Chapters 1-4 Review

***MathLinks 8*, pages 156–158**

Suggested Timing
60–75 minutes

Materials
- grid paper
- ruler
- coloured pencils
- compass
- protractor
- calculator
- computer with spreadsheet software
- hundred grids

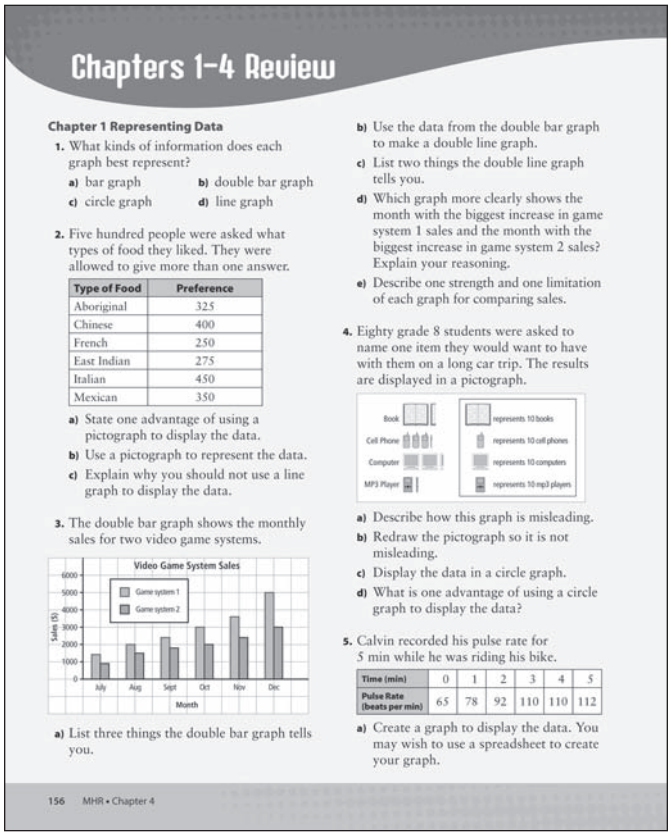
Blackline Masters
Master 8 Centimetre Grid Paper
Master 10 Hundred Grids
Master 12 Percent Circles (optional)

Planning Notes

Have students work individually to complete the review, then in pairs to compare solutions. Alternatively, assign the Chapters 1–4 Review to reinforce the concepts, skills, and processes learned so far. If students encounter difficulties, have them discuss strategies with a partner. Encourage them to refer to their notes in each chapter Foldable and then to the specific section in the student resource and/or their notebook. Once they have found a suitable strategy, students should include it in the appropriate section of their chapter Foldable.

Make copies of **Master 8 Centimetre Grid Paper**, **Master 10 Hundred Grids**, and **Master 12 Percent Circles** available for students to use during the review.

These are the minimum questions which will meet the curriculum requirements: #1, #2, #4–#6, #8, #10, #12–#20, #22, #24, and #25.



Chapters 1–4 Review

Chapter 1 Representing Data

1. What kinds of information does each graph best represent?
- **a)** bar graph
- **b)** double bar graph
- **c)** circle graph
- **d)** line graph

2. Five hundred people were asked what types of food they liked. They were allowed to give more than one answer.

Type of Food	Preference
Aboriginal	325
Chinese	400
French	250
East Indian	275
Italian	450
Mexican	350

- **a)** State one advantage of using a pictograph to display the data.
- **b)** Use a pictograph to represent the data.
- **c)** Explain why you should not use a line graph to display the data.

3. The double bar graph shows the monthly sales for two video game systems.

- **a)** List three things the double bar graph tells you.
- **b)** Use the data from the double bar graph to make a double line graph.
- **c)** List two things the double line graph tells you.
- **d)** Which graph more clearly shows the month with the biggest increase in game system 1 sales and the month with the biggest increase in game system 2 sales? Explain your reasoning.
- **e)** Describe one strength and one limitation of each graph for comparing sales.

