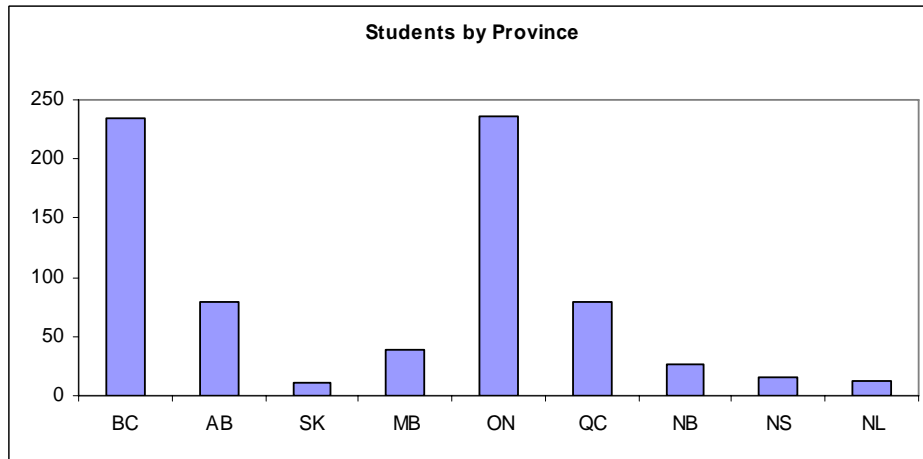


# Michael Smith National Science Challenge 2006

## Analysis

### Participation

A total of 733 students took part, from 10 provinces (with just one from PEI). The gender ratio was 59% male, 41% female. Most reported their grade as 10 or Secondaire 4; 46 were in grade 9, one in grade 8).

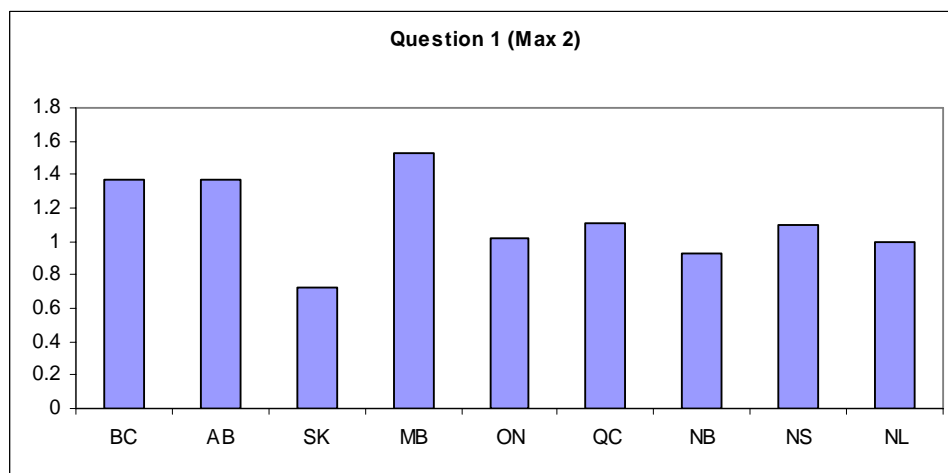


### Questions

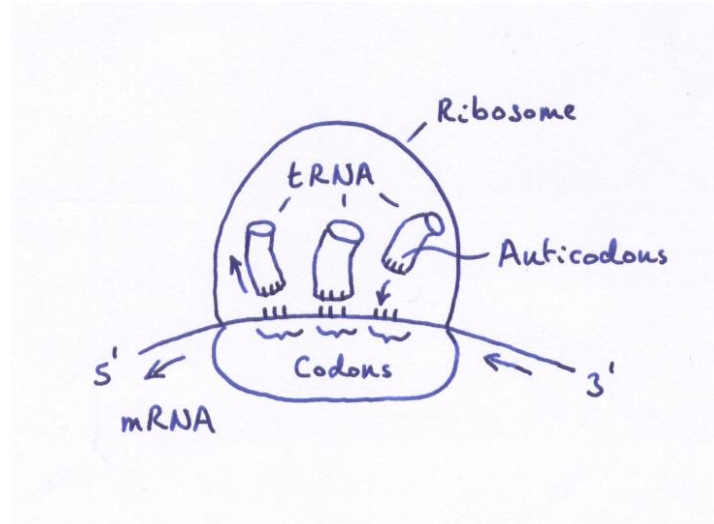
1. What is a gene? Give your answer in no more than 10 words.

DNA transcriptional unit (unit of heredity). Codes for proteins, expressed as traits etc. etc.

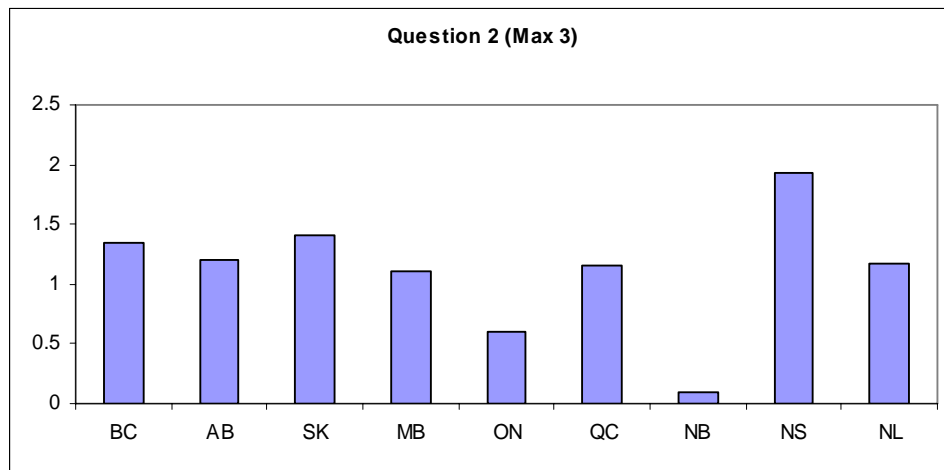
This is "general knowledge" type of question and was fairly well answered across the country.



2. Draw a labelled diagram that shows how protein synthesis works inside a cell. Be sure to include the following components: ribosome, messenger RNA, several transfer RNAs, several amino acids, growing polypeptide chain (growing protein).



