

Mathematics Investigation: *Learning About the Game!*

Primary Level (Grades 1-3)

Theme: *How are You going to Direct your Energy?*

Curriculum Links: Taken from the Overall Expectations in *The Ontario Curriculum - Mathematics, Grades 1-8:*

- *Number Sense and Numeration* - read, represent, compare, and order whole numbers to 50, including dividing whole objects into parts using fractional names (e.g. halves, fourths or quarters);
- *Measurement* - estimate, measure, and describe length, area, mass, capacity, time, and/or temperature, using non-standard units of the same size and/or standard units;
- *Geometry and Spatial Sense* - identify common two-dimensional shapes and/or three-dimensional figures and/or sort and classify them by their attributes;
- *Data Management and Probability* - read, describe and/or interpret primary data presented in charts and/or graphs;
- *Patterning and Algebra* - identify, describe, extend, and create repeating patterns.

Introduction: In preparation for the 2009 World Junior Championship in Ottawa, Canada, students in the National Capital Region and surrounding areas are learning about the game of hockey.

1. Your teacher has asked you to participate in an activity that divides whole objects into parts. She shows you a picture of a Team Canada jersey.



The teacher then shows you what one-half ($1/2$) of the jersey looks like.



The teacher then shows you what one-quarter ($1/4$) of the jersey looks like.



After learning about dividing whole objects into parts, one of the students in your class brings in the following items for display: a hockey puck and a pair of skates.

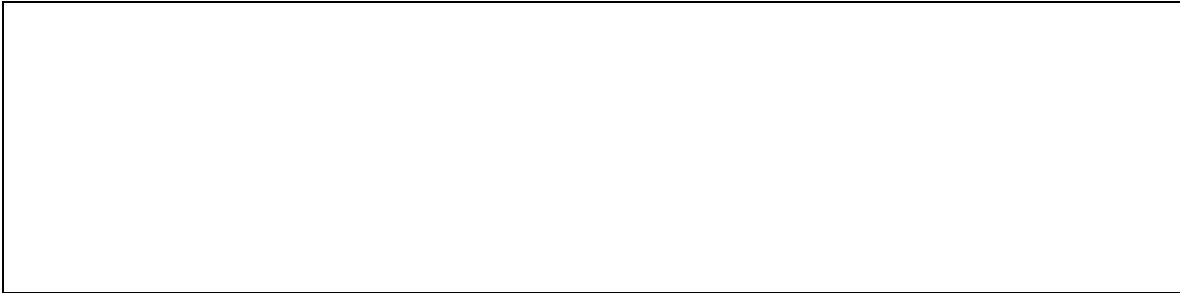
Task: Draw the following parts of the items displayed:



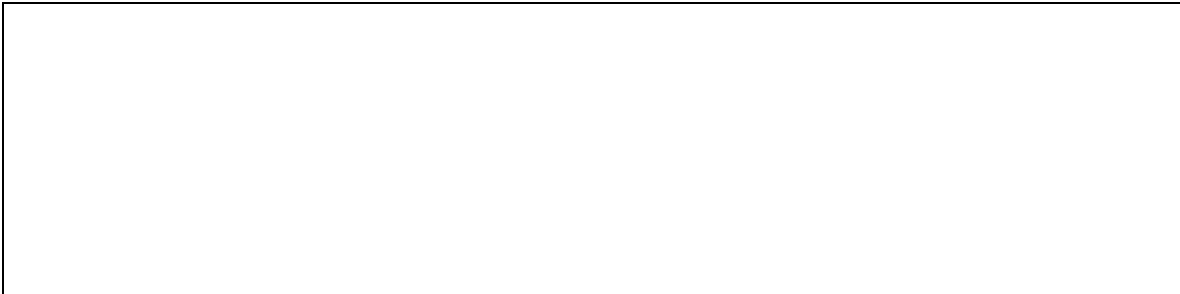
one-quarter ($1/4$) of a hockey puck.



one-half (1/2) of a skate.



Extension: Draw three-quarters (3/4) of a hockey helmet.



