

Skills and Knowledge Inventories (SKI) Pension Area of Practice

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*This resource document is to assist members practicing in retirement in gauging their Skills and Knowledge for this area of practice. The Skills and Knowledge Inventory (SKI) should not be construed as a definitive and complete description of the all the competencies required for members practicing in this area **nor should it be construed or applied as constituting a minimum or a maximum requirement to qualify/disqualify or enable/disable an actuary for the retirement area of practice. This SKI is also not intended to prevent the application of the Statutes, Bylaws, Rules of Professional Conduct and Standards of Practice which may be relevant to each particular case in which an actuary is acting in his/her professional capacity.***

The familiarity or adherence to the document is not a necessary condition to meet the CIA’s Continuing Professional Development (CPD) Qualification Standard. This document will not be used by the CIA (specifically, the Committee on Professional Conduct or the Disciplinary Tribunal) as a standard to discipline members.

The letter in each box indicates the level of skills and knowledge of a member working in a given role. The level may vary from that indicated depending on the specific requirements of any practitioner’s role. The letter codes are defined as follows:

Table 1a

	Blank Box	No specific requirements identified for that subject.
A	Basic Knowledge and General Awareness	General awareness of the basic facts and also of the broad implications of the subject.
W	Wide Knowledge	Deep understanding of the subject area and its implications, as well as its potential interaction with other subjects.
D	Detailed Knowledge and Experience	Ability to effectively apply the subject in practice, with detailed knowledge of the facts, and ability to adjust the approach based on circumstances, particularly for unusual situations.
D*	Detailed Knowledge and Experience	Same as D except it is needed only if a member accepts assignments in that area.

Table 1b
Skills and Knowledge Subjects for Various Pension Practitioner Categories

		A	B	C	D	E	F	G
	Skills and Knowledge Subjects	Benefits Consultant/ Consulting Actuary	Valuation Actuary (Signing)	Actuarial Valuation (Technical Support)	Practice Leader	Benefits and Pension Optional Values	Regulator	Social Security Plan Actuary
	Actuarial Resources							
1	Experience Studies (internal and industry)	D	D	D	W			D
2	Standard Tables	D	D	D	W	A	A	D
	Actuarial Techniques and Methods							
3	ALM	D*	W		W		A	D
4	Asset Modelling	D*	W		W		A	D
5	Financial Economics	W	W		W		A	W
6	M&A	D	W		W		A	
7	Replication Portfolios	D*	W	A	W		A	A
8	Selection of Methods and Assumptions	D	D	A	W	A	A	D
9	Total or Partial Plan Wind-up	D	D	A	W	A	A	
	Economic Environment							
10	Published Statistics Demographic/ Economic	W	A		W			W
11	Wage and Price Economics	W	A		W			W
	Specialist Areas of Knowledge							
12	Risk Management Transactions	D	W	D*	W	W	W	
13	Pension Administration	D	D	D	W	D	D	
14	Plan Design/Conversions	D	D*		W	D*	D*	
15	SERPs and Designated Plans	D*	D*	D*	W	D*	D*	
16	Governance Policies	D	W		W		A	

(Updated April xx, 2018)

Skills and Knowledge Inventory – Pension

		A	B	C	D	E	F	G
	Skills and Knowledge Subjects	Benefits Consultant/ Consulting Actuary	Valuation Actuary (Signing)	Actuarial Valuation (Technical Support)	Practice Leader	Benefits and Pension Optional Values	Regulator	Social Security Plan Actuary
17	Funding Policies	D	W		W		A	
18	Statement of Investment Policies and Procedures	D	W		W		D	D
Tax and Legal Environment								
19	Accounting Standards	D	D	D*	W			
20	Pension Benefit Standards Acts and Regulations	D	D	D	W	D	D	
21	Foreign Actuarial Standards of Practice	A	A		A		A	A
22	Income Tax Act and Regulations	D	D	A	W	D	D	
23	Jurisprudence/Legal Environment	D	D		W	D	D	W
24	Social Security Benefit Law	A	A	A	W	D	W	D