This material is not on the Ontario curriculum, although many Ontario students answered it. Overall, 22% of students got it substantially correct (2.5/3 or better). The weighting of this question was reduced in the final mark summation.



3. A large population of beetles is thought to be in Hardy-Weinberg Equilibrium for a gene with two alleles, a dominant allele for black colour, and a recessive allele for brown colour. If 9% of the animals are found to be brown, what fraction is expected to be heterozygotes?

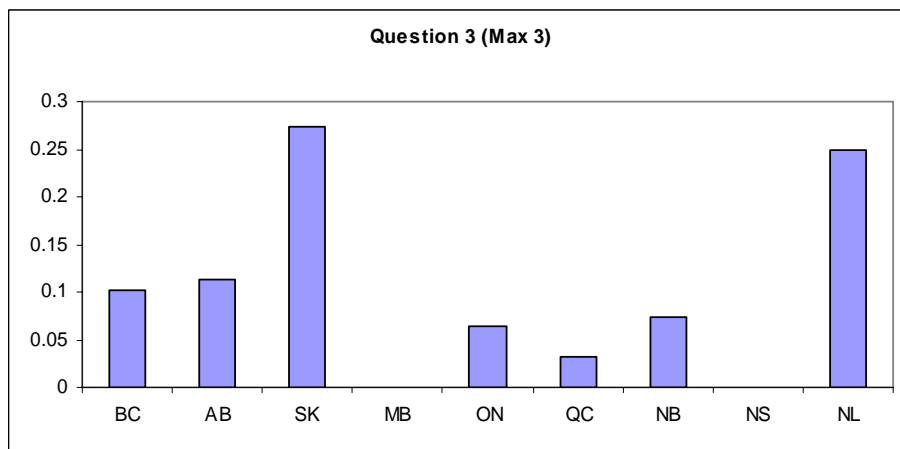
Fraction of dominant allele =  $p$

Fraction of recessive allele =  $q$

Fraction of brown insects =  $q^2 = 0.09$ ;  $\Rightarrow q = 0.3$ , i.e.  $p = 0.7$

Fraction of heterozygotes =  $2pq = 0.42$ , i.e. 42%

Hardy-Weinberg equilibrium is, as far as we can tell, not formally taught in any province at the grade-10 level. Thus to answer this question, a student would have had to read about biology beyond his or her school work. A total of 17 students across the country had obviously done just this. The weighting of this question was reduced in the final mark summation.

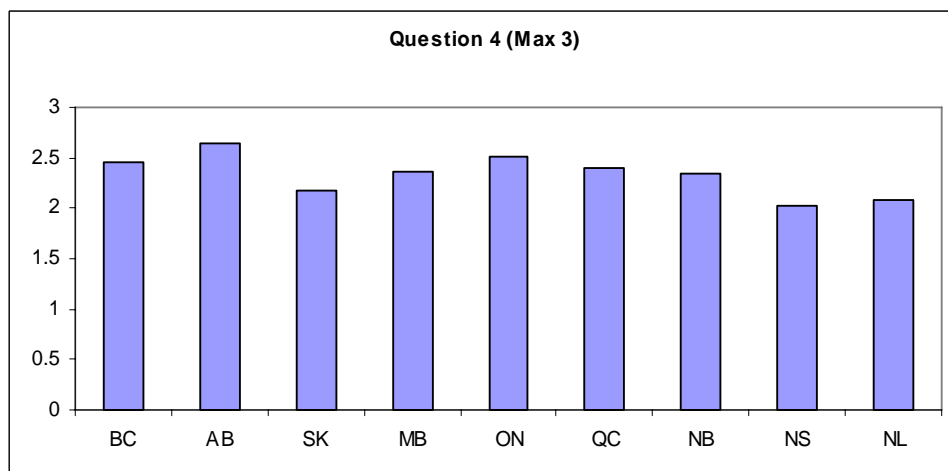


4. In 2-5 words, say what you expect the following elements to be like:

- (a) Rubidium (Rb)
- (b) Ruthenium (Ru)
- (c) Xenon (Xe)

- (a) Highly reactive metal [shiny, conductor, less dense than Ru etc.]
- (b) Transition metal; not so reactive
- (c) Inert gas [two good basic ideas for each were enough for full marks]

This question was written to determine whether a student understands trends across the Periodic Table. The elements were chosen so that students would be highly unlikely to have had any direct contact with them (or even to have heard of them before). The question was uniformly well done.



5. Consider a litre of water:

- (a) If the container is a cube, how long are its sides (on the inside)?
- (b) What is the approximate mass of the water?
- (c) Approximately how many water molecules are in this amount of water?

(a) 0.1 m (10 cm)

(b) 1 kg

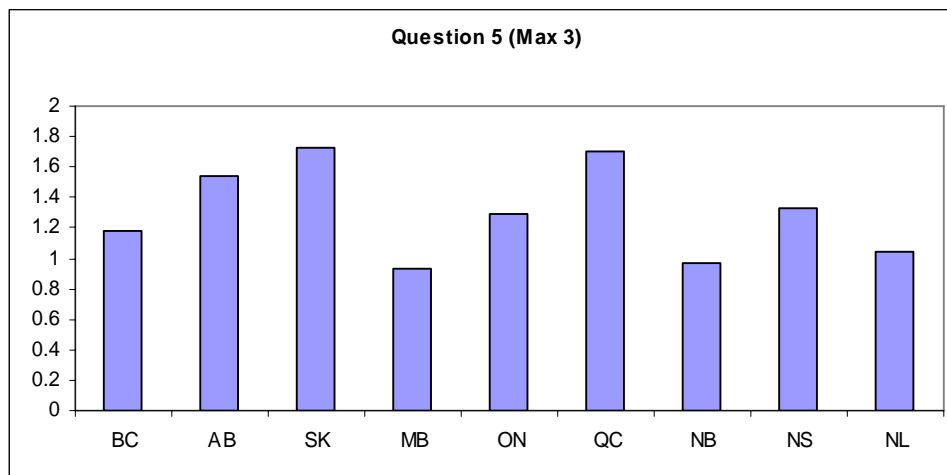
(c) Avogadro's Number  $N =$  number of molecules in a gram-mole of substance  $= 6.02 \times 10^{23}$

One gram-mole of  $H_2O = 18$  g (atomic weight of H is 1; O is 16)

Molecules in 1 kg  $= 1000 \times 6.02 \times 10^{23} / 18 = \underline{3.3 \times 10^{25}}$

The sub-agenda behind this question is that an alarming fraction of science undergraduate students think that a litre is  $1m^3$ . This is symptomatic of the disconnect in their minds between what they are taught in school and their everyday experience. They all know roughly what a cubic metre is and what a litre is; to equate the two is ludicrous, but tempting for the thoughtless (SI teaches them that "1" is the most likely conversion factor for almost anything).