2. Your class then brainstorms a list of other hockey-related items. The list that is generated by your class includes:

- hockey pin



- goalie mask



- water bottle



- hockey tape





- hockey sweater



- equipment bag (full)



Task: You are asked to order the items from *heaviest* to *lightest* below.

heaviest _____

lightest _____

Extension: Circle the unit you would use to measure each item below.

- a) water needed to fill the bottle *grams, milliliters, litres, metres*
- b) mass of the hockey pin *litres, kilograms, grams, kilometers*
- c) height of the goalie mask *metres, grams, litres, centimeters*
- d) length of the hockey sweater *milliliters, centimetres, grams, metres*
- e) mass of the equipment bag (full) *kilograms, litres, milliliters, milligrams*
- f) length of the hockey tape (rolled) *grams, metres, kilometers, litres*

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3. The next day, you notice that many of your classmates are wearing Team Canada jerseys. *Here is the crest that you see on the jerseys.



* Graphic taken from Hockey Canada web site at www.hockeycanada.ca.



Task: Identify and describe shapes within the maple leaf crest on the jersey.

Extension: On a blank sheet of paper, design your own Team Canada crest using as many geometric shapes as you like.

4. The title sponsor, Direct Energy, one of North America's leading integrated energy companies, provides your teacher with information on the history of the World Junior Championships. Included in this information package is a chart on medal winners of the past ten years.*

Past Results – World Junior Championships			
Year	Gold	Silver	Bronze
2007	CAN	RUS	USA
2006	CAN	RUS	FIN
2005	CAN	RUS	CZE
2004	USA	CAN	FIN
2003	RUS	CAN	FIN
2002	RUS	CAN	FIN
2001	CZE	FIN	CAN
2000	CZE	RUS	CAN
1999	RUS	CAN	SVK
1998	FIN	RUS	SUI

CAN – Canada

RUS – Russia

USA – United States of America

FIN – Finland

CZE – Czech Republic

SVK - Slovakia

SUI – Switzerland

* Chart taken from Hockey Canada web site at www.hockeycanada.ca.

Task: Use the chart above to answer the questions below.

a) How many gold, silver and bronze medals has Team Canada won over the past ten years?

Gold _____ Silver _____ Bronze _____ Total _____

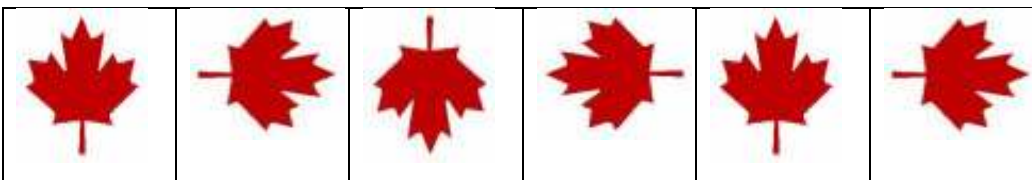
b) Which team has won more medals over the past ten years - the team from Russia or the team from Sweden? _____

c) The team from Finland has won more medals than the team from the U.S.A. How many more medals has Finland won? _____

d) How many teams on the chart have won more than eight medals? _____
 Name the teams: _____

Extension: How many medals have been won altogether? Create a mathematical sentence to show how you arrived at this total.

5. To celebrate the World Junior Championship, your class decides to create a colourful border for the classroom with the maple leaf crest. The border begins as follows:



Task: Continue the pattern in the border below.

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Extension: Make another pattern that repeats, as a border for the main foyer of the school, using the following three objects:

<ul style="list-style-type: none"> • hockey puck 	<ul style="list-style-type: none"> • hockey pin 	<ul style="list-style-type: none"> • hockey sweater 
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Display your pattern in the spaces provided below.

	<div style="border: 1px solid black; width: 100%; height: 100%;"></div>						

6. Each of the four walls of the classroom requires 20 sections of the border.

Task: How many sections are needed to cover the perimeter of the classroom?

Show your work.

A total of _____ sections are needed to cover the perimeter of the classroom.

Extension: If each section is 25 centimetres in length, what is the perimeter of the classroom? Give the answer in centimetres and metres.