

Important Concepts . . .

Preview Review



Mathematics

Grade 5

**W2 - Lesson 2: Collecting Data and
Analyzing Patterns**

Important Concepts of Grade 5 Mathematics

| | |
|---------------------|--|
| W1 - Lesson 1 | Number Sense Numbers 0 to 100 000 |
| W1 - Lesson 2 | Exploring Proper Fractions |
| W1 - Lesson 3 | Exploring Decimals |
| W1 - Lesson 4 | Numbers With Up to 2 Decimal Places |
| W1 - Lesson 5 | Multiplication |
| W1 - Quiz | |
| W2 - Lesson 1 | Division |
| W2 - Lesson 2 | Collecting Data and Analyzing Patterns |
| W2 - Lesson 3 | Estimating and Taking Measurements |
| W2 - Lesson 4 | Perimeter and Area Measurements |
| W2 - Lesson 5 | Metric Measurements |
| W2 - Quiz | |
| W3 - Lesson 1 | Volume, Capacity, Mass, and Time |
| W3 - Lesson 2 | 2-D Shapes and 3-D Objects |
| W3 - Lesson 3 | Transformations |
| W3 - Lesson 4 | Statistics and Probability |
| W3 - Lesson 5 | Chance and Probability |
| W3 - Quiz | |

Materials Required

Protractor
Ruler
Calculator

A textbook is not
needed.

This is a stand-alone
course.

Mathematics Grade 5

Version 5

Preview/Review W2 - Lesson 2

Publisher: Alberta Distance Learning Centre

Author: Leslie Friesen

In-House Teacher: Sue Rees

Project Coordinator: Dennis McCarthy

Preview/Review Publishing Coordinating Team: Nina Johnson,

Laura Renkema, and Donna Silgard



Alberta Distance Learning Centre has an Internet site that you may find useful. The address is as follows: <http://www.adlc.ca>

The use of the Internet is optional. Exploring the electronic information superhighway can be educational and entertaining. However, be aware that these computer networks are not censored. Students may unintentionally or purposely find articles on the Internet that may be offensive or inappropriate. As well, the sources of information are not always cited and the content may not be accurate. Therefore, students may wish to confirm facts with a second source.

ALL RIGHTS RESERVED

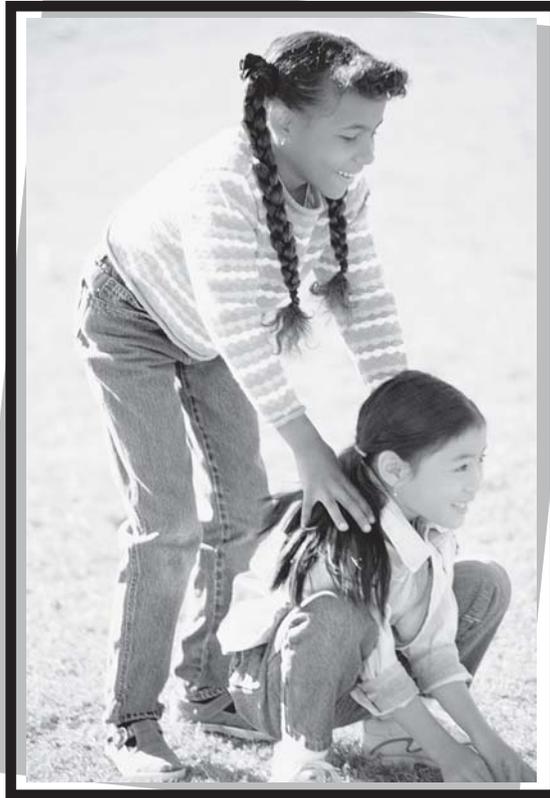
Copyright © 2007, by Alberta Distance Learning Centre, 4601-63 Avenue, Barrhead, Alberta, Canada, T7N 1P4. Additional copies may be obtained from Alberta Distance Learning Centre.

No part of this courseware may be reproduced or transmitted in any form, electronic or mechanical, including photocopying (unless otherwise indicated), recording, or any information storage and retrieval system, without the written permission of Alberta Distance Learning Centre.

Every effort has been made both to provide proper acknowledgement of the original source and to comply with copyright law. If cases are identified where this effort has been unsuccessful, please notify Alberta Distance Learning Centre so that appropriate corrective action can be taken.

IT IS STRICTLY PROHIBITED TO COPY ANY PART OF THESE MATERIALS UNDER THE TERMS OF A LICENCE FROM A COLLECTIVE OR A LICENSING BODY.

