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Ministry of
Education

Choosing a High School Mathematics Pathway

January 26, 2010

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- *Key Terms*
- *Current Situation*
 - *Demographics*
- *Factors Affecting Choice*
 - *Statistics*
- *Considerations when Selecting a Pathway(s)*
- *Submitted Questions*
- *Sources of Additional Information*
- *Questions and Discussion*



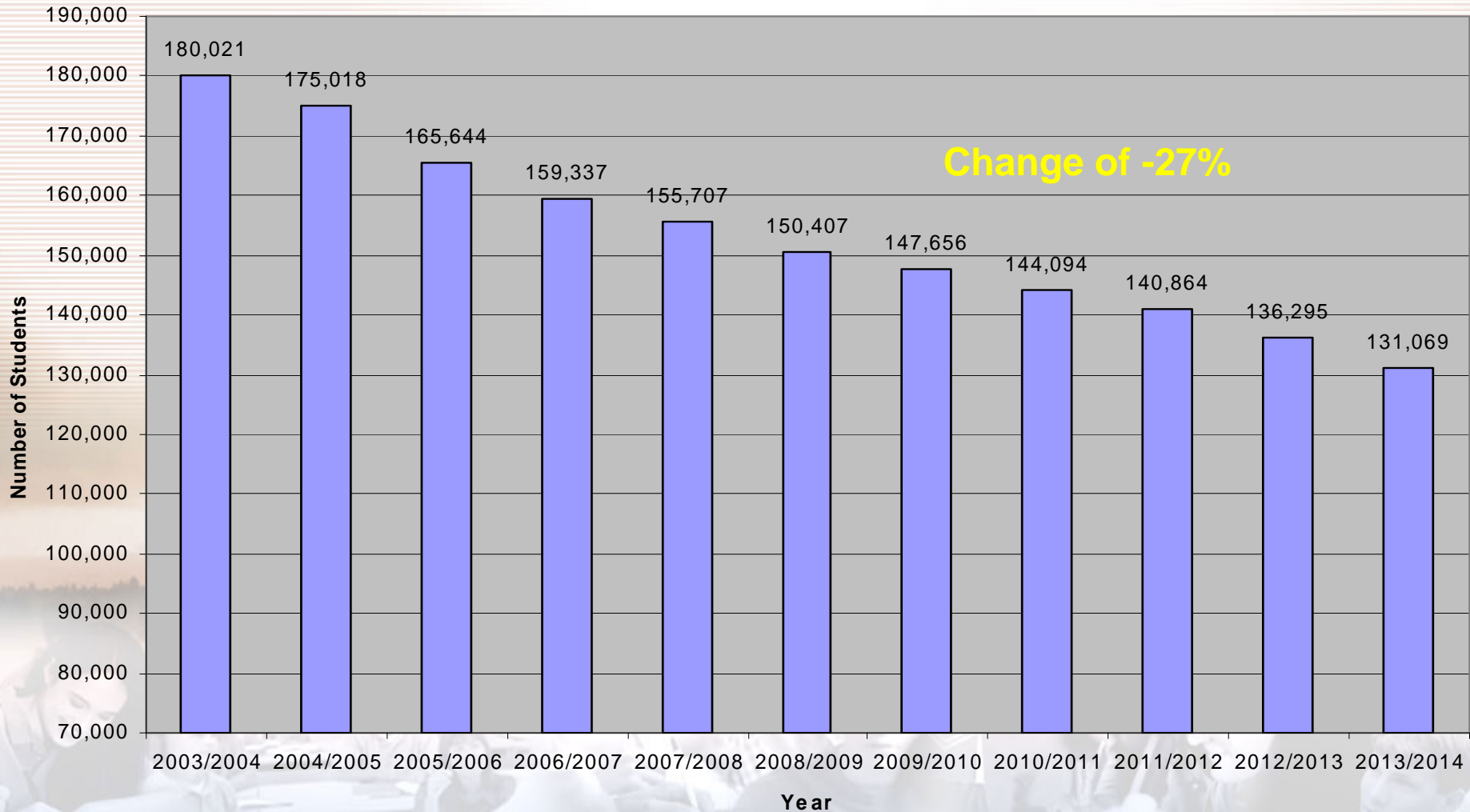
Key Terms

- *WNCP – Western and Northern Canadian Protocol*
- *CCF – Common Curriculum Framework: basis for K-12 mathematics in BC, YT, AB, NT, SK, NU, MB, NB, PEI, NF*
- *Pathways – series of courses students take in high school*
- *PLO – Prescribed Learning Outcomes: specific knowledge, skills and understandings that students are required to attain by the end of a given course*
- *Als – Achievement Indicators: how students may demonstrate their achievement of the goals of a specific prescribed learning outcome*
- *Mathematical Processes – critical aspects of learning, doing and understanding mathematics*



