ask and answer questions.

4. A recent local election between two candidates was decided by only 15 votes! The winning candidate got 228 votes.

My model:

My questions and answers:

5. 29 people went on a trip in 2 vans and 3 cars. Each car held 5 people and every vehicle was full.

My model:

My questions and answers:

6. On Tuesday, Liane read the first 20 pages of a book at the library. Then she took the book home and read it at a rate of 6 pages every 10 minutes. Liane read at this rate for 45 minutes.

*[This scenario is from the 2014 grade 10 MCAS. The question has been removed to make it a scenario.]*

My model:

My questions and answers:

7. Shirley is saving money to buy a computer.

- The computer she will buy costs \$1,200.
- She has already saved \$300.

Shirley will save another \$30 each week until she has saved enough money to buy the computer.

*[This scenario is from the 2017 grade 10 MCAS. The question has been removed to make it a scenario.]*

My model:

My questions and answers:

8. 650 pounds of food were collected in a drive. Three times as many pounds were collected at the supermarket as at the library. The community center collected 50 pounds more than the library.

My model:

My questions and answers:

9. I went to the fair with \$35. I spent \$15 on admission and went on 4 rides that all cost the same amount. I had \$8 left after that.

My model:

My questions and answers:

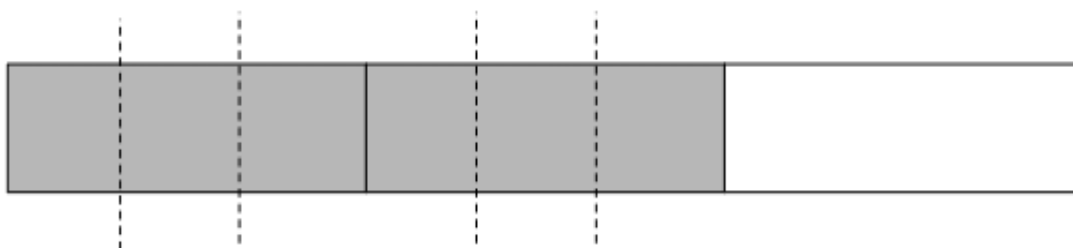
For scenarios 10–13, fill in all the information you can on the bar model diagram. Then use it to ask and answer as many questions as you can. (Also feel free to draw the model differently if you prefer.)

10. Suong spends  $\frac{2}{5}$  of her monthly income on rent. Her rent is \$800.



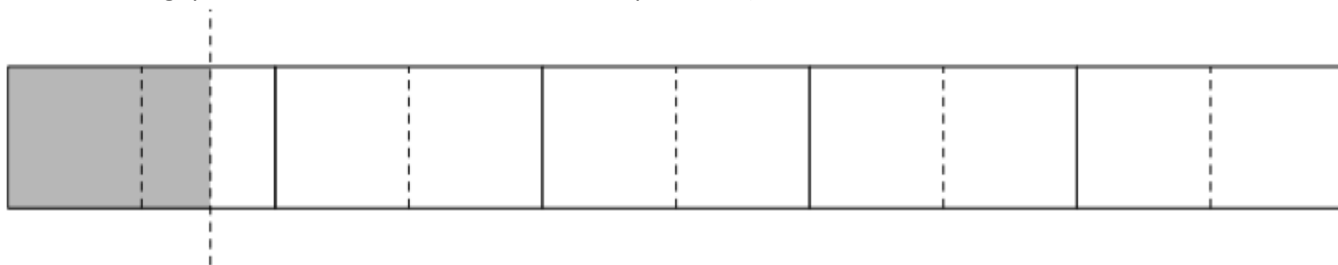
My questions and answers:

11. There are 18 students in a class. Yesterday,  $\frac{2}{3}$  of the students were absent.  $\frac{5}{6}$  of those that were absent went to a rally.



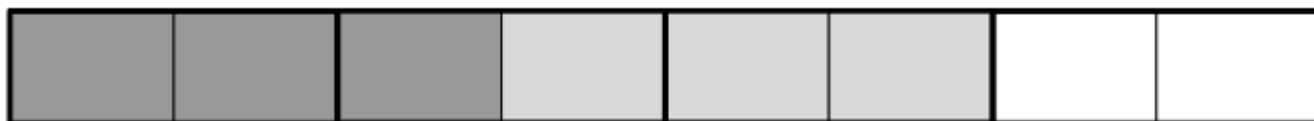
My questions and answers:

12. Juan is doing a series of five 2-day trainings. He has completed the first day and a half of training. (Try asking and answering questions that use both fractions and percents!)



My questions and answers:

13. When Danielle left for work this morning, there was  $\frac{3}{4}$  of a leftover lasagna in the fridge. When she got home, there was only  $\frac{3}{8}$  of that same lasagna left.



My questions and answers:



For scenarios 14–20, draw a bar model model yourself and then use it to ask and answer questions.

14. Juanita always tries to put 25% of her weekly take home pay in savings. She then allows herself to spend 10% of what is left on entertainment. She brings home about \$300 per week.

My model:

My questions and answers:

15. Caleb painted for 2.5 hours in the morning and then declared that he was 20% done with the job.

My model:

My questions and answers:

16.  $\frac{4}{5}$  of the students in an ABE program signed up for a career workshop. When the day came, only half of those who signed up actually showed up. 6 students showed up.

My model:

My questions and answers:

17. A group of ABE students conducted a survey about people's favorite meal of the day and found that  $\frac{1}{4}$  of the people surveyed preferred breakfast, 40% of them preferred lunch, and the remaining 14 people preferred dinner.

My model:

My questions and answers:

18. A day care center advertises that they have a child to teacher ratio of 5 : 2. They enroll 30 children.

My model:

My questions and answers:

19. Wyatt owns a food truck. He offers a selection of 8 types of sandwiches and 4 types of tacos.

- He will increase his selection of sandwiches by 1 per month.
- He will increase his selection of tacos by 2 per month.

In how many months will Wyatt offer an equal number of sandwich and taco selections?

*[This scenario is from the 2016 grade 10 MCAS. The question has been left in, but that doesn't mean you can't ask and answer even more!]*

My model:

My questions and answers:

- 20.** A parking lot is divided into three sections. Sections A and B together have 300 spots. Section A has 40 more spots than Section B. Section C has twice as many spots as Section B.

My model:

My questions and answers:

- 21.** The sum of three consecutive integers is 54.

My model:

My questions and answers:

- 22.** A landscaping company placed two orders with a nursery. The first order was for 5 bushes and 1 tree and totaled \$162. The second order was for 6 bushes and 2 trees and totaled \$232. The bills do not list the per-item price.

My model:

My questions and answers:

- 23.** To make the perfect shade of purple paint, Rani mixes red and blue paint in a ratio of 3 : 5. To have enough to paint her living room, she ends up buying 6 more pints of blue paint than red paint.

My model:

My questions and answers: