

SHAPE AND SPACE

GRADE 3

**Western and Northern Canadian Protocol
(WNCP) Edition**

hands-on
mathematics

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Contents

Introduction to <i>Hands-On Mathematics</i>			
Program Introduction	1	11 Regular and Irregular Polygons	105
Program Principles	1	12 Identifying the Faces of Geometric Solids (Three-Dimensional Objects)	113
The Big Ideas of Mathematics	1	13 Identifying, Comparing, and Contrasting Geometric Solids	118
<i>Hands-On Mathematics</i> Learning Outcomes, Grade 3	5	14 Investigating Nets	122
Program Implementation	6	15 Skeletons and Pictorial Representations of Three-Dimensional Solids	132
Classroom Environment	7	Problem-Solving Black Line Master: Shape and Space	138
Timelines	7	References for Teachers	142
Classroom Management	7		
Planning Guidelines	8		
Assessment	11		
The <i>Hands-On Mathematics</i> Assessment Plan	11		
Websites	24		
Shape and Space	27		
Books for Children (Measurement)	28		
Books for Children (3-D Objects and 2-D Shapes)	29		
Introduction	30		
1 Measuring the Passage of Time	31		
2 Measuring the Passage of Time in Standard Units	36		
3 Days in a Month, Months of the Year	45		
4 Introducing Standard Measurement: Metre and Centimetre	56		
5 Measuring Objects by Height, Length, and Width	65		
6 Comparing and Ordering Objects by Mass	69		
7 Investigating Mass	73		
8 Perimeter	78		
9 More about Perimeter	81		
10 Exploring Two-Dimensional Shapes	87		

Introduction

Measurement

Measurement concepts and skills apply directly to the students' world. Through the active, hands-on lessons in this module, students develop spatial sense and an understanding of measurement. Concrete experiences help students become familiar with different types of measures, the process of measuring, and the relationships among figures.

In lessons 1 through 9, students:

- estimate, measure, and compare, using standard units of measure for measuring length, perimeter, and mass
- select the most appropriate unit of measure
- measure the passage of time related to minutes and hours
- relate days to weeks, weeks to months, and months to a year

3-D Objects and 2-D Shapes

In grade three, students continue to investigate geometry concepts and skills that apply directly to the world in which they live. Concrete experiences will assist students in identifying and understanding the relationship between two- and three-dimensional figures, as well as in describing the relative position of objects.

In lessons 10 through 15, students:

- describe, classify, and construct three-dimensional objects and two-dimensional shapes as well as relate them to each other
- use numbers and direction words to describe the relative position of objects in one dimension and using everyday contexts

Mathematics Vocabulary

Throughout this module, teachers should use, and encourage students to use, vocabulary such as: *estimate, measure, compare, length, height, width, centimetre, metre, iteration, mass/weight, balance scale, perimeter, second(s), minute(s), hour(s), day(s), days of the week, week(s), month(s), months of the year, year(s), circle, triangle, square, rectangle, rhombus, parallelogram, angle, right angle, cube, sphere, cylinder, cone, polygon, pentagon, hexagon, octagon, rectangular prism, triangular prism, triangle-based pyramid, and square-based pyramid.*

Continue to use your classroom Math Word Wall as a means of reinforcing new vocabulary. As new terms are introduced in the lessons, record the words on index cards and display them under the appropriate letters of the alphabet on your Math Word Wall.

2

Measuring the Passage of Time in Standard Units

Materials

- chart paper
- markers
- Minutes/Hours labels (included. Make one photocopy for each working group, and cut out the labels.) (3.2.1)
- Activity Cards (included. Make one photocopy of the set for each working group, and cut out the cards.) (3.2.2)
- classroom clock with secondhand
- stopwatch

Activity: Part One: How Long Is a Minute?

Have students look at the classroom clock. Point to the secondhand, and ask students:

- What does this hand on the clock tell us?
- How many seconds are there between each number on the clock?

Ask students to carefully watch the secondhand as it moves around the clock. Have students clap at each five-second interval. Stress that as the secondhand moves from one number to the next, five seconds pass. Ask:

- How many seconds pass when the secondhand makes a full circle around the clock?

As a class, count the seconds by 5s, beginning at the 12. Stress that sixty seconds pass as the secondhand completes a full circle around the clock. Ask:

- What other word do we use for sixty seconds?
- How many seconds are there in one minute?

Explain that there are sixty seconds in one minute and that one minute passes each time

the secondhand completes a full circle around the clock. Point out how the minute hand moves slightly as each sixty seconds passes.