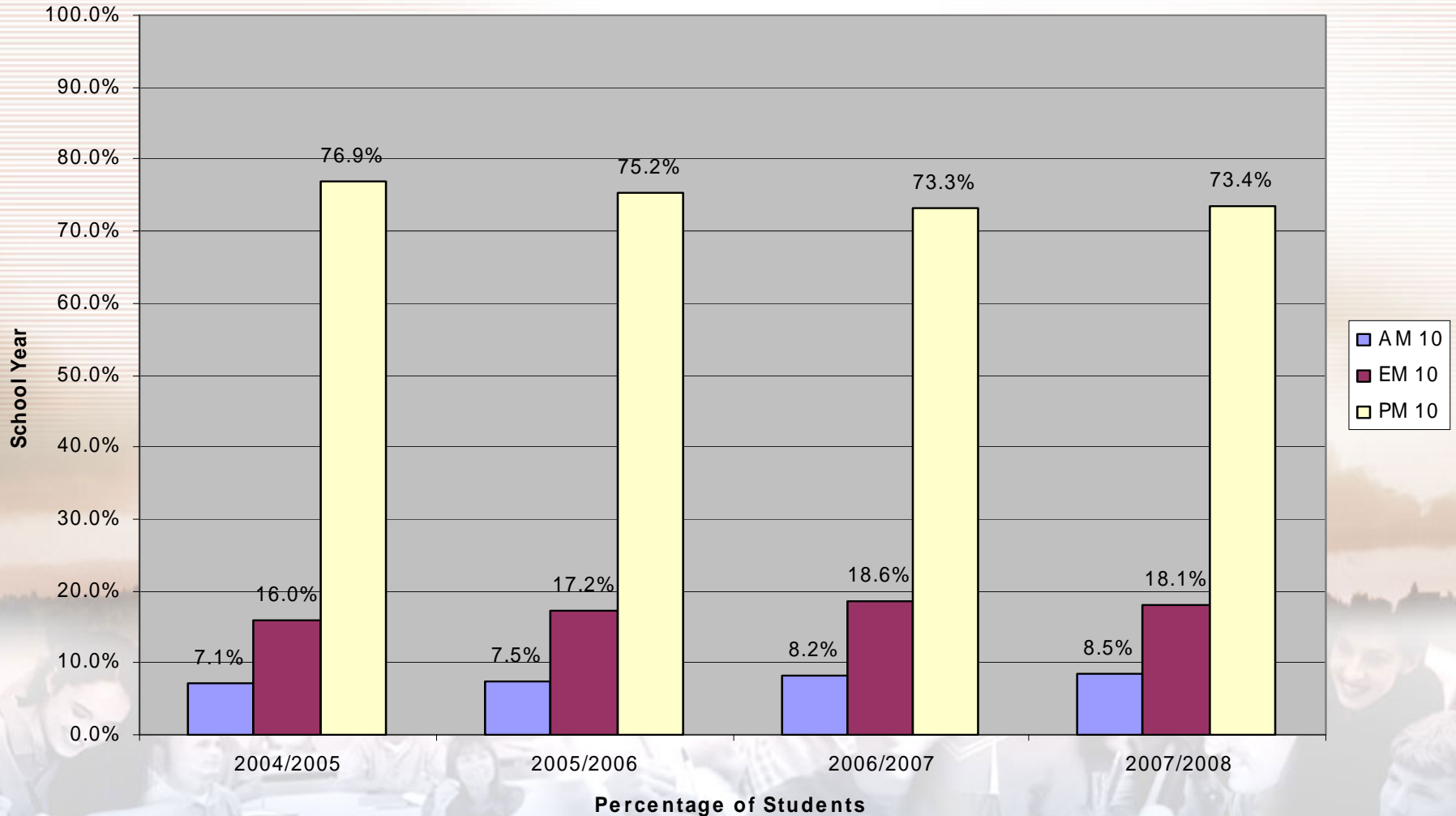
Demographics

BC Student Numbers (Grades 10, 11, 12)



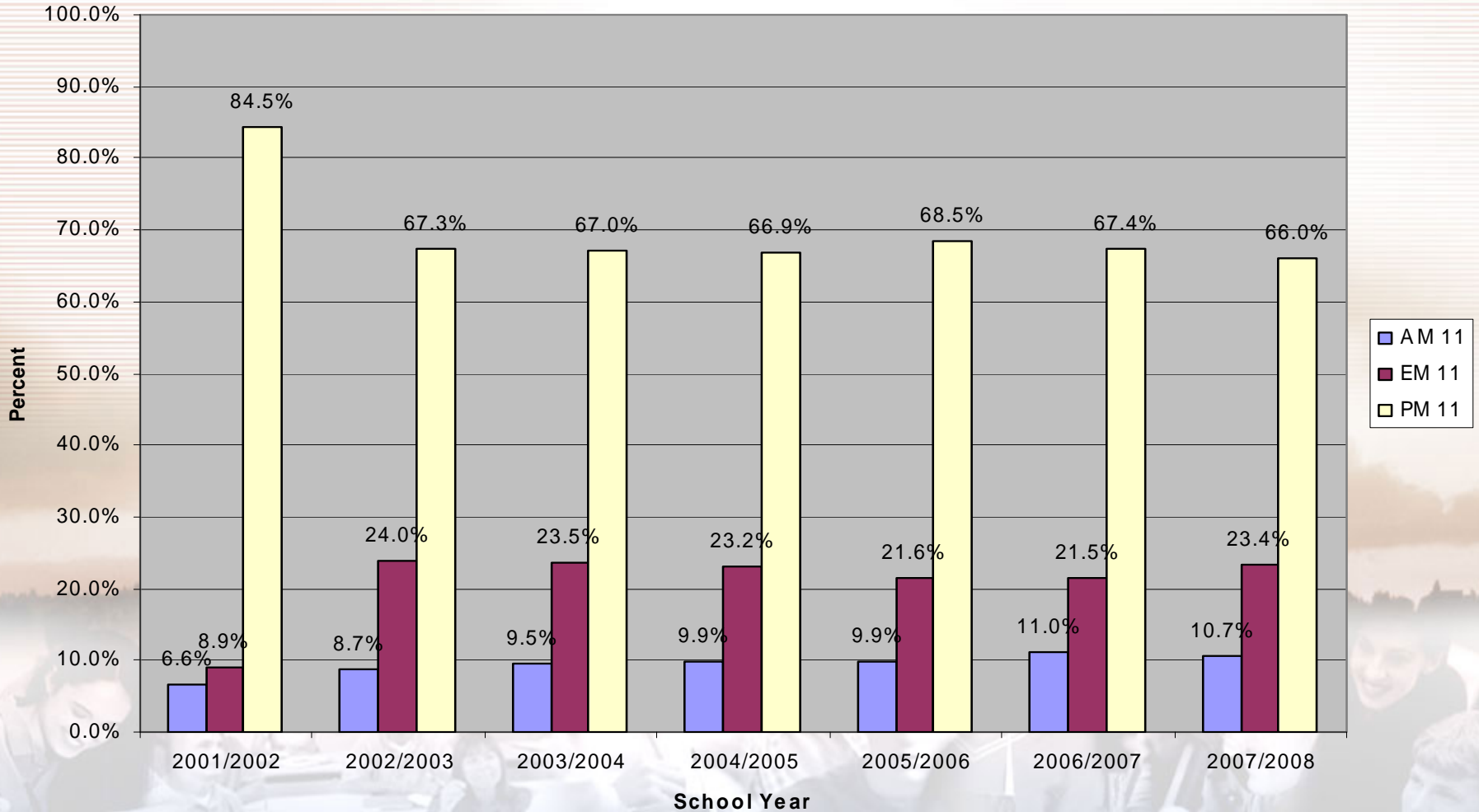
Demographics

Grade 10 Student Percentages



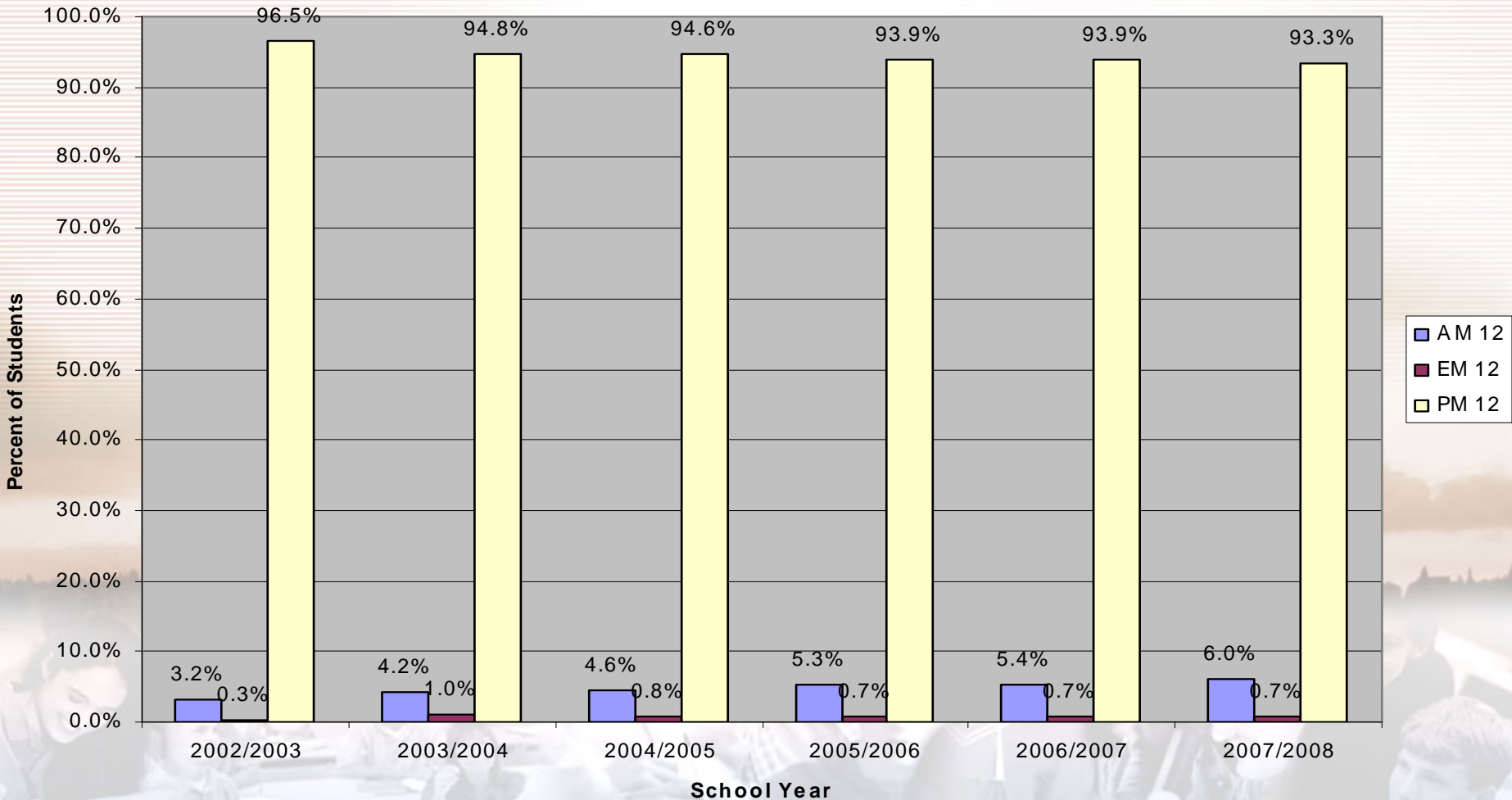
Demographics

Grade 11 Student Percentage



Demographics

Grade 12 Student Percentages



What Factors are Driving These Choices?

- 1. Post – Secondary Admission Criteria*
- 2. Concern About Taking the Wrong Pathway*



Post-Secondary Admissions

With the current Mathematics Pathways it has been observed ...

1. Students want to “keep their doors open” by taking Principles of Mathematics (PM) in particular PM 11

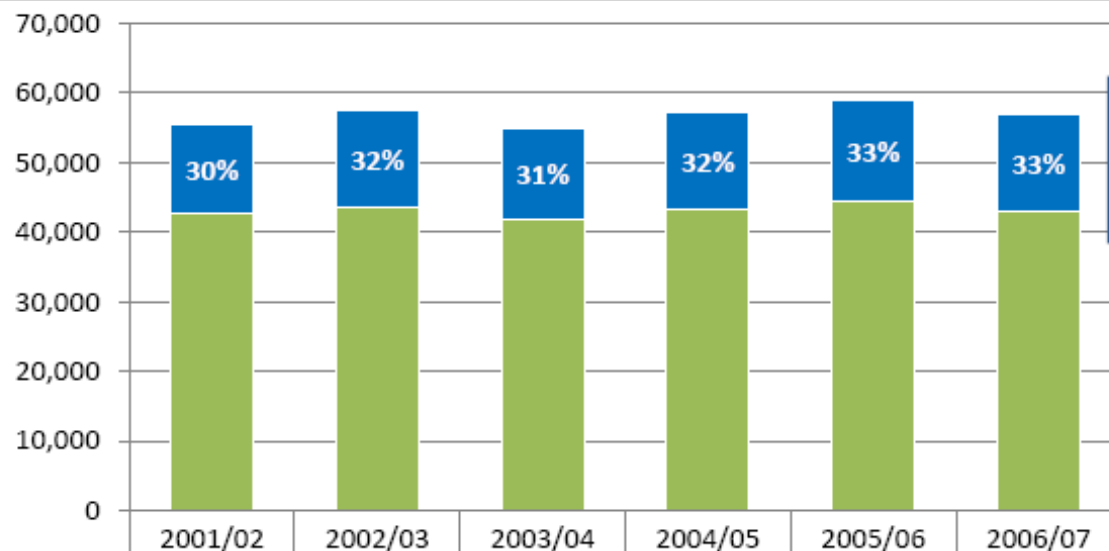
- Highest “admission criteria” becomes the standard*
- PM 11 is currently necessary for entry into UBC*
- Students often take PM11 course more than once*
- Student attitudes are often affected*

2. Students do not want to take an “extra math” course

- Less than ½ of BC students take a grade 12 math course*
- Students often look at minimal graduation or post secondary admission requirements and not at which courses would serve them best in the future*
- Students may have to take a post-secondary math course to “upgrade”*

Post-Secondary Admissions

STP Fast Fact #10: University Eligibility
Number and percentage of grade 12 graduates
who are university eligible.