Preview/Review Concepts for Grade Five Mathematics



*W2 - Lesson 2:
Collecting Data and
Analyzing Patterns*

OBJECTIVES

By the end of this lesson, you should

- find patterns in charts or graphs
- construct charts and graphs to display data

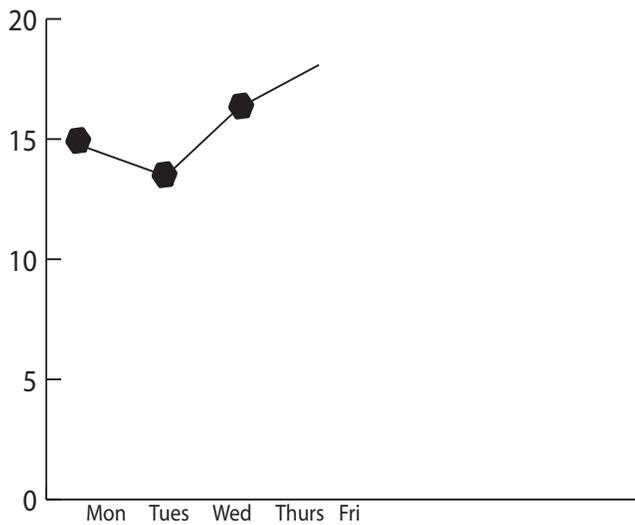
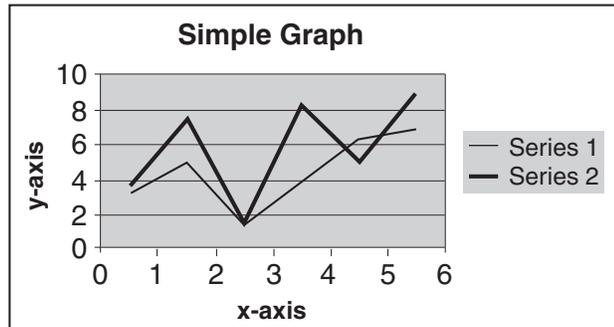
Glossary of Terms

Chart/Graph: These are *pictures* of information. Charts and graphs use data to display information. The information can be displayed in a way that gives more meaning to the information. It makes the information easier to read; or it highlights data. The type of chart or graph used is dependent on the purpose for the chart or graph.

This lesson uses only the following charts and graphs.

SIMPLE CHARTS

| | |
|-------------|---|
| Information | 2 |
| Information | 2 |
| Information | 2 |
| Information | 3 |
| Information | 4 |
| Information | 5 |
| Information | 6 |

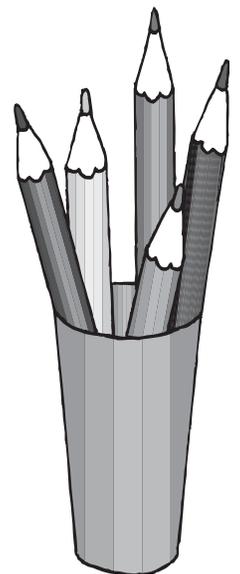




Data:

Data is the information used for analysis in a graph or chart.

| SIMPLE CHARTS | |
|---------------|---|
| Information | 2 |
| Information | 2 |
| Information | 2 |
| Information | 3 |
| Information | 4 |
| Information | 5 |
| Information | 6 |



W2 - Lesson 2: Collecting Data and Analyzing Patterns

Concepts:

- Finding Patterns
- Predicting Future Data from Charts and Graphs
- Constructing Charts and Graphs

Finding Patterns

When information is organized into a **chart** or **graph**, the information is easier to read and to interpret. The following chart was posted in a store to advertise a savings plan.

| When you spend ... | you save |
|--------------------|----------|
| \$10.00 | \$1.00 |
| \$20.00 | \$2.00 |
| \$30.00 | \$3.00 |
| \$40.00 | \$4.00 |
| \$50.00 | \$5.00 |
| \$60.00 | \$6.00 |
| \$70.00 | \$7.00 |

- Customers can see easily how much they have saved.
- Charts help us to recognize patterns in the information. What patterns can you identify? In this situation, you save \$1 for every \$10 you spend.



What is the pattern in each question below?

| Day | High Temperature |
|-----------|------------------|
| Monday | 21°C |
| Tuesday | 20°C |
| Wednesday | 21°C |
| Thursday | 20°C |
| Friday | 21°C |

Pattern Seen In Numbers

SHAPES AND LINES

| Number of Sides | Number of Diagonals |
|-----------------|---------------------|
| 3 | 0 |
| 4 | 2 |
| 5 | 5 |
| 6 | 9 |
| 7 | 14 |

Pattern Seen In Numbers

Predicting Future Data from Charts and Graphs

Predicting the next number on a chart or graph involves two steps.