Now, have students put their heads down on their desks. Tell them that when you say the word *Go*, you will begin timing one minute on the clock, starting from when the minute hand is at the 12. Ask students to lift up their heads when they think one minute has passed and look at the minute hand on the clock. When all students have lifted their heads, ask:

- Was one minute longer than you thought? Shorter than you thought?
- What do you think you could do in one minute?

Create a list of possible things students could do in one minute. Record their suggestions on chart paper (for example, tie my shoes, count to 100, do twenty-five jumping jacks).

Activity: Part Two: How Long Is an Hour?

On chart paper, record the terms *minute* and *hour*. Ask:

- Which is longer, a minute or an hour?

Again, focus students' attention on the classroom clock. Identify the minute hand and the hour hand. Explain that as the minute hand moves from one number to the next, five minutes pass. Ask:

- How many minutes pass when the minute hand makes a full circle around the clock?

Again, have the class count by 5s, beginning at 12. Stress that sixty minutes pass as the minute hand completes a full circle around the clock. Ask:

- What is another word for sixty minutes?
- How many minutes are there in one hour?

2

Explain that there are sixty minutes in one hour, and one hour passes each time the minute hand completes a full circle around the clock. Ask:

- What do you think you could do in one hour?

Create a list of possible things students could do in one hour. Record their suggestions on chart paper (for example, bake cookies, rake the leaves).

Divide the class into working groups, and provide each group with a set of Minutes/Hours labels (3.2.1) and a set of Activity Cards (3.2.2). Have students work together to sort the activities into two groups: activities that can be completed in minutes, and activities that can be completed in hours.

Have the groups share their results of this sorting activity. As they do, record their findings on a piece of chart paper, as in the example below:

Activities Measured in Minutes	Activities Measured in Hours

Now, distribute Activity Sheet A (3.2.3), and have students list and illustrate two activities they would measure in minutes, and two activities they would measure in hours. Also have students estimate how many minutes or hours each activity would take.

Activity Sheet A

Directions to students:

List, and illustrate two activities that you would measure in minutes. Estimate how many minutes you think each activity would take.

List, and illustrate two activities that you would measure in hours. Estimate how many hours each activity would take (3.2.3).

Problem Solving

Demonstrate a series of physical education activities (actions) for students (for example, jumping jacks, hopping on one foot, squats). For each action, have students estimate how many of the action they can do in one minute, and record this estimate on the Problem Solving Sheet called “What Can You Do in One Minute?” (3.2.4). Next, time each student for one minute, and have him/her do as many of each action as he/she can. Have students record the actual number of the action they can do in one minute.

Extensions

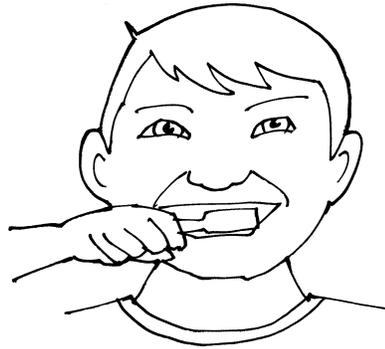
- Add the terms *second*, *minute*, and *hour* to your classroom Math Word Wall.
- Have students use a strip of paper as a timeline and record their activities over a twenty-four hour period.
- Have students estimate how many times they can perform an action or activity (for example, tie their shoes, print their names) in one minute. Or, have students time each other to see how long it takes them to complete an action or activity (for example, tie and untie their shoes ten times, print out the alphabet).
- Have students write and draw pictures on index cards to illustrate daily classroom activities. Use the cards to create a class timeline for each hour of the school day. Use clothespins to attach the cards to a piece of string, and hang the timeline in the classroom.
- Make posters or scrapbook pages to record the passage of time. For example, “A Day in the Life of (student’s name)” “A Year in the Life of (student’s name).”

