



## **Mathematics Investigation: *A Special Guest Visit!***

Intermediate Level (Grades 7-8)

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

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

- *Patterning and Algebra* - represent linear growing patterns (where the terms are whole numbers) using concrete materials, graphs, and/or algebraic expressions;
- *Measurement* - determine the relationships among units and measurable attributes;
- *Data Management and Probability* - read, interpret and draw conclusions from primary data and display the data using charts and/or graphs, including relative frequency tables and/or circle graphs, and, apply a variety of data management tools and strategies to make convincing arguments about data;
- *Geometry and Spatial Sense* - demonstrate an understanding of geometric properties and the application of geometric properties in the real world;
- *Number Sense and Numeration* - apply a variety of computational strategies to solve problems involving whole numbers and decimal numbers, and demonstrate an understanding of proportional relationships using percent, ratio and/or rate.

**Introduction:** In the week before the World Junior Championship, a member of Team Canada's National Junior Under-20 Team and a representative of Direct Energy, one of North America's leading integrated energy companies, visit schools in the National Capital Region and surrounding areas to discuss the importance of education, athletics and energy conservation.

1. The special guest visitors are only able to meet with three classes per school visit. The following table outlines the total number of students the visitors have met by the end of each day.

Day	Total number of students met
1	75
2	150
3	225
4	
5	

**Task:** Finish the table using the pattern established.

What pattern rule was used to complete the table?

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How many days would the visitors need to meet a total of 600 students?

Show your work.

**Extension:** If there were two "pairs" of special guests visiting schools in the region, how many days would it take to meet 1000 students?

2. The Principal of a local school has included an announcement about the special guest visit in the monthly newsletter. The announcement reads as follows:



**Special Guest Visit!**

A member of Team Canada's National Junior Under-20 Team and a representative of Direct Energy will be visiting our school on Thursday, December 18, 2008 to discuss the importance of education, athletics and energy conservation.

The school assembly begins at 1:10 p.m. All are welcome to attend!

The Principal has also created a schedule for the special guest visit that day.

Thursday, December 18, 2008	
Arrival at school	10:15
Visit to classroom#1	10:45-11:10
Visit to classroom#2	11:10-11:35
Lunch	11:35-12:35
Visit to classroom#3	12:35-13:00
School assembly (open to all)	13:00-13:30
Personal autograph session	13:30-14:10
Departure from school	14:10

**Task:** How long will the visitors be in classrooms on that day?

Show your work.

The visitors will be in classrooms for \_\_\_\_\_ .



Do the times of the school assembly noted in the newsletter and the schedule match?

Explain your answer.

**Extension:** Explain the meaning of the following times:

1:10 \_\_\_\_\_

13:10 \_\_\_\_\_

3. During the special guest appearance, the visitors provide each student with a statistics package for the World Junior Championships, courtesy of title sponsor, Direct Energy. The 'stats pack' 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](http://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 would 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 as a bar graph, using any one of the following tools: graph paper, spreadsheets, dynamic statistical software. Don't forget to label your graph!

Write two questions about the graph you have created for as classmate to answer.

1. \_\_\_\_\_  
\_\_\_\_\_

2. \_\_\_\_\_  
\_\_\_\_\_

**Extension:** Based on the data in the chart, which National Junior Under-20 hockey programs have been more successful...those in Europe or those in North America?

Explain your answer.

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4. Using the 'location' of where the games have been played on the chart, write the names of the countries that have hosted the World Junior Championships since 1974 from greatest to least number of times hosted.

Show your work.

Greatest number of times hosted: \_\_\_\_\_

Least number of times hosted: \_\_\_\_\_

**Extension:** Create a circle graph or relative frequency table to display the countries that have hosted the World Junior Championships since 1974.

5. During the special guest visit, you have a close look at the maple leaf crest on the player's Team Canada jersey.\*



\* Graphic taken from Hockey Canada web site at [www.hockeycanada.ca](http://www.hockeycanada.ca).



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

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**Extension:** On a blank sheet of paper, design your own Team Canada jersey (including a crest) using as many geometric shapes and/or figures as you wish.

6. Shortly after the special guest visit, many in the community are so enthused that they begin to explore plans to experience this exciting



sporting event. Three different packages are offered for an excursion as listed below:

2009 WJC Excursion Packages (per person)		
A	B	C
Three-game package	Two-game package	One-game package
\$125	\$ 82	\$ 47

**Task:** Which excursion package is the least expensive per game?

Show the strategies you used to solve the problem.

Excursion package  $A / B / C$  is the least expensive per game. (circle one)

**Extension:** An adult relative of yours from out-of-town would like to stay in Ottawa during the World Junior Championship. Expenses for the trip, including the three-day package, meals and lodging, costs \$1000 (all taxes included). The chart below shows how the money was spent. Calculate the missing amounts and complete the chart.

	Percent of money spent	Fraction of money spent	Amount of money spent
Lodging			
Meals			\$275
Ticket package	12.5%		