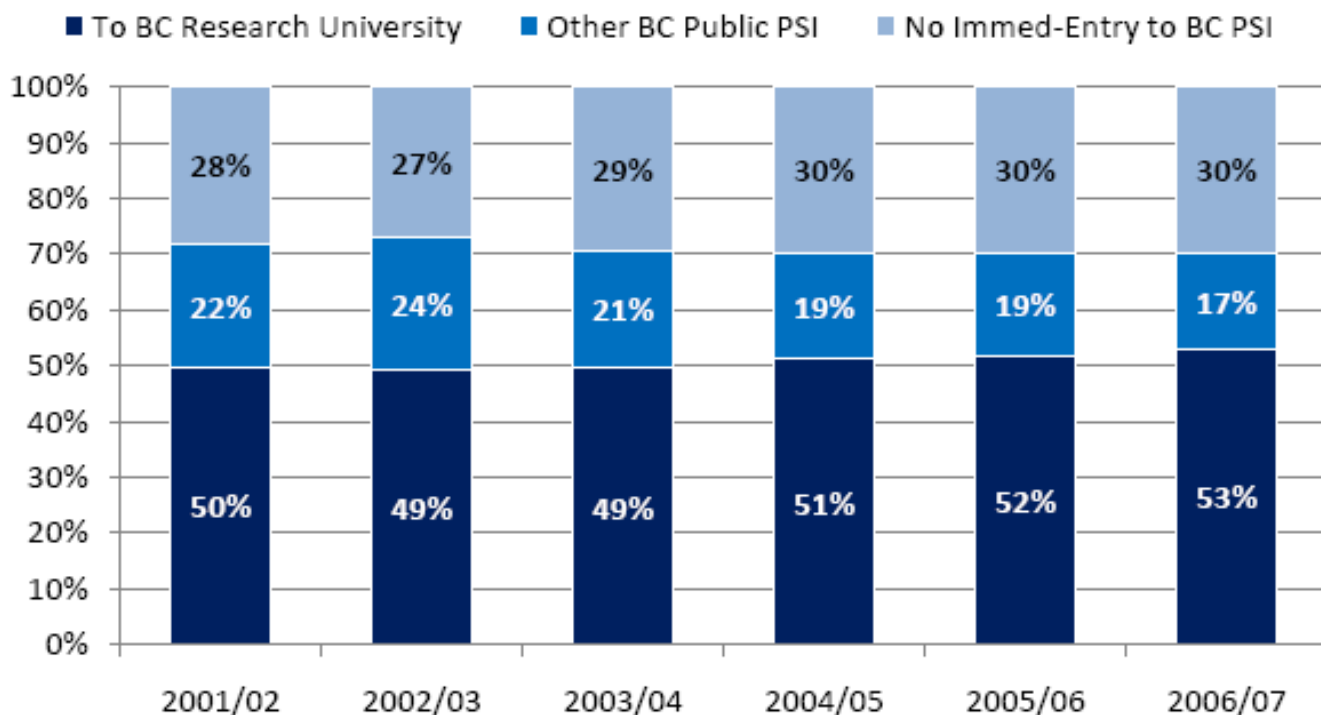
Do these university-eligible grads enrol in B.C. universities? (NEXT)

# Univ Eligible	12,793	13,901	12,948	13,874	14,482	14,035
# Grads	42,534	43,482	41,827	43,193	44,442	42,907
# Not Univ Eligible	29,741	29,581	28,879	29,319	29,960	28,872

Post-Secondary Admissions

STP Fast Fact #11: Do University Eligible Grade 12 Graduates Enrol in B.C. Universities?

Post-secondary destinations of university eligible graduates within one year of high school graduation.



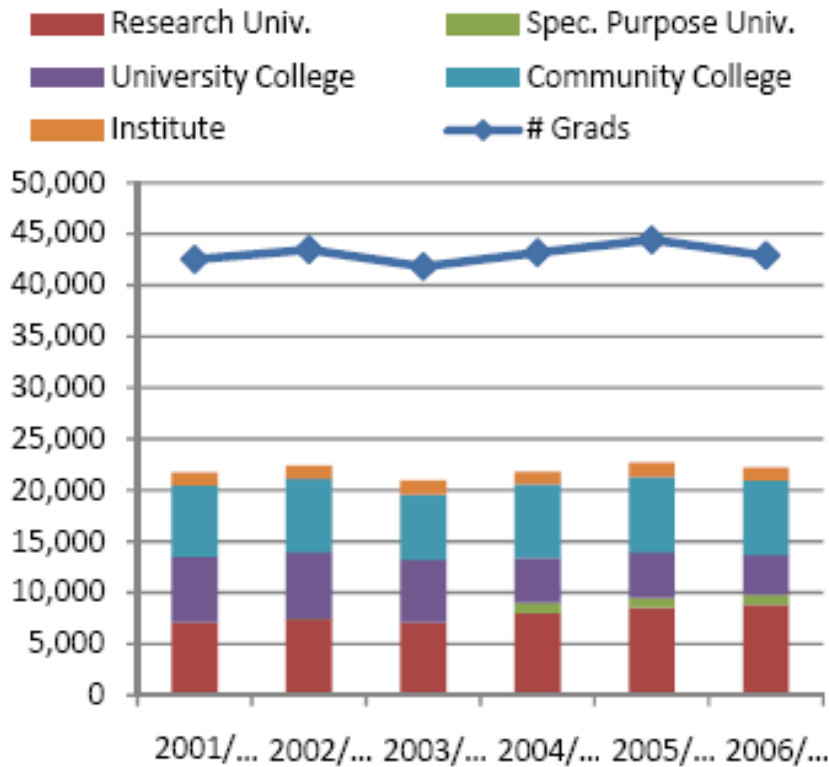
32% of grads are Univ Elig. (PREV)