4. Eighty grade 8 students were asked to name one item they would want to have with them on a long car trip. The results are displayed in a pictograph.

- **a)** Describe how this graph is misleading.
- **b)** Redraw the pictograph so it is not misleading.
- **c)** Display the data in a circle graph.
- **d)** What is one advantage of using a circle graph to display the data?

5. Calvin recorded his pulse rate for 5 min while he was riding his bike.

Time (min)	0	1	2	3	4	5
Pulse Rate (beats per min)	65	78	92	110	110	112

- **a)** Create a graph to display the data. You may wish to use a spreadsheet to create your graph.

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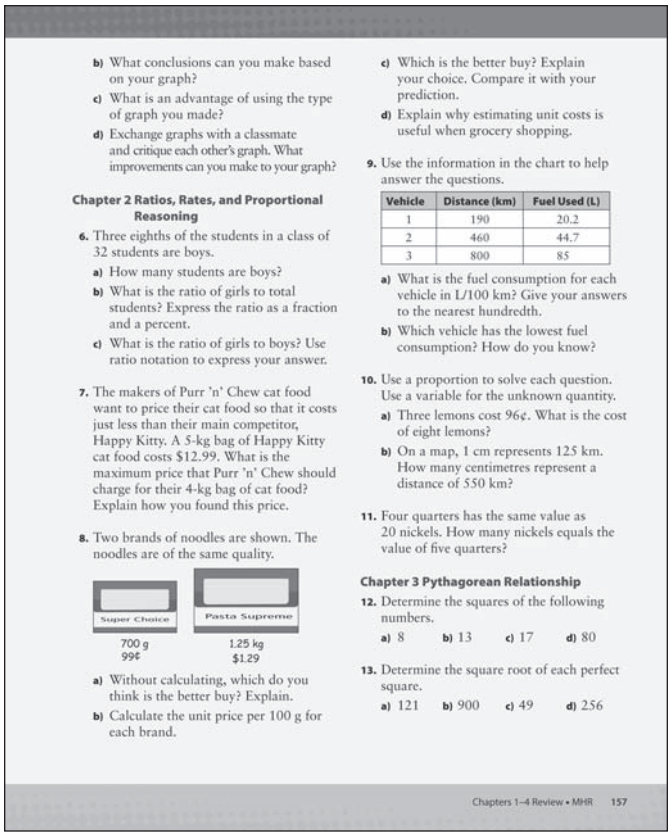

- **b)** What conclusions can you make based on your graph?
- **c)** What is an advantage of using the type of graph you made?
- **d)** Exchange graphs with a classmate and critique each other's graph. What improvements can you make to your graph?

Chapter 2 Ratios, Rates, and Proportional Reasoning

6. Three eighths of the students in a class of 32 students are boys.
- **a)** How many students are boys?
- **b)** What is the ratio of girls to total students? Express the ratio as a fraction and a percent.
- **c)** What is the ratio of girls to boys? Use ratio notation to express your answer.

7. The makers of Purr 'n' Chew cat food want to price their cat food so that it costs just less than their main competitor, Happy Kitty. A 5-kg bag of Happy Kitty cat food costs $12.99. What is the maximum price that Purr 'n' Chew should charge for their 4-kg bag of cat food? Explain how you found this price.

8. Two brands of noodles are shown. The noodles are of the same quality.

- **a)** Without calculating, which do you think is the better buy? Explain.
- **b)** Calculate the unit price per 100 g for each brand.
- **c)** Which is the better buy? Explain your choice. Compare it with your prediction.
- **d)** Explain why estimating unit costs is useful when grocery shopping.

9. Use the information in the chart to help answer the questions.

Vehicle	Distance (km)	Fuel Used (L)
1	190	20.2
2	460	44.7
3	800	85

- **a)** What is the fuel consumption for each vehicle in L/100 km? Give your answers to the nearest hundredth.
- **b)** Which vehicle has the lowest fuel consumption? How do you know?