Minutes/Hours Labels

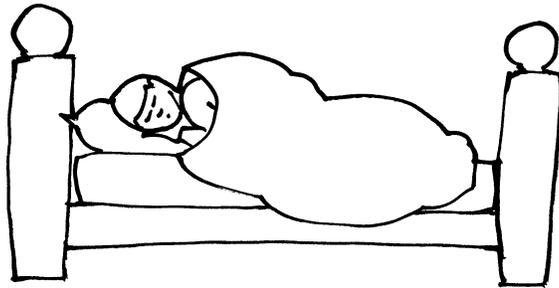
Minutes

Hours

Activity Cards



Brush Your Teeth

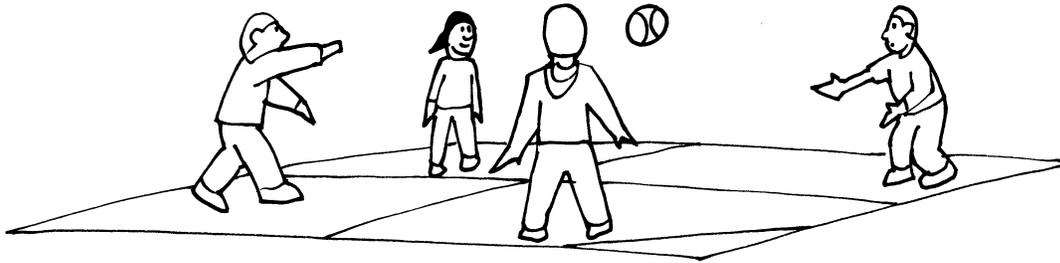


Sleep at Night

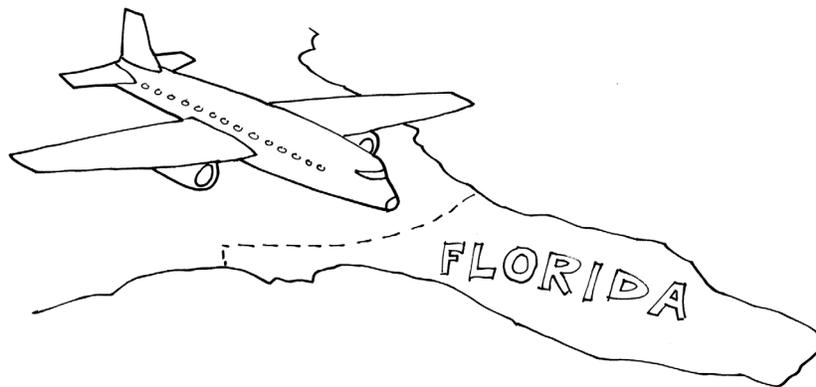


Watch a Movie

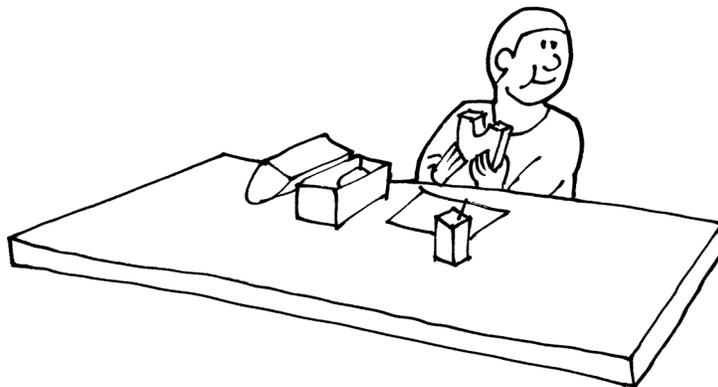
Activity Cards



Play at Recess



Fly on an Airplane to Florida



Eat Your Lunch

Activity Cards



Have a Shower



Read a Chapter Book

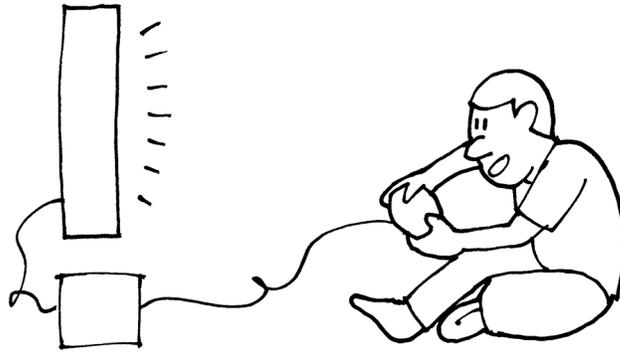


Get Dressed for School

Activity Cards



Go to School for the Day



Play a Video Game



Drive to Prince Edward Island

Date: _____

Name: _____

Measuring Time

<p>Activity Measured in Minutes:</p> <p>_____</p> <p>Estimate: _____ minutes</p>	<p>Activity Measured in Minutes:</p> <p>_____</p> <p>Estimate: _____ minutes</p>
<p>Activity Measured in Hours:</p> <p>_____</p> <p>Estimate: _____ hours</p>	<p>Activity Measured in Hours:</p> <p>_____</p> <p>Estimate: _____ hours</p>