Step 1: Identify the pattern.

Step 2: Apply the pattern to the next number on the chart or graph.

| Input/Output | |
|--------------|----|
| 2 | 9 |
| 4 | 11 |
| 6 | 13 |
| 8 | 15 |
| ? | ? |

Step 1: 2, 4, 6, 8

All the input numbers increase by 2.

9, 11, 13, 15

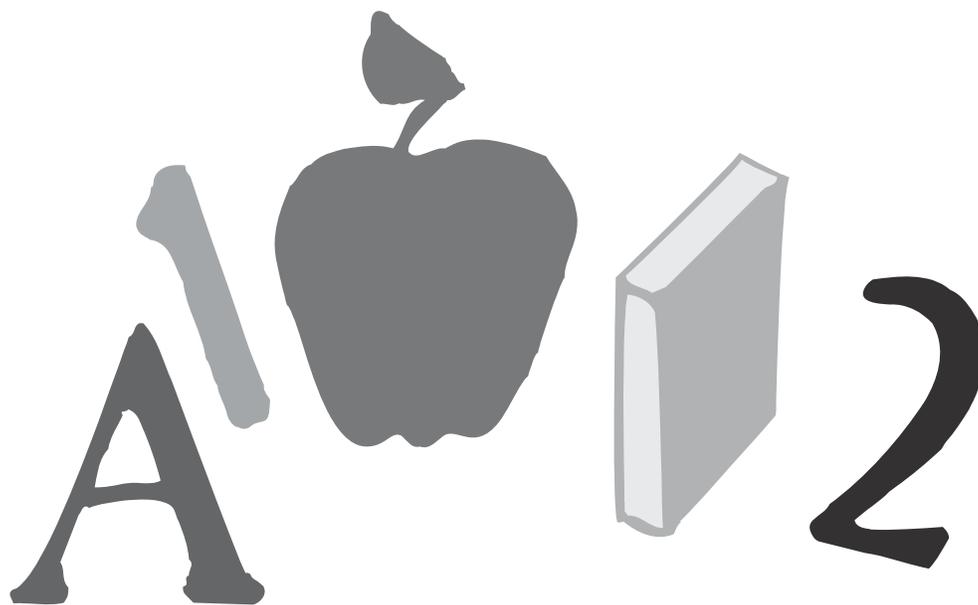
All the output numbers increase by 2.

Therefore, the pattern is *as the input increases by two, the output also increases by two.*

Step 2: Add $8 + 2 = 10$ (for the next input number)

Add $15 + 2 = 17$ (for the next output number)

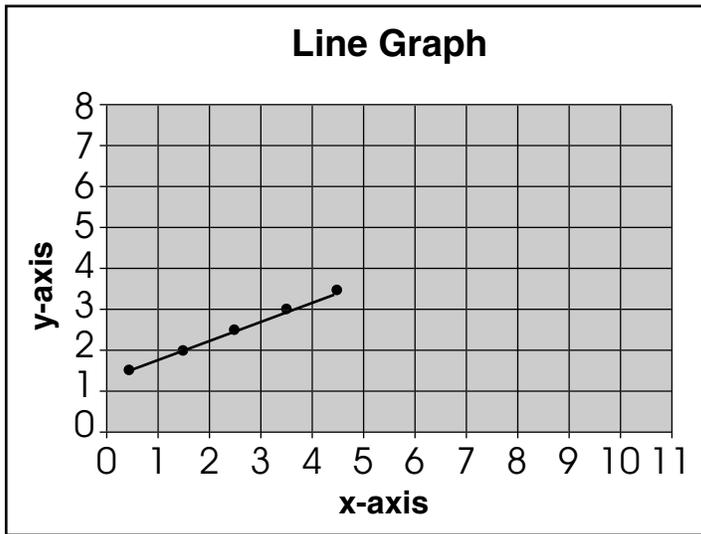
Therefore, the answer is input 10 and output 17.



Complete each of the graphs and charts by following the patterns.

- Draw the dots and lines needed in the graphs
- Provide the missing numbers in the charts.

a.