# University Eligible Grads:	12,793	13,901	12,948	13,874	14,482	14,035
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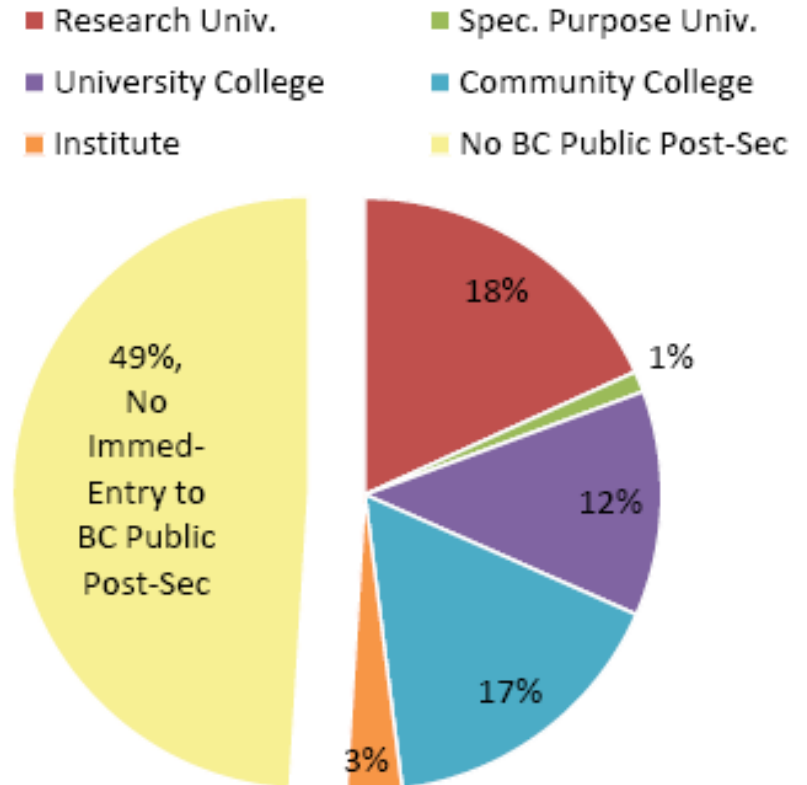
Some Factors to Consider

STP Fast Fact #12: B.C. Public Post-Secondary Destinations of all grade 12 graduates within one year of high school graduation.

Immediate Entry Destinations, by High School Grad Year



Immediate Entry Destinations, 6-Yr Avg



Post-Secondary Admissions UBC Case Study

		Math 1XX*	No Math**	Grand Total
Campus	Prog			
Vancouver	BA (Arts)	688	1365	2053
	BASC (Applied science/engineering)	731	8	739
	BCOM (Commerce)	510	37	547
	BDSC (Dental Hygiene)		20	20
	BHK (Human Kinetics)	33	76	109
	BMUS (Music)	1	39	40
	BMW (Midwifery)		1	1
	BSAB (Bachelor of Applied Biology)	6	1	7
	BSAG (Agroecology)	12	5	17
	BSC (Science)	1560	77	1637
	BSCN (Nursing)	29	13	42
	BSCW (Wood products, Forestry)	14		14
	BSF (Forestry)	22	4	26
	BSFN (Food, Nutrition and Health)	162	18	180
	BSFS (Forest Sciences)	16	3	19
	Unclassified			3
Vancouver Total		3784	1670	5454
Grand Total		3784	1670	5454

* Students taking first year math at UBC (2009 Direct Entry)

** Student did not take a first year math at UBC (including IB, AP, BC Calc 12)

Post-Secondary Admissions: UBC Case Study

UBC Student Population (2003-2006)