Our evidence is that most grade 10 students know that a litre of water has a mass of about 1kg, but not many knew it has the volume of a 10cm cube. Answers to (a) varied widely: 5cm, 7cm, 15cm, 31.6 cm, 1m etc. Few (29%) know how to use Avogadro's Number.



6. Assume gasoline is a hydrocarbon with two hydrogen atoms for each carbon. How many litres of gasoline does one have to burn to produce a tonne of carbon dioxide ( $CO_2$ )? (One tonne of liquid gasoline has a volume of 1300 litres).

Reaction:  $CH_2 + \frac{3}{2}O_2 \rightarrow CO_2 + H_2O$

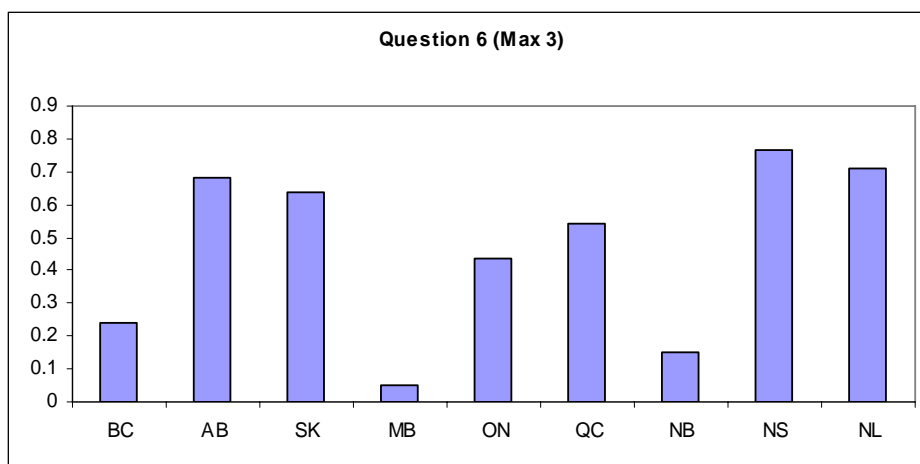
Molecular weight of  $CH_2$ :  $12+2 = 14$

Molecular weight of  $CO_2$ :  $12+2 \times 16 = 44$

One tonne  $CO_2$  comes from burning  $14/44 = 0.32$  tonnes of gasoline, or  $0.32 \times 1300 = \underline{414}$  litres

To solve this problem you have to write the formula for gasoline as  $(\text{CH}_2)_n$  and to realize that the value for  $n$  does not matter. Then one has to keep track of two ratios (mass of  $\text{CO}_2$  to mass of gasoline, and the volume to mass for gasoline). Knowledge that a tonne is 1000 kg is not required anywhere. We have approximated the composition of gasoline, but the bottom line – that a few fill-ups inevitably produces a tonne of  $\text{CO}_2$  – is correct.

As a whole the problem was not well done, but we are glad that residents of oil-producing provinces (AB, NL) seem to be more capable of evaluating environmental impact than most!



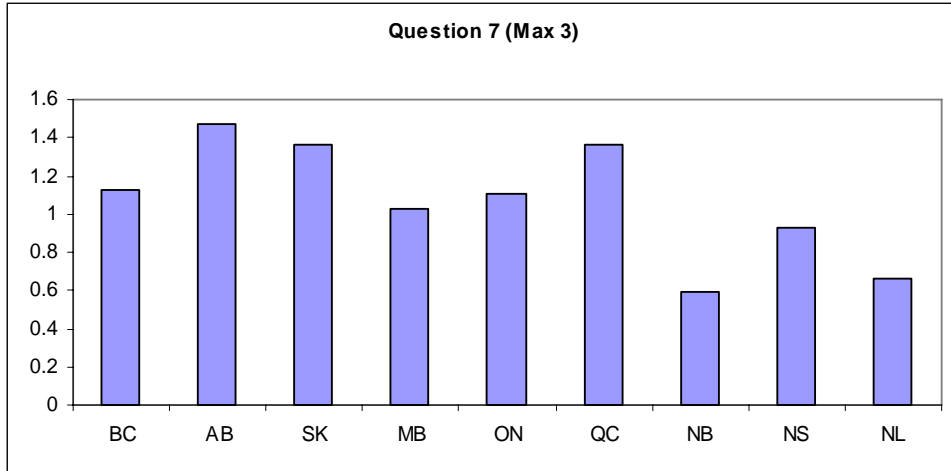
7. Canada's 32.5 million people are responsible for the consumption of  $1.4 \times 10^{19}$  J of energy each year. If all this power had to come from burning gasoline, how many litres per person per day would have to be consumed? The energy content of gasoline is 32 MJ/litre.

$$\text{Energy used per person per year} = 1.4 \times 10^{19} / 32.5 \times 10^6 = 4.3 \times 10^{11} \text{ J}$$

$$\text{Energy used per person per day} = 4.3 \times 10^{11} / 365 = 1.2 \times 10^9 \text{ J}$$

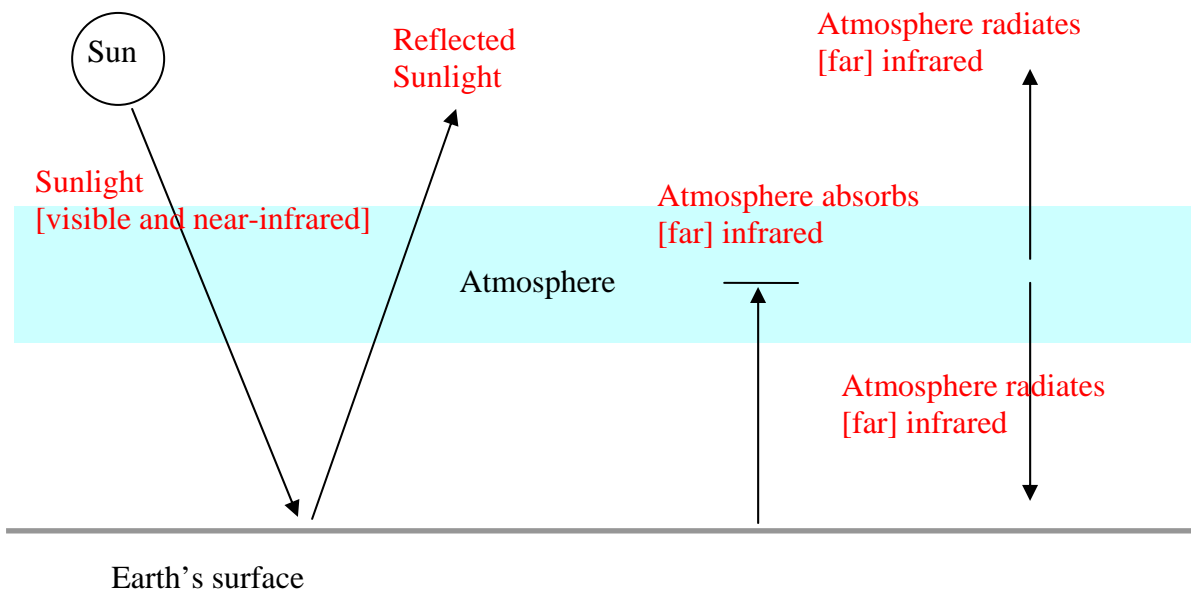
$$\text{Volume of gasoline per person per day} = 1.2 \times 10^9 / 32 \times 10^6 = \underline{37 \text{ litres}}$$

Like #6, this question involved forming some simple ratios. The answer is again a little shocking. The student responses were much better than for #6, probably because the question did not involve the stoichiometry of a chemical reaction. Many students (34%) had trouble with "M", not being sure whether it meant  $10^3$ ,  $10^6$  or  $10^9$ . This they have in common with science undergraduates, despite the fact that we are all surrounded by MHz and Mbytes.



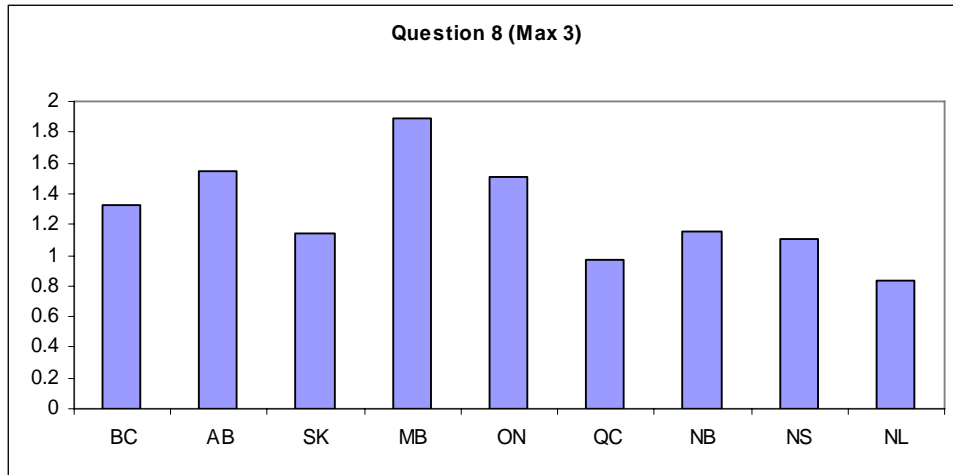
8. Label the arrows (only) on this diagram explaining the Greenhouse Effect. Use no more than three words per arrow. (The *lengths* of the arrows are not intended to have any meaning).

[Words in parenthesis are for information only]



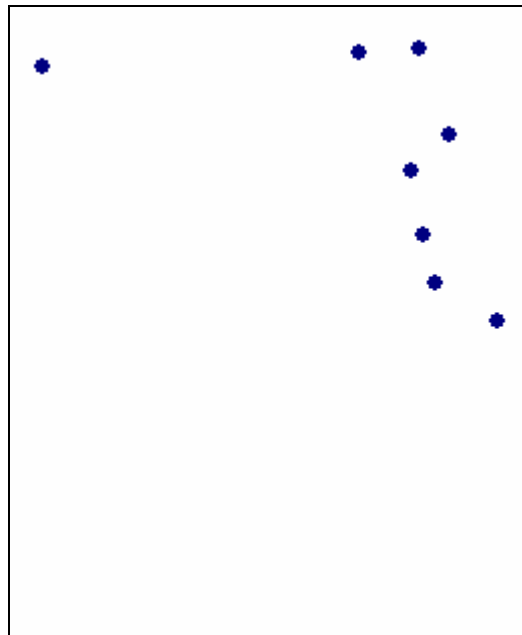
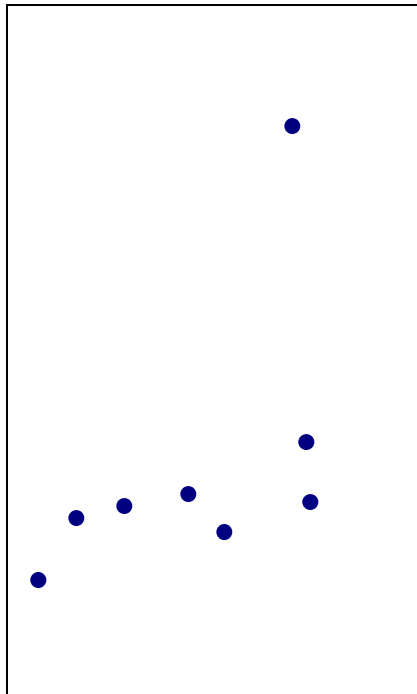
The fundamental science behind the greenhouse effect is that the Sun radiates in one part of the spectrum and the much cooler Earth radiates in another. The Earth's temperature rises until the power it loses to radiation equals that coming in from the Sun. The sunlight *reflected* by the Earth is distinct from the Earth's own radiation. Greenhouse gases are much more transparent to sunlight (visible and near-infrared) than to radiation from the Earth (far-infrared). Absorption and re-radiation from the atmosphere in the far-infrared raises the temperature of the Earth's surface while maintaining the overall balance incoming and outgoing radiated power.

Full marks were awarded to any student who demonstrates a realization that there are two parts to the spectrum involved, and that the atmosphere transmits one but absorbs the other. Many students (41%) thought that the arrows indicated the migration of gases, (CO<sub>2</sub>, ozone, CFCs, “pollution”) or the falling of acid rain etc.

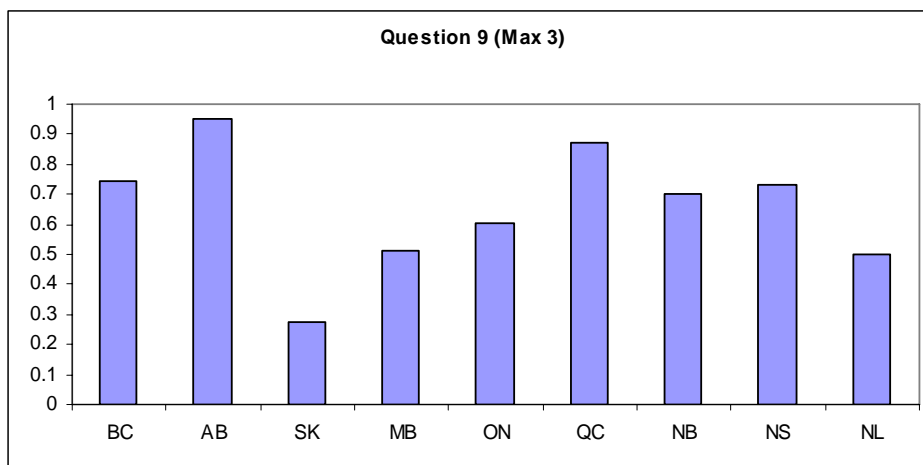


9. At a certain time on a clear evening you look north and see Ursa Major (also known as the Great Bear or the Big Dipper) and the Pole Star (top). Draw on the right how these stars will appear six hours later.

Answer:

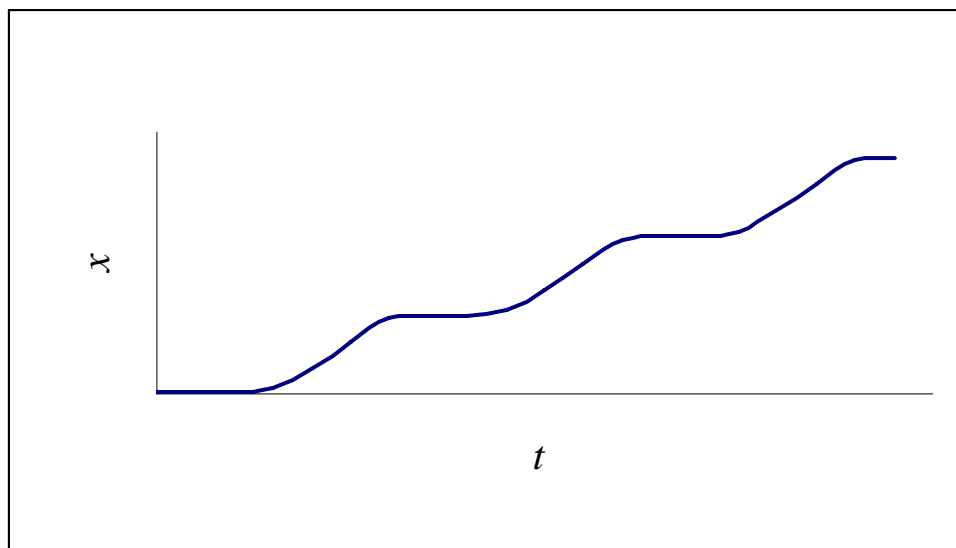


To do this question one has to know that the Earth, and therefore the appearance of the sky, makes a quarter-turn in 6 hours. A total of 15% got it fully correct. One mark was deducted for getting the direction wrong (16% did this). Other variants were mirror images (7%), no change (6%) etc.



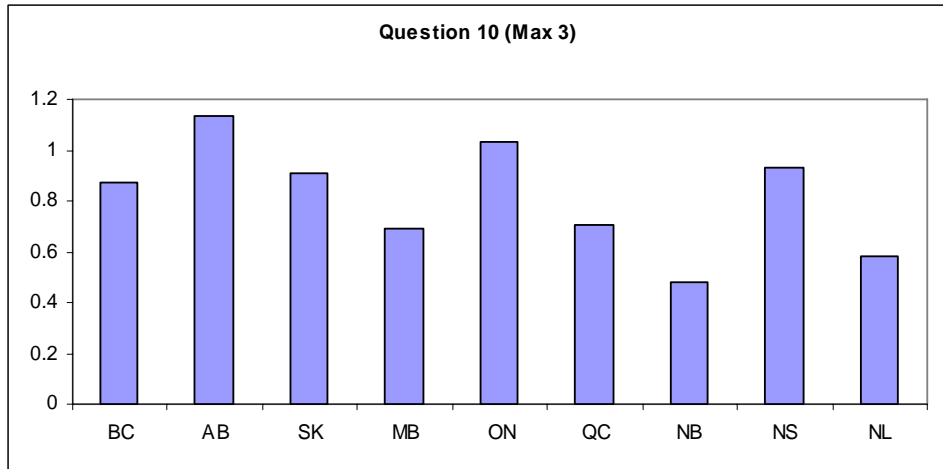
**10.** A person walks normally at a constant speed in the positive  $x$  direction. Sketch a graph of the position  $x$  of the person's left foot as a function of time  $t$ :

Curves indicate acceleration and deceleration of foot.



