Chapter 6 Review

Ongoing Assessment ▽

• Upon completing the Chapter 6 Review, students can also answer questions such as the following:

– What questions did you find easy? Difficult? Why?

– How often did you have to check the related worked example in the textbook to help you with the questions? For which questions?

Using the Chapter Review

• This Chapter Review is organized by sections and is designed to review different skills and concepts in this chapter.
• Consider having the students work independently to complete the Review during the first part of the period, then work in pairs to compare solutions and tackle questions that were missed.
• Alternatively, the Review could be assigned for reinforcing skills and concepts in preparation for the Practice Test. Provide an opportunity for the students to discuss any questions containing strategies or features that they find difficult.
• After they complete the Chapter Review, encourage students to make a list of questions that caused them difficulty, and include the related sections and teaching examples. They can use this to focus their studying for a final test on the chapter's content.
• Use **BLM 6–13 Chapter 6 Review** for extra review.

Chapter 6 Problem Wrap-Up

Summative Assessment ⊘

• Use **BLM 6–14 Chapter 6 Problem Wrap-Up Rubric** to assess student achievement.

Using the Chapter Problem

• If you have been revisiting the chapter problem as each section is completed, students should be ready to work on the Chapter Problem Wrap-Up. They will be asked to apply knowledge and skills that they learned and practised during the chapter to extend the problem of choosing a cut-off time for free pizzas. Before working on the Chapter Problem, you may want to revisit each of the section problems briefly to draw together an overview of the process that the restaurant manager employed in solving the problem.

• If you have not had students complete the chapter problem revisits, and wish to use the wrap-up as a summative assessment, the suggested timing is 70-80 min. Take some time to discuss the problem as presented in the chapter opener. This might be done before the Chapter Review, so that students will have time to reflect and ask questions before finding themselves in an assessment situation. They can use the Chapter Review to revisit knowledge and hone skills that they will need to successfully complete the summative assessment.

Level 3 Notes

• Student examines the original table of data and determines the first and second differences. Student concludes that the data does not model a linear or quadratic relation.

• Student examines the ratios between the number of pizzas delivered per consecutive time intervals and determines that since the ratio is approximately constant, the data models an exponential relation.

• Using the original function, the student is able to substitute the ratio for the base to obtain a new function. Student identifies the variables.

• Student is able to use the new function to generate a new table of data.

• Student makes all calculations correctly.

• Student correctly interprets the new data and makes appropriate recommendations to the manager, based on the data.

Level 3 Sample Response

a) By inspection of the data, it can be seen that neither the first nor second differences are constant. Therefore, the relation is neither linear nor quadratic. Now examine the ratios of the numbers of pizzas:

$\frac{116}{247} \doteq 0.47, \frac{55}{116} \doteq 0.47, \frac{26}{55} \doteq 0.47$

Rounded to two decimal places, the ratios are equal.

b) Modify the original function. Let N represent the number of pizzas delivered during a time interval. Let t represent the number of minutes required from order to delivery. Round t-values up to the nearest 5-min interval and restrict t to $t \geq 30$. The new function is $N(t) = 247(0.47)^{\frac{t-30}{5}}$.

c)

Delivery Time Interval (min)	Pizzas Delivered Within Time Interval	Total Number of Pizzas Delivered
0–30	247	247
30–35	116	363
35–40	55	418
40–45	26	444
45–50	12	456
50–55	6	462
55–60	3	465
60–65	1	466
longer	1	467

d) Amanda can afford to give away for free, 2% of the total number of pizzas delivered which would be 9 pizzas. She is well under the limit of 55 min but she could consider changing the limit to 50 min. If she was comfortable with the time limit she has already set, the data suggests she does not need to change it.

e) Answers may vary. She is currently selling 467 pizzas per week, which is still within her limit of 500. Based on the present numbers, she does not need to expand the fleet of cars or hire more drivers. However, her sales have been steadily increasing. If they continue to grow, a larger percent of her sales may be delivered late resulting in significant losses due to her guarantee. She should try to increase delivery capacity in the short term (and for the future) if sales continue to increase.

What Distinguishes Level 2

- Student explains without showing a table of first differences and second differences that the data does not model a linear or quadratic relation.
- Student needs assistance to determine the new function. The student must be told to find the ratio between consecutive values of pizzas delivered per time interval.
- Student is then able to write the new function but fails to indicate what the variables represent.
- Student creates a new table of data using the new function.
- Student makes several errors in calculations.
- Student is unable to provide recommendations to the manager based on the new data or if recommendations are made, does not provide support.

What Distinguishes Level 4

- Student creates a first and second differences table for the original data. From the table, the student determines that the data does not model a linear or quadratic relation.
- Student examines the ratios between the number of pizzas delivered per consecutive time intervals and determines that since the ratio is approximately constant, the data models an exponential relation.
- Using the original function, the student is able to substitute the ratio for the base to obtain a new function. Student identifies the variables.
- Student is able to use the new function to generate a new table of data.
- Student makes all calculations correctly.
- Student correctly interprets the new data and makes appropriate recommendations to the manager, based on the data.
- Student graphs the new function to support the recommendations presented. The graph is correctly labelled and the critical points identified and explained.