10. Use a proportion to solve each question. Use a variable for the unknown quantity.
- **a)** Three lemons cost 96¢. What is the cost of eight lemons?
- **b)** On a map, 1 cm represents 125 km. How many centimetres represent a distance of 550 km?

11. Four quarters has the same value as 20 nickels. How many nickels equals the value of five quarters?

Chapter 3 Pythagorean Relationship

12. Determine the squares of the following numbers.
- **a)** 8
- **b)** 13
- **c)** 17
- **d)** 80

13. Determine the square root of each perfect square.
- **a)** 121
- **b)** 900
- **c)** 49
- **d)** 256

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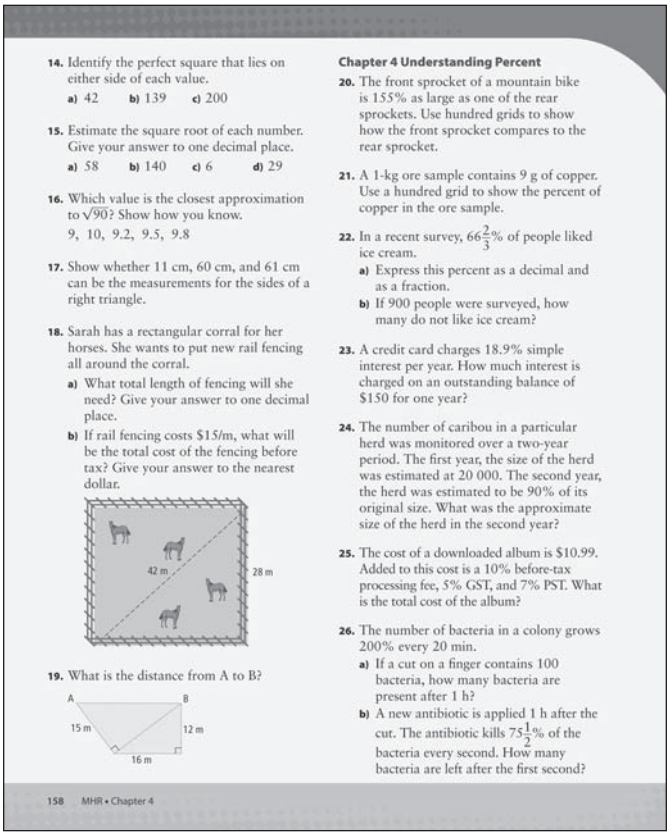
Study Guide

Question(s)	Section(s)	Refer to	The student can …
1	1.1	Key Ideas	✓ compare information from different graphs
2, 3	1.1	Example 1 Example 2	✓ compare information from different graphs ✓ identify the advantages and disadvantages of different types of graphs
4	1.2	Example 2	✓ explain how the visual representation of a graph could misrepresent data ✓ identify conclusions that do not agree with a given data set or graph and explain the misinterpretation
5	1.3	Example	✓ explain how a graph is used to represent the data from a given situation
6	2.1	Example 1	✓ represent two-term ratios ✓ represent a ratio as a fraction ✓ represent a ratio as a percent ✓ solve problems using ratios
7, 8	2.2	Example 1 Example 2	✓ express rates using words and symbols ✓ solve problems using rates
9, 10, 11	2.3	Example 1 Example 2	✓ solve problems using proportional reasoning ✓ use more than one method to solve proportional reasoning problems
12	3.1	Example 2	✓ determine the square of a whole number
13	3.1	Example 3	✓ determine the square root of a perfect square
14, 15	3.3	Example 1	✓ estimate the square root of a number that is not a perfect square
19	3.4	Example 1	✓ use the Pythagorean relationship to determine the missing side length of a right triangle
17	3.2	Example 2	✓ describe how the Pythagorean relationship applies to right triangles
16	3.3	Example 2	✓ identify a number with a square root that is between two given numbers
18	3.5	Example 1	✓ apply the Pythagorean relationship to solve problems ✓ use the Pythagorean relationship to determine distances between objects
20, 21	4.1	Example 2	✓ show percents that are between 0% and 100% ✓ show percents that are greater than 100% ✓ show percents involving fractions
22	4.2 4.3	Example 3 Example 2	✓ convert between fractions, decimals, and percents ✓ solve problems involving fractional percents
23	4.3	Example 2	✓ solve problems involving fractional percents
24	4.4	Example 2	✓ solve problems involving percents of percents
25, 26	4.4	Example 1	✓ solve problems involving combined percents