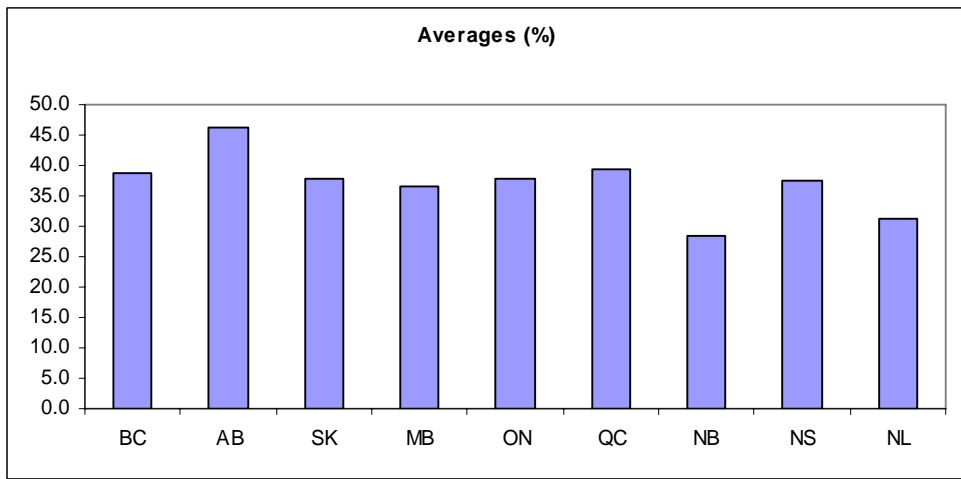
Here we test abstract thinking and the ability to analyze a ubiquitous activity in terms of one of the kinematical variables. Full marks were awarded to anyone who got the shape right, and recognized that the foot takes a fraction of the cycle time to accelerate and decelerate (26%). A further 15% missed the curves and were awarded 2/3. Some (36%) simply drew a straight line, others (4%) a staircase with 90deg angles.





**Overall**

Nationally, the mean score was 39% (standard deviation 34%). The top mark was 86.5%.



These numbers should be read in the light of the numbers of students per province; the statistical significance of the Prairie and Maritime averages is not large. However, there is no doubt, however one adds up the marks, that Albertans did rather well.

Chris Waltham, for the UBC Michael Smith Science Challenge Committee:  
 Gordon Bates (Chemistry)  
 Andrzej Kotlicki (Physics & Astronomy)  
 Tony Griffiths (Botany)  
 Stewart Sutherland (Earth & Ocean Science)

2006/05/03

## Prizes

Nationally: 1<sup>st</sup> - \$500, 2<sup>nd</sup> - \$250, 3<sup>rd</sup> - \$100 each

Provincially: \$100 for top student without a national prize

Teachers: \$50 for a teacher with a prize-winning student

## Top 10 Students Nationally

School	Prov	M/F	Family Name	Given Name	Total %	Natl Rank	Prov Rank
Western Canada High School	AB	M	Cong	Ting	<b>86.5</b>	1	1
Westmount Charter School	AB	M	Russell-Hoffman	Justen	<b>85.6</b>	2	2
Old Scona Academic	AB	M	Portillo	Stephen	<b>84.6</b>	3=	3=
Old Scona Academic	AB	M	Li	Matthew	<b>84.6</b>	3=	3=
Walter Murray Collegiate	SK	M	Corello	Thomas	<b>83.7</b>	5	1
Walnut Grove Secondary	BC	F	Li	Wendan	<b>82.7</b>	6	1
Old Scona Academic	AB	F	Wall	Chloe	<b>80.8</b>	7	5
Lower Canada College	QC	M	Morrissey	Robert	<b>79.8</b>	8	1
Westmount Charter School	AB	M	Chaudhry	Ross	<b>78.8</b>	9=	6
Western Canada High School	AB	M	Gordon	Jared	<b>78.8</b>	9=	7

## Other Students in top 25% (cut-off mark 50.0%)

Alphabetical Order, rank in province given, up to 5<sup>th</sup> place

School	Prov	M/F	Family Name	Given Name	Total %	Prov. Rank
University of Toronto Schools	ON	F	Archibald	Jennifer	<b>55.8</b>	
Ecole aux Quatre-Vents	QC	F	Arsenault	Mireille	<b>51.9</b>	
Bathurst High	NB	M	Arseneau	Cal	<b>50.0</b>	2
Ecole aux Quatre-Vents	QC	F	Audet	Melissa	<b>50.0</b>	
Beaconsfield High School	QC	M	Austin	James	<b>65.4</b>	5=
University Transition Program	BC	M	Av-Gay	Gal	<b>73.1</b>	
Old Scona Academic	AB	M	Babadagli	Mustafa	<b>54.8</b>	
University of Toronto Schools	ON	M	Bae	Gordon	<b>74.0</b>	4
Centennial CVI	ON	M	Barrows	Ian	<b>53.8</b>	
Waterloo Collegiate	ON	M	Ben-David	Shalev	<b>76.9</b>	1
Balmoral Jr. Secondary	BC	M	Bevilacqua	Glenn	<b>73.1</b>	
Centennial CVI	ON	F	Beznogova	Anna	<b>50.0</b>	
Collingwood School	BC	M	Bockheld	Keith	<b>50.0</b>	
Western Canada High School	AB	F	Boon	Kathryn	<b>61.5</b>	
Father John Redmond Catholic High	ON	F	Bui	Anna	<b>50.0</b>	
University Transition Program	BC	M	Busto	Daniel	<b>65.4</b>	
New Westminster Secondary	BC	M	Butler	Cameron	<b>51.9</b>	
Marystown Central High School	NL	M	Carvery	Logan	<b>53.8</b>	2
Southridge School	BC	F	Chanona	Melanie	<b>57.7</b>	
Old Scona Academic	AB	M	Chau	Joachim	<b>50.0</b>	
Moscrop Secondary	BC	M	Chen	Robert	<b>57.7</b>	
Richmond Hill High School	ON	M	Chen	Andy	<b>50.0</b>	