Table II
Additional Information Regarding Skills and Knowledge Subjects

Skills and Knowledge Specifics	
1	Experience Studies: Constructing tables, comparing actual to expected, gain and loss analysis, statistical credibility.
2	Standard Tables: Sources of data, construction techniques, projection method, common usage.
3	(ALM) Asset Liability Management: Asset models, liability models, interpretation and presentation of results, methods for evaluating risk and possible loss.
4	Asset Modeling: Asset models, interpretation of results, setting interest rate assumptions.
5	Financial Economics: Basic theory, evaluating guarantees.
6	Mergers and Acquisitions: Accounting impact of transaction, definition of purchase price adjustments.
7	Replication Portfolios: Design, construction, available assets and products to defray risk.
8	Selection of Methods and Assumptions: Market valuations, interrelationship of assumptions, selection of realistic assumptions, best estimate assumptions, margins and provisions for adverse deviations, method and assumptions appropriate to the purpose of valuation implications of experience studies, and gain and loss analyses.
9	Total or Partial Wind-up: Trust implications; regulator guidelines, Canadian Institute of Actuaries’ standards and guidance, investment implications, disclosure requirements, accounting implications.
10	Published Statistics Demographic/Economic: Bond yields, investment returns, market indices, population mortality tables, consumer price index, average wage index.
11	Wage and Price Economics: Central bank policies and targets.
12	Risk Management Transactions: Purchase of annuities (buy-in and buy-out), accounting implications, Assuris insurance, Pension Benefits Guarantee Fund (PBGF) coverage, registered and non-registered, prescribed and non-prescribed. Longevity insurance and swaps. Pension settlements, locking-in rules and commutation rights.

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13	Pension Administration: Regulatory requirements, disclosure requirements.
14	Plan Design/Conversions: Regulatory requirements, surplus implications, accounting applications, disclosure requirements, benefit projections.
15	SERPs and Designated Plans: Valuation requirements, regulatory requirements, accounting implications, taxation requirements.
16	Governance Policies: Regulatory requirements, development and information that should be included, application.
17	Funding Policies: Regulatory requirements, development, application.
18	Statement of Investment Policies & Procedures: Regulatory requirements, development and information that should be included, application.
19	Accounting Standards: Canadian, US, UK, International, etc. calculations, disclosure requirements, differences in certification requirements. Convergence of standards.
20	Pension Benefits Standards Acts and Regulations: Funding Standards (going-concern and solvency), reporting requirements, minimum benefit Standards, disclosure Standards.
21	Foreign Actuarial Standards of Practice: Practice Standards to be applied.
22	Income Tax Act and Regulations: Maximum funding rules, reporting requirements, maximum benefit Standards, PAs, PSPAs and PARs.
23	Jurisprudence/Legal Environment: Marriage breakdown requirements, beneficiary rights, basic principles of trust law, rights to surplus, responsibility for deficits.
24	Social Security Benefit Law: Canada Pension Plan, Old Age Security, GIS, Provincial programs. Disability and death benefits.

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Table III
Additional Details Regarding Pension Practitioner Categories

A	Benefits Consultant/Consulting Actuary: Advice on benefit design and amendment, setting of assumptions, selection of funding methods, design and application of funding policy, compliance with <i>Income Tax Act</i> and federal and provincial standards. Interpretation of data, studies and valuation results and explanation thereof to sponsors and other stakeholders. Assessment of financial risk to sponsors and members and reporting of actuarial implications. Monitoring of changing standards and reporting requirements and assistance in compliance.
B	Valuation Actuary (Signing): Planning, organizing, control and direction of experience studies, assumption-setting, valuation calculations, gain and loss analyses, development of recommendations and preparation of reports in accordance with legislative requirements and Canadian Institute of Actuaries Standards of Practice. Responding to questions and provision of explanations in respect of any or all of the aforementioned.
C	Actuarial Valuation (Technical Support): Planning, organizing, control and direction of experience studies, assumption-setting, valuation calculations, gain and loss analyses, development of recommendations and preparation of reports in accordance with legislative requirements and Canadian Institute of Actuaries Standards of Practice.
D	Practice Leader: Recruitment, training and management of benefit consultants, actuaries and actuarial support staff. Maintenance of quality standards and ensuring all actuarial work is performed in accordance with both legislative requirements and Canadian Institute of Actuaries Standards of Practice, including ensuring appropriate internal peer review of all actuarial work.
E	Benefits and Pension Optional Values: Planning, organization, control and direction of calculation of benefit amounts and pension optional values. Ensuring all calculations are performed in accordance with legislative requirements and applicable jurisprudence and, where applicable, with Canadian Institute of Actuaries Standards of Practice.
F	Regulator: Review of actuarial valuation reports and other reports received for compliance with legislative requirements, applicable jurisprudence and, where applicable, Canadian Institute of Actuaries Standards of Practice. Advice to governments on changes to legislative requirements and interpretation and explanation of same to sponsors, members, consultants and other advisors.
G	Social Security Plan Actuary: Planning, organizing, control and direction of experience studies, assumption-setting, valuation calculations, demographic and financial projections, gain and loss analyses. Development of recommendations to governments with respect to benefit changes and funding policies. Preparation of reports in accordance with legislative requirements and Canadian Institute of Actuaries Standards of Practice. Responding to questions from Ministers and others, and provision of explanations in respect of any or all of the aforementioned.

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Members are reminded that they must decide for themselves whether the material presented in the reference list is relevant to his/her own development. In doing so, the member should consider that the list is meant to accommodate practitioners of various experience levels and with widely different development requirements. Since members are required to be familiar with the Standards of Practice applicable to the actuarial work they perform, the SOPs are not specifically included in the SKI’s Reference List but a link to where they can be found on the CIA website is provided at the end of the Table below.

Table IV
Suggested Resources for Skills and Knowledge Subjects

Resources by Broad Category: Actuarial Resources (R); Actuarial Methods (M); Economic Environment (E); Tax/Legal Environment (T); Specialist Knowledge (S)	
	<p>Associations and Organizations:</p> <ul style="list-style-type: none"> • Actuarial Associations • Bank of Canada • Association of Canadian Pension Management (ACPM) • Canadian Association of Pension Supervisory Authorities (CAPSA) • Canadian Legal Information Institute (CanLII)
	<p>General References:</p> <ul style="list-style-type: none"> • Manulife Summary of Pension Legislation • Morneau Shepell <i>Handbook of Canadian Pension and Benefit Plans</i> (Sixteenth Edition), 2016 - Chapters 1-15 • Willis Towers Watson <i>Canadian Pensions and Retirement Income Planning</i> (Six Edition), 2017 - Chapters 1-23 • <i>Employee Benefits in Canada</i>, International Federation of Employee Benefit Plans (Fourth Edition), 2015 • <i>Pension Mathematics for Actuaries</i>, A. Anderson (Third Edition), 2006
M	<p>Revised Educational Note – Setting the Accounting Discount Rate Assumption for Pension and Post-employment Benefit Plans (Accession Number 218086) http://www.cia-ica.ca/docs/default-source/2018/218086e.pdf</p>
M	<p>Educational Note: Assumptions for Hypothetical Wind-Up and Solvency Valuations with Effective Dates between December 31, 2017, and December 30, 2018 (Accession Number 218031) http://www.cia-ica.ca/docs/default-source/2018/218031e.pdf N.B. Look for updates each quarter.</p>