14. Identify the perfect square that lies on either side of each value.
a) 42 b) 139 c) 200

15. Estimate the square root of each number. Give your answer to one decimal place.
a) 58 b) 140 c) 6 d) 29

16. Which value is the closest approximation to $\sqrt{90}$? Show how you know.
9, 10, 9.2, 9.5, 9.8

17. Show whether 11 cm, 60 cm, and 61 cm can be the measurements for the sides of a right triangle.

18. Sarah has a rectangular corral for her horses. She wants to put new rail fencing all around the corral.
a) What total length of fencing will she need? Give your answer to one decimal place.
b) If rail fencing costs $15/m, what will be the total cost of the fencing before tax? Give your answer to the nearest dollar.

42 m
28 m

19. What is the distance from A to B?

A
B
15 m
12 m
16 m

Chapter 4 Understanding Percent

20. The front sprocket of a mountain bike is 155% as large as one of the rear sprockets. Use hundred grids to show how the front sprocket compares to the rear sprocket.

21. A 1-kg ore sample contains 9 g of copper. Use a hundred grid to show the percent of copper in the ore sample.

22. In a recent survey, $66\frac{2}{3}$% of people liked ice cream.
a) Express this percent as a decimal and as a fraction.
b) If 900 people were surveyed, how many do not like ice cream?

23. A credit card charges 18.9% simple interest per year. How much interest is charged on an outstanding balance of $150 for one year?

24. The number of caribou in a particular herd was monitored over a two-year period. The first year, the size of the herd was estimated at 20 000. The second year, the herd was estimated to be 90% of its original size. What was the approximate size of the herd in the second year?

25. The cost of a downloaded album is $10.99. Added to this cost is a 10% before-tax processing fee, 5% GST, and 7% PST. What is the total cost of the album?

26. The number of bacteria in a colony grows 200% every 20 min.
a) If a cut on a finger contains 100 bacteria, how many bacteria are present after 1 h?
b) A new antibiotic is applied 1 h after the cut. The antibiotic kills $75\frac{1}{2}$% of the bacteria every second. How many bacteria are left after the first second?

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Meeting Student Needs

- Allow students to complete the review using any combination of oral or written answers, including diagrams.
- Students with motor difficulties may need to use spreadsheet software to create graphs. Alternatively, allow students to use **Master 12 Percent Circles** to create circle graphs.

Gifted and Enrichment

- Some students may already be familiar with the skills handled in this review. To provide enrichment and extra challenge, go to www.mathlinks8.ca and follow the links.

Assessment	Supporting Learning
Assessment *for* Learning	
Chapters 1–4 Review The cumulative review provides an opportunity for students to assess themselves by completing selected questions pertaining to each chapter and checking their answers against the answers in the back of the student resource.	• Have students review their notes from each chapter Foldable, the tests from each chapter and any challenges related to those chapters, identify items that they had problems with, and do the questions related to those items. Have students do at least one question that tests skills from each chapter. • Have students revisit any chapter section they are having difficulty with.
Assessment *as* Learning	
Math Learning Log Once students have completed the Chapters 1–4 Review, have them reflect on their progress and complete a journal entry for each statement: • I continue to have difficulty with ... • Here's how I plan to address what I am having difficulty with ...	• Encourage students to clear up any problems that they have had during the past four chapters. Work with them to provide the necessary coaching.