Old Scona Academic	AB	M	Cheung	Douglas	76.9	
University of Toronto Schools	ON	F	Chin	Kelly	59.6	
St. John's-Ravenscourt School	MB	M	Chung	Jordan	51.9	5=
New Westminster Secondary	BC	F	Cowan	Emily	55.8	
Ecole St. Michael	AB	F	Craiciu	Ioana	53.8	
Centennial CVI	ON	M	Cui	Wei	50.0	
St. Thomas Aquinas	BC	F	Cunningham	Amanda	55.8	
Collingwood School	BC	F	Dally	Hannah	51.9	
West Vancouver Secondary	BC	M	Dang	Jun Hang	50.0	
Western Canada High School	AB	F	Dawson	Leanne	57.7	
University Transition Program	BC	M	Djeric	Rastko	63.5	
Centennial CVI	ON	F	Dobosiewicz	May	55.8	
Southridge School	BC	M	Donald	Mitchell	59.6	
W.L. Mackenzie C.I.	ON	M	Du	Cheufei	63.5	
Ecole aux Quatre-Vents	QC	M	Dumas	Olivier	50.0	
New Westminster Secondary	BC	M	Duncan	Alexander	55.8	
Highwood High School	AB	M	Dwyer	Benjamin	51.9	
Collingwood School	BC	M	Elkington	Tyler	54.8	
W.C. Miller Collegiate	MB	M	Epp	Riley	53.8	3=
Guelph Collegiate-Vocational Institute	ON	M	Fairchild	Jason	53.8	
Collège Saint-Sacrement	QC	F	Ferland	Marie-Chantal	50.0	
Old Scona Academic	AB	M	Fung	Josiah	63.5	
Richmond Hill High School	ON	F	Funk	Angel Yi Nam	51.9	
Guelph Collegiate-Vocational Institute	ON	F	Gauley	Heather	59.6	
University of Toronto Schools	ON	F	Gavrilov	Zoya	73.1	5
Burnaby South Secondary	BC	M	Geng	Jeff	57.7	
St. Thomas Aquinas	BC	M	Gill	Dayle	50.0	
Western Canada High School	AB	M	Goldie	Steven	75.0	
St. Thomas Aquinas	BC	M	Golinsky	Cameron	61.5	
centennial academy	QC	M	Gould	Matthew	61.5	
Lord Selkirk Regional Comprehensive	MB	M	Graham	Sean	73.1	1
University of Toronto Schools	ON	M	Grandfield	Charles	67.3	
Waterloo Collegiate	ON	F	Gu	Ming	62.5	
University of Toronto Schools	ON	F	Gu	Jenny	51.9	
New Norway School	AB	F	Gust	Lauren	67.3	
University of Toronto Schools	ON	M	Hao	Xiao	51.9	
New Westminster Secondary	BC	M	Hardinge-Booney	Cameron	51.9	
Bathurst High	NB	M	Hatheway	Branden	51.0	1
Westview Centennial Secondary	ON	F	Heng	Janet	57.7	
Lower Canada College	QC	M	Hoffmann	Daniel	57.7	
Old Scona Academic	AB	M	Hsung	Eugene	61.5	
Centennial CVI	ON	M	Hu	Jonah	67.3	
W.L. Mackenzie C.I.	ON	M	Huang	Jia	61.5	
Sir Winston Churchill	BC	M	Huang	Bryan	55.8	
Hawthorn School for Girls	ON	F	Hulbert	Laila	75.0	2=
Yale Secondary	BC	M	Hwang	Ju Sung	65.4	
Old Scona Academic	AB	M	Iglinski	Peter	72.1	
Woburn Collegiate Institute	ON	M	Ing	Colman	67.3	
Woburn Collegiate Institute	ON	F	Jain	Ashna	61.5	

University of Toronto Schools	ON	M	Jia	Eric	57.7	
Heritage Woods Secondary School	BC	M	Jun	Billy	61.5	
Centennial CVI	ON	M	Kang	Yi	61.5	
Beaconsfield High School	QC	F	Katigbak	Alexandra	53.8	
Centennial Academy	QC	M	Kistler	Tobias	77.9	2
W.C. Miller Collegiate	MB	M	Klippenstein	Zachary	53.8	3=
Yale Secondary	BC	M	Kong	Gil Woo	65.4	
Western Canada High School	AB	F	Lai	Krista	61.5	
Yale Secondary	BC	M	Lam	Lawrence	65.4	
Lord Selkirk Regional Comprehensive	MB	F	Leask	Kelly	57.7	2
Yireh Academy	BC	M	Lee	Scott	50.0	
W.L. Mackenzie C.I.	ON	M	Lee	Chun	53.8	
St. John's-Ravenscourt School	MB	F	Lefevre	Claire	51.9	5=
Ashbury College School	ON	M	Leslie	Adam	50.0	
Collège Saint-Sacrement	QC	F	Lessard	Marie-Pier	54.8	
Walter Murray Collegiate	SK	M	Li	Victor	59.6	3
Walter Murray Collegiate	SK	M	Li	Dali	51.9	5=
Point Grey Secondary	BC	M	Liu	Oscar	63.5	
Western Canada High School	AB	M	Liu	Jason	75.0	
Beaconsfield High School	QC	M	Luby	Ben	65.4	5=
Lower Canada College	QC	M	Lui	Edward	65.4	
New Westminster Secondary	BC	M	Lungu	Razvan	63.5	
W.L. Mackenzie C.I.	ON	F	Luo	Yuying	53.8	
Thistletown Collegiate Institute	ON	F	Ly	Christine	59.6	
Immaculata Regional High School	BC	M	Mack	Richard	67.3	
Northumberland Regional High School	NS	F	Mackenzie	Molly	59.6	1
St. Ann's Academy	BC	F	Main	Kimberly	55.8	
Richmond Hill High School	ON	M	Manocha	Rohan	51.0	
Collège Saint-Sacrement	QC	M	Marsan	Antoine	69.2	4
W.L. Mackenzie C.I.	ON	M	Mihaescu	Alexander	63.5	
New Westminster Secondary	BC	M	Millar	Eric	76.9	2
Richmond Hill High School	ON	M	Mohamedali	Hussein	50.0	
Hants East Rural High	NS	M	Mombourquette	Ethan	50.0	2
Holy Heart of Mary High School	NL	M	Mong	Jonathan	57.7	1
Clarence Fulton Secondary	BC	M	Morin	Mitchell	57.7	
Lower Canada College	QC	M	Moroz	Sonny	61.5	
Penticton Secondary	BC	M	Mrau	Jesse	55.8	
Bishop Macdonell Cathlic High School	ON	M	Muresan	Matthew	50.0	
Walter Murray Collegiate	SK	M	Myers	Nigel	53.8	4
Yale Secondary	BC	F	Neale	Robin	67.3	
Ballenas Secondary School	BC	M	Newell	Mason	53.8	
AR MacNeill Secondary	BC	M	Ng	Canic	50.0	
W.L. Mackenzie C.I.	ON	M	Nguy	David	54.8	
Old Scona Academic	AB	M	Nguyen	Julian	62.5	
Collingwood School	BC	M	Niamir	Darien	50.0	
Centennial CVI	ON	M	Niesiobedzki	Paul	53.8	
W.L. Mackenzie C.I.	ON	M	Nyman	John	59.6	
Richmond Hill High School	ON	M	Panju	May Sum	57.7	
University of Toronto Schools	ON	M	Patel	Nayan	67.3	
St. Thomas Aquinas	BC	M	Pearsall	Eric	59.6	
Centennial CVI	ON	M	Perkins	Colin	71.2	

