Mathematics Investigation: *At the Game!*

Junior Level (Grades 4-6)

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

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

- *Measurement* - estimate, measure, and record elapsed time, using a variety of strategies;
- *Patterning and Algebra* - describe, extend, and investigate repeating, growing and shrinking number patterns, and make predictions related to the patterns;
- *Number Sense and Numeration* - solve problems involving the addition, subtraction, multiplication and/or division of money amounts, using a variety of strategies;
- *Data Management and Probability* - read, describe, and interpret primary data and secondary data presented in charts and graphs, including bar graphs;
- *Geometry and Spatial Sense* – identify and classify two-dimensional shapes and/or three-dimensional figures by their geometric properties.

Introduction: As part of this exciting hockey experience, your class has decided to attend a game at the 2009 World Junior Championship in Ottawa, Canada.

1. Your teacher provides you with the following schedule of events:

Activity	Timeline (approximate)	
	12-hour clock	24-hour clock
Board the bus (to arena)	9:30 a.m.	09:30 hours
Arrival at arena	10:15 a.m.	

Start of game	11:00 a.m.	
End of game	1:20 p.m.	
Lunch	1:30 p.m.	
Board the bus (to school)	2:00 p.m.	
Arrival at school	2:45 p.m.	

Task: How long will your class be at the arena?

Show your work here.

Your class will be at the arena for _____ .

Extension: Write the corresponding 24-hour time for the a.m. and p.m. times in the schedule above. The first one has been done for you.

2. The following diagram shows the seating arrangement for the class.

A	**41**	42									A
I	31	32	**33**	34	35	36	37	**38**	39	40	I
S	21	**22**	23	24	**25**	26	27	28	29	**30**	S
L	11	12	13	**14**	15	16	**17**	18	19	20	L
E	**1**	2	3	4	5	**6**	7	8	**9**	10	E
Section 101											

Courtesy of the title sponsor, Direct Energy, one of North America's leading integrated energy companies, the students who sit in the seats that have numbers in bold receive an Energy Conservation Tips Sheet.

Task: Will the student in seat 58 receive an Energy Conservation Tips Sheet?

Explain your answer using patterns that you have observed.

The student *will / will not* receive an Energy Conservation Tips Sheet. (circle one)

Extension: Describe any other patterns you see in the seating arrangement.

3. During the first intermission, one of your classmates decides to purchase a small popcorn and a large orange juice at the concession stand (all taxes included).

Size	Popcorn	Orange Juice
Small	$1.75	$2.00
Medium	$2.25	$2.75
Large	$2.65	$3.35

Task: How much change will the student receive if she pays with a $10.00 bill?

Show your work.

The student receives _____ in change.

Extension: Another classmate buys a package of Smarties for $1.50 and a bottle of water for $2.00 from a different vendor in the arena. A tax of 14% is added to the cost of the items. The student pays with a $20 bill. How much change does he receive?

The student receives _____ in change.

4. Direct Energy also provides each student with a program at the game. The program contains the following chart on the 'past results' of the medal winners since the beginning of the World Junior Championship in 1974.*

PAST RESULTS

Year	Gold	Silver	Bronze	Location
2007	CAN	RUS	USA	Leksand/Mora, SWE
2006	CAN	RUS	FIN	Vancouver/Kamloops/Kelowna, BC, CAN
2005	CAN	RUS	CZE	Grand Forks, ND, USA
2004	USA	CAN	FIN	Helsinki/Hameenlinna, FIN
2003	RUS	CAN	FIN	Halifax/Sydney, NS, CAN
2002	RUS	CAN	FIN	Pardubice/Hradec Kralove, CZE
2001	CZE	FIN	CAN	Moscow, RUS
2000	CZE	RUS	CAN	Skelleftea/Umea, SWE
1999	RUS	CAN	SVK	Winnipeg, MB, CAN
1998	FIN	RUS	SUI	Helsinki/Hameenlinna, FIN
1997	CAN	USA	RUS	Geneva/Morges, SUI
1996	CAN	SWE	RUS	Boston, MA, USA
1995	CAN	RUS	SWE	Red Deer, AB, CAN
1994	CAN	SWE	RUS	Ostrava/Fryek, CZE
1993	CAN	SWE	CZE/SVK	Gavle, SWE
1992	CIS	SWE	USA	Fussen, GER
1991	CAN	USSR	TCH	Saskatoon, SK, CAN
1990	CAN	USSR	TCH	Helsinki, FIN
1989	USSR	SWE	TCH	Anchorage, AK, USA
1988	CAN	USSR	FIN	Moscow, RUS
1987	FIN	TCH	SWE	Piestany, TCH
1986	USSR	CAN	USA	Hamilton, ON, CAN
1985	CAN	TCH	USSR	Helsinki, FIN
1984	USSR	FIN	TCH	Nykoping, SWE
1983	USSR	TCH	CAN	Leningrad, USSR
1982	CAN	TCH	FIN	Minnesota, USA
1981	SWE	FIN	USSR	GER
1980	USSR	FIN	SWE	Helsinki, FIN
1979	USSR	SWE	TCH	Karlstad, SWE
1978	USSR	SWE	CAN	Montreal, QC, CAN
1977	USSR	CAN	TCH	TCH
1976*	USSR	CAN	TCH	FIN
1975*	USSR	CAN	SWE	CAN
1974*	USSR	FIN	CAN	Leningrad, USSR

*Prior to the 1977 IIHF World Junior Hockey Championship, the World Junior event was a tournament and not a World Championship

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

Task: Assume that a gold medal is worth 5 points, a silver medal 3 points and a bronze medal 1 point. Based on the chart, how many points do each of the following countries have?

a)	Canada	(CAN)	_____
b)	U.S.A.	(USA)	_____
c)	Russia	(RUS/CIS/USSR)	_____
d)	Czech Republic	(CZE)	_____
e)	Finland	(FIN)	_____
f)	Sweden	(SWE)	_____
g)	Slovakia	(SVK/TCH)	_____
h)	Switzerland	(SUI)	_____

Graph this information using a bar graph. Don't forget to label your graph!

Extension: Write a question about the graph you have created for a classmate to answer.

_____

_____

5. During the game, you notice that many fans are wearing Team Canada jerseys.*Here is the maple leaf crest that you see on the jerseys.

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

Task: Describe the geometric properties of the crest that you see on the jerseys. (Think about lines of symmetry, angles, shapes and transformations.)

_____

_____

_____

_____

_____

_____

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

6. After the game, the class decides to order pizza (for 27 people in total). Each person would like to eat three slices. Each pizza comes in slices of 10.

Task: How many pizzas will need to be ordered so that every person gets the three slices they wish?

Show your work.   A total of _____ will need to be ordered.

Extension: How many slices will be eaten in total? How many slices will be left over?