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Resources by Broad Category: Actuarial Resources (R); Actuarial Methods (M); Economic Environment (E); Tax/Legal Environment (T); Specialist Knowledge (S)	
T	Submission to the Ontario Ministry of Finance on the Reform of Ontario’s Funding Rules (Accession Number 218019) http://www.cia-ica.ca/docs/default-source/2018/218019e.pdf
R	Research Paper: Settlement Cost Compared to Going Concern Funding Targets – Analysis of Pension Plans Registered in Ontario (Accession Number 218016) http://www.cia-ica.ca/docs/default-source/2018/218016e.pdf
R	Phase 2 Final Report: Population Aging, Implications for Asset Values, and Impact for Pension Plans: An International Study (Accession Number 218014) http://www.cia-ica.ca/docs/default-source/2018/218014e.pdf
T	Submission to the Nova Scotia Finance and Treasury Board on Pension Funding Framework Review and Other Issues Affecting Pension Plans (Accession Number 218003) http://www.cia-ica.ca/docs/default-source/2018/218003e.pdf
M	Educational Note – Second Revision: Selection of Mortality Assumptions for Pension Plan Actuarial Valuations (Accession Number 217128) http://www.cia-ica.ca/docs/default-source/2017/217128e.pdf
E	Report on Canadian Economic Statistics 1924-2017 (Accession Number 218067) http://www.cia-ica.ca/publications/publication-details/218067
M	Research Paper: Provisions for Adverse Deviations in Going Concern Actuarial Valuations (Accession Number 217035) http://www.cia-ica.ca/docs/default-source/2017/217035e.pdf
R	Research Paper: Discount Rate Sensitivities in Pension Plans (Accession Number 217034) http://www.cia-ica.ca/docs/default-source/2017/217034e.pdf
M	Educational Note – Use of Models (Accession Number 217007) http://www.cia-ica.ca/docs/default-source/2017/217007e.pdf
M	Revised Educational Note – Determination of Best Estimate Discount Rates for Going Concern Funding Valuations (Accession Number 215106) http://www.cia-ica.ca/docs/default-source/2015/215106e.pdf
M	Commutated Value Mortality Table Communication (Accession Number 215077) http://www.cia-ica.ca/docs/default-source/2015/215077e.pdf

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Skills and Knowledge Inventory – Pension

Resources by Broad Category: Actuarial Resources (R); Actuarial Methods (M); Economic Environment (E); Tax/Legal Environment (T); Specialist Knowledge (S)	
T	Report: Report of the Task Force on Target Benefit Plans (Accession Number 215043) http://www.cia-ica.ca/docs/default-source/2015/215043e.pdf
M	Revised Educational Note: Events Occurring After the Calculation Date of an Actuarial Opinion for a Pension Plan (Accession Number 215004) http://www.cia-ica.ca/docs/default-source/2015/215004e.pdf
M	Revised Educational Note on Reflecting Increasing Maximum Pensions under the Income Tax Act in Solvency, Hypothetical Wind-up and Wind-up Valuations (Accession Number 215003) http://www.cia-ica.ca/docs/default-source/2015/215003e.pdf
M	Revised Educational Note: Transfer Values – Ontario Reporting Requirements (Accession Number 215002) http://www.cia-ica.ca/docs/default-source/2015/215002e.pdf
T	Submission by the Canadian Institute of Actuaries to the House of Commons Standing Committee on Finance (Accession Number 214122) http://www.cia-ica.ca/docs/default-source/2014/214122e.pdf
M	Revised Educational Note: Expenses in Funding Valuations for Pension Plans (Accession Number 214101) http://www.cia-ica.ca/docs/default-source/2014/214101e.pdf
M	Revised Educational Note: Guidance on Asset Valuation Methods (Accession Number 214100) http://www.cia-ica.ca/docs/default-source/2014/214100e.pdf
M	Final Report: Canadian Pensioners’ Mortality (Accession Number 214013) http://www.cia-ica.ca/docs/default-source/2014/214013e.pdf
M	Educational Note – Alternative Settlement Methods for Hypothetical Wind-Up and Solvency Valuations (Accession Number 213082) http://www.cia-ica.ca/docs/default-source/2013/213082e.pdf
M	Report: Issues Related to Increasing the “Retirement Age” (Accession Number 213038) http://www.cia-ica.ca/docs/default-source/2013/213038e.pdf
R	Report: Canadian Institute of Actuaries 2009 Pension Review Project (Accession Number 212093) http://www.cia-ica.ca/docs/default-source/2012/212093e.pdf