Penticton Secondary	BC	M	Peterson	Kevin	63.5	
Westview Centennial Secondary	ON	F	Phan	Alicia	57.7	
Lord Selkirk Regional Comprehensive	MB	F	Pizzey	Dorothy	50.0	
Southridge School	BC	M	Podmore	Hugh	51.9	
Richmond Hill High School	ON	M	Ponte	Salomon	67.3	
Western Canada High School	AB	M	Pradhan	Faruq	59.6	
Westdale Secondary	ON	M	Qian	Chengbo	53.8	
University Transition Program	BC	M	Reich	Asaf	75.0	3=
Foothills Composite High School	AB	F	Reidlinger	Taylor	63.5	
Western Canada High School	AB	M	Rockley	Mark	52.9	
Penticton Secondary	BC	M	Rogers	John	50.0	
Penticton Secondary	BC	M	Rusk	David	54.8	
St. Ann's Academy	BC	F	Saat	Nicole	50.0	
Southridge School	BC	M	Saincher	Asheesh	50.0	
St. Thomas Aquinas	BC	F	Samuel	Rachel	50.0	
Bishop Macdonell Cathlic High School	ON	F	Savill	Alison	51.9	
Westmount Charter School	AB	M	Schuler	Kyle	57.7	
W.L. Mackenzie C.I.	ON	M	Shah	Akhil	55.8	
Ecole secondaire Des Pionniers	QC	M	Shen	Jifeng	61.5	
Heritage Woods Secondary School	BC	M	Shin	Harry	53.8	
Collège Saint-Sacrement	QC	M	Shink	Simon	71.2	3
Westview Centennial Secondary	ON	M	Sivagnanam	Ratharam	57.7	
Highland Secondary School	ON	F	Song	Eunsun	57.7	
W.L. Mackenzie C.I.	ON	F	Sriram	Pauari	63.5	
St. David Catholic Secondary	ON	M	Steffler	Mitch	50.0	
Ballenas Secondary School	BC	M	Stephens	Andrew	55.8	
Lord Tweedsmuir Secondary	BC	M	Stothers	Mark	53.8	
West Vancouver Secondary	BC	M	Sunell	Alexander	53.8	
Moscrop Secondary	BC	F	Sung	Amy	65.4	
University of Toronto Schools	ON	M	Tam	Davis	63.5	
New Westminster Secondary	BC	F	Tang	Jessica	63.5	
Woburn Collegiate Institute	ON	M	Teng	David	51.9	
Lord Beaverbrook Senior High School	AB	M	Thorton	Brady	59.6	
New Westminster Secondary	BC	M	Tran	Tony	55.8	
Old Scona Academic	AB	F	Troitskaia	Alice	71.2	
University of Toronto Schools	ON	M	Tsang	Kyle	75.0	2=
Walter Murray Collegiate	SK	M	Tsang	Chris	71.2	2
Centennial CVI	ON	M	van Dop	Peter	50.0	
Credo Christian High School	BC	M	Van Spronsen	Loren	74.0	
Credo Christian High School	BC	M	Vander Horst	James	53.8	
Woburn Collegiate Institute	ON	M	Velauthapillai	Nivethan	67.3	
W.L. Mackenzie C.I.	ON	F	Vu	Elizabeth	61.5	
Lower Canada College	QC	F	Wagner	Caroline	56.7	
Lower Canada College	QC	M	Wallace	Benjamin	61.5	
Woburn Collegiate Institute	ON	M	Wang	Matthew	57.7	
New Westminster Secondary	BC	M	Wang	Ivan	59.6	
Sir Winston Churchill	BC	F	Wang	Catherine	50.0	
Lord Selkirk Regional Comprehensive	MB	M	Wehru	Ryan	50.0	
Centennial CVI	ON	M	Wei	Yuan	57.7	
Waterloo Collegiate	ON	M	Wei Jie	Yu	57.7	
St. Thomas Aquinas	BC	F	Wheeler	Leanne	57.7	

University of Toronto Schools	ON	F	Wong	Cecillia	<b>61.5</b>	
University Transition Program	BC	M	Wood	Ian	<b>75.0</b>	3=
Centennial CVI	ON	M	Xie	Lawrence	<b>53.8</b>	
Thornhill Secondary School	ON	M	Xu	Steven	<b>55.8</b>	
Old Scona Academic	AB	M	Yan	Jack	<b>68.3</b>	
West Vancouver Secondary	BC	M	Yang	Hee Sung	<b>50.0</b>	
Walter Murray Collegiate	SK	M	Yin	Wenbo	<b>51.9</b>	5=
Centennial CVI	ON	M	Yin	Fred	<b>64.4</b>	
University Transition Program	BC	M	Yu	Simon	<b>75.0</b>	3=
Sir Winston Churchill	BC	F	Yu	Karen	<b>65.4</b>	
Burnaby South Secondary	BC	M	Zarud	Stan	<b>50.0</b>	
Western Canada High School	AB	M	Zhang	Zhen	<b>57.7</b>	
Old Scona Academic	AB	F	Zhang	Alison	<b>65.4</b>	
Western Canada High School	AB	M	Zhou	Kevin	<b>61.5</b>	
Richmond Hill High School	ON	M	Zhu	Zimu	<b>71.2</b>	
Bishop Tonnos Catholic Secondary	ON	F	Zizzo	Natalie	<b>54.8</b>	
Old Scona Academic	AB	M	Zuo	Kevin	<b>53.8</b>	
Thornhill Secondary School	ON	M	Zuo	Ben	<b>67.3</b>	