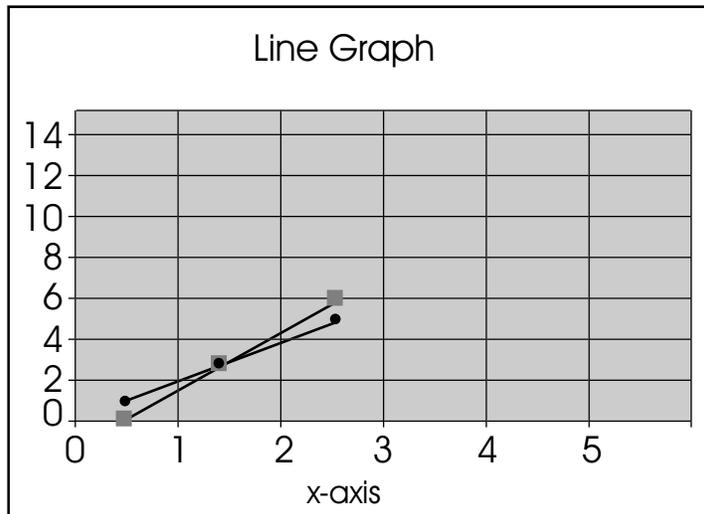
b.

| Time | Number of People |
|------------|------------------|
| 9:00 A.M. | 10 |
| 11:00 A.M. | 20 |
| 12:00 A.M. | 40 |
| 2:00 A.M. | 80 |
| 4:00 A.M. | |

c.

| | | | | | | |
|------|---------|---------|---------|---------|--|--|
| John | \$10.00 | \$12.00 | \$15.00 | \$19.00 | | |
| Mary | \$16.00 | \$17.00 | \$18.00 | \$19.00 | | |

d.



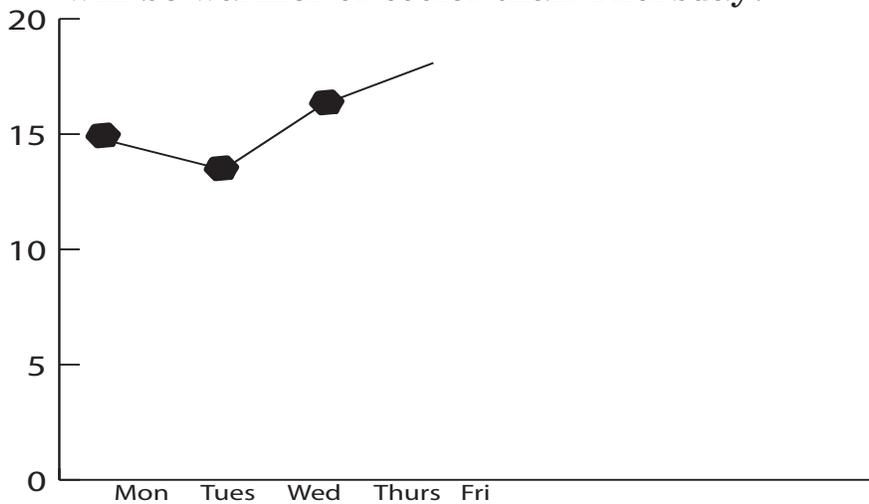
Constructing Charts and Graphs

Step 1: Look at your data. What do you want your data to show?

Step 2: Choose a chart or graph. What chart/graph will display your data well?

Step 3: Complete the graph by using your data.

1. Predict the weather trend. Monday was 15°C, Tuesday was 13°C, Wednesday was 16°C, and Thursday was 17°C. Do you think Friday will be warmer or cooler than Thursday?



2. Find the area when given the perimeter. When the perimeter was 4 cm, the area was 1 cm²; perimeter 8 cm, area 4 cm²; perimeter 12 cm, area 9 cm²; perimeter 16, area 16 cm². What will the area be if the perimeter is 20 cm?

| Perimeter | Area |
|-----------|--------------------|
| 4 cm | 1 cm ² |
| 8 cm | 4 cm ² |
| 12 cm | 9 cm ² |
| 16 cm | 16 cm ² |
| 20 cm | |

Hint:

Perimeter is the distance around the shape.
Area is the amount of surface a figure covers.

3. Predict the growth of a tree. If the tree grows 5 cm its first year, 10 cm its second year, 20 cm its third year. How many centimetres will the tree grow its fifth year?

| Year | Tree Growth |
|------|-------------|
| | |
| | |
| | |
| | |
| | |

4. A pendulum makes 6 swings every 10 seconds. Predict the number of swings a pendulum has made in 30 seconds, 40 seconds, and 45 seconds.

| Seconds | Swings |
|---------|--------|
| | |
| | |
| | |

5. Suppose you already have \$80.00, and you are able to save another \$5.00 a week. Predict how long you will take to save \$100.00.

| Week | Total Money |
|------|-------------|
| | |

6. Amanda is entered in a walkathon. Her sponsor will contribute \$10.00 plus \$2.00 for every kilometre she walks. How much money will she make if she walks 8 kilometres.

| Km | Total Contributions |
|----|---------------------|
| | |