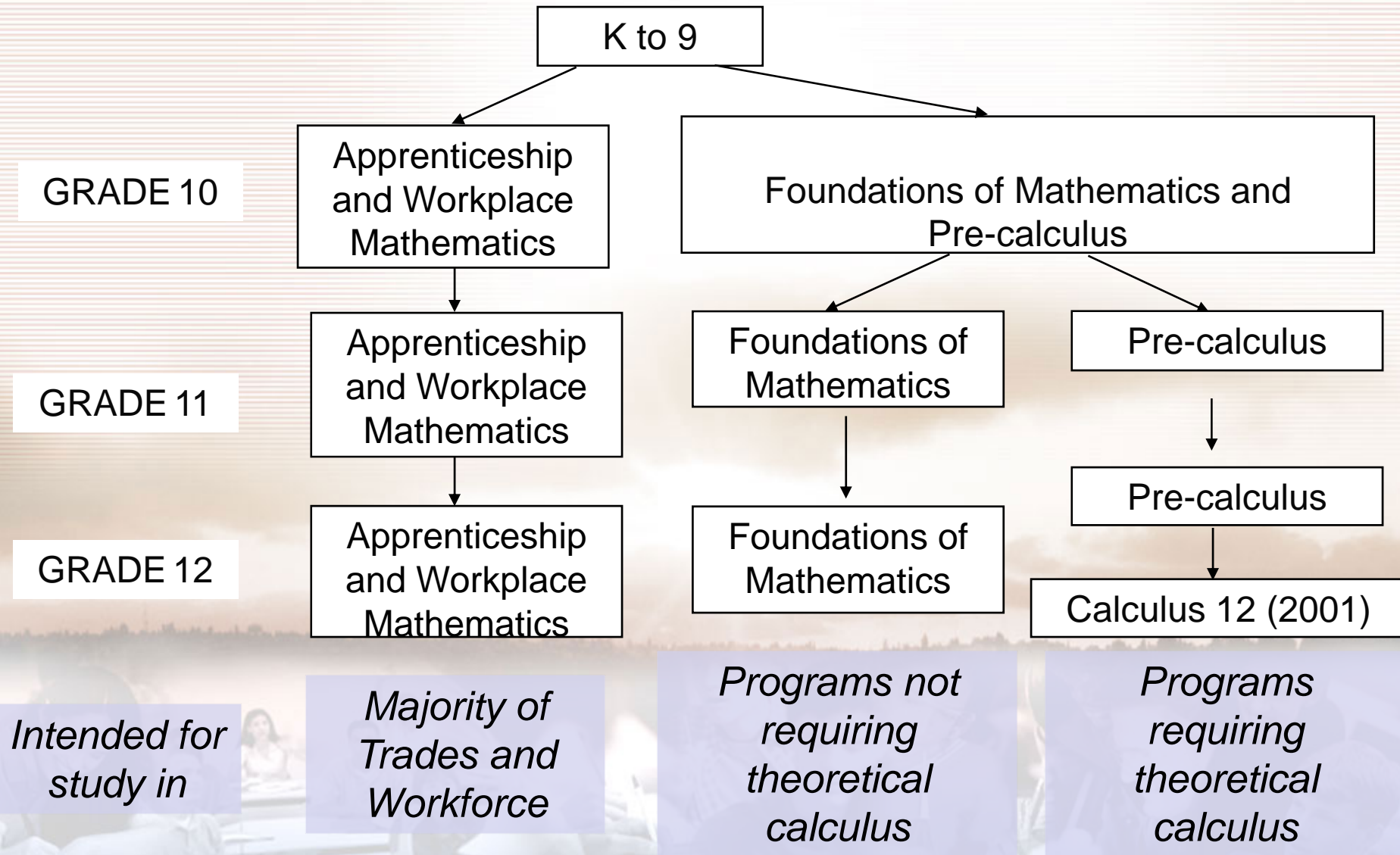
Total BC Grade 12 Students	170,000
UBC Entrants	10,303
PM 11 Entrants	991
Percent of UBC Entrants with PM 11 only	9.62%
Percent of Total BC Grade 12 Student Population	0.58%
Grade 12 Math (PM 12, IB, AP, BC Calculus 12)	9,312
Percent of UBC Entrants with Grade 12 Math	90.38%
Percent of Total BC Grade 12 Student Population	5.48%

Note: Only Arts, Dental Hygiene, Human Kinetics, Midwifery, and Music do not require PM 12 for admission

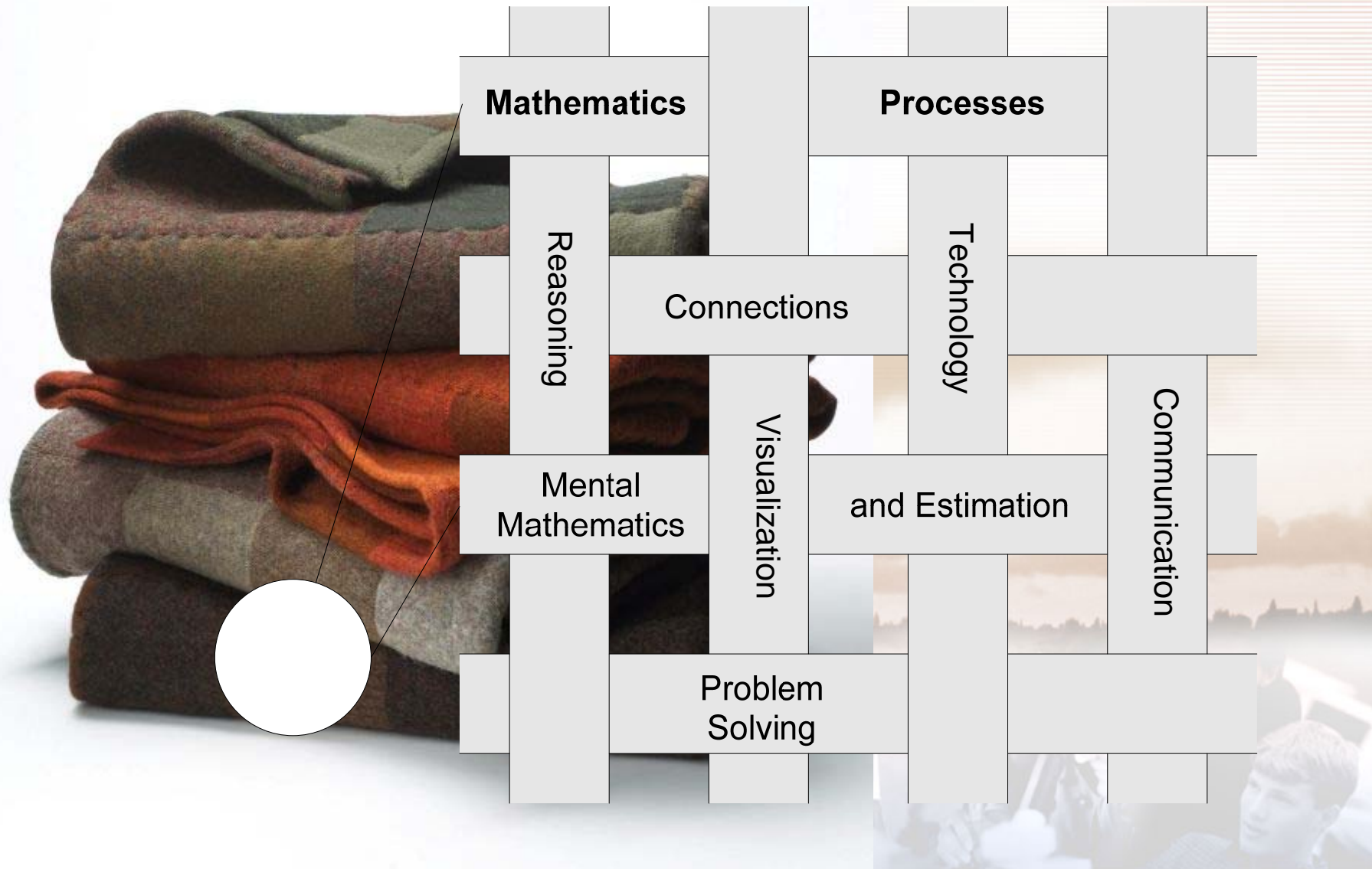
- *UBC – Foundations of Mathematics 12 or Pre-calculus 11 for general admission (i.e. Arts, Dental Hygiene, Human Kinetics, Midwifery, and Music) all other programs will require additional mathematics courses*
- *Decisions from other post-secondary institutions pending*
- *Information will be posted on www.educationplanner.ca when available*



Selecting the Right Pathway



Mathematical Processes – The Threads of the Three Pathways



Topics in the 10-12 Pathways – What is Relevant?

AWM 10
Measurement
Geometry
Number
Algebra

AWM 11
Measurement
Geometry
Number
Algebra
Statistics

AWM 12
Measurement
Geometry
Number
Algebra
Statistics
Probability

Foundations 11
Measurement
Geometry
Logical Reasoning
Statistics
Relations and Functions
Mathematics Research Project

“Common 10”
Measurement
Algebra and Number
Relations and Functions

Foundations 12
Financial Mathematics
Logical Reasoning
Probability
Relations and Functions
Mathematics Research Project

Pre-calculus 11
Algebra and Number
Trigonometry
Relations and Functions

Pre-calculus 12
Trigonometry
Relations and Functions
Permutations, Combinations and Binomial Theorem

Selecting the Right Pathway


- 1) *Which pathway is interesting to the student?*
- 2) *Where are the student's strengths?*
- 3) *Which math topics would be most relevant for the post-secondary study plans of the student?*
- 4) *Which topics would assist the student in developing an appreciation for mathematics?*
- 5) *Is the student interested in taking more than one math pathway?*



6) *Closing Doors? Which one?*

- *“I will never take math again”*
- *I can not get directly into the program I think I may take*
- *No door is ever closed ... the student's path changes*

7) *BC Council of Admissions and Transfers – established transfer agreements*



Q: Can a student take more than one pathway?

A: Yes.

Q: If a student takes “the wrong” pathway can s/he switch?

A: Yes. Students should discuss the best transitions with their teacher. After graduation there are options as well through post secondary institutions and agreements within the BC Council of Admissions and Transfer (www.bccat.bc.ca).

Q: What about the student who is several grades behind?

A: Curriculum can not solve this by itself. Changes in K-9 should assist. Identifying issues early, differentiated instruction, formative assessment all play a part.

Where can I get more information?

Post -Secondary Admission Criteria

- www.educationplanner.ca or post secondary web sites

Curriculum documents

- http://www.bced.gov.bc.ca/irp/irp_math.htm

Mathematics 10-12 FAQs

- www.bced.gov.bc.ca/irp/program_delivery/math1012_faq.pdf

WNCPCCF, background research, resources

- www.wncp.ca click on Subject Area/Projects then Mathematics

Three Additional Illuminate Sessions

Jan 27 @ 2:30 pm	Introduction to Mathematics 10-12 Pathways and Choosing a Mathematics Pathway
Feb 9 @ 3:30 pm	Grade 10 Provincial Mathematics Exams
Feb 23 @ 3:30 pm	Mathematical Processes in the High School Mathematics Curriculum

Further Questions

Additional questions can be sent by email to:

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Please include your email and phone number