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Resources by Broad Category: Actuarial Resources (R); Actuarial Methods (M); Economic Environment (E); Tax/Legal Environment (T); Specialist Knowledge (S)	
S	Educational Note – Financial Risks Inherent in Multi-Employer Pension Plans and Target Benefit Pension Plans (Accession Number 211039) http://www.cia-ica.ca/docs/default-source/2011/211039e.pdf
M	Educational Note – Calculation of Incremental Cost on a Hypothetical Wind-Up or Solvency Basis (Accession Number 210095) http://www.cia-ica.ca/docs/default-source/2010/210095e.pdf
E	White Paper: Government-Facilitated Retirement Income Plans (Accession Number 210014) http://www.cia-ica.ca/docs/default-source/2010/210014e.pdf
R	Report: Pension Value Consistency (Accession Number 208019) http://www.cia-ica.ca/docs/default-source/2008/208019e.pdf
M	Final: Standards of Practice – General Standards CIA/CICA Joint Policy Statement Subsections 1620 and 1630 (Accession Number 207067) http://www.cia-ica.ca/docs/default-source/2007/207067e.pdf
M	Educational Note: Applicability of Rules, Standards, and Other Guidance to CIA Members (Accession Number 205122) http://www.cia-ica.ca/docs/default-source/2005/205122e.pdf
M R E	Actuarial Report (28 th) supplementing the Actuarial Report on the Canada Pension Plan: http://www.osfi-bsif.gc.ca/Eng/Docs/cpp28.pdf
M R E	Actuarial Report (27 th) on the Canada Pension Plan (REVISED): http://www.osfi-bsif.gc.ca/Eng/Docs/cpp27rev.pdf
M R E	Review of the 27 th Actuarial Report on the Canada Pension Plan: http://www.osfi-bsif.gc.ca/Eng/Docs/ar27.pdf

Resources by Broad Category:	
Actuarial Resources (R); Actuarial Methods (M); Economic Environment (E); Tax/Legal Environment (T); Specialist Knowledge (S)	
T	<p>Canada Revenue Agency – Registered Plans Directorate including, but not limited to:</p> <ul style="list-style-type: none"> • Income Tax Act • Income Tax Act Regulations • Forms and Publications • Consultation Sessions • Bulletins • Frequently Asked Questions
T	<p>Federal – Office of the Superintendent of Financial Institutions (OSFI) including, but not limited to:</p> <ul style="list-style-type: none"> • Pension Benefits Standards Act • Pension Benefits Standards Regulations • OSFI Guidance Notes • OSFI Directives and Specification • Frequently Asked Questions
T	<p>Alberta – Alberta Finance, Superintendent of Financial Institutions (Pensions) including, but not limited to:</p> <ul style="list-style-type: none"> • Employment Pension Plans Act (EPPA) • Employment Pension Plans Act Regulations • Interpretive Guidance
T	<p>British Columbia – Financial Institutions Commission: Superintendent of Pensions including, but not limited to:</p> <ul style="list-style-type: none"> • Pension Benefit Standards Act • Pension Benefit Standards Act Regulations • Frequently Asked Questions • Information Bulletins

Resources by Broad Category:

Actuarial Resources (R); Actuarial Methods (M); Economic Environment (E); Tax/Legal Environment (T); Specialist Knowledge (S)

Manitoba – [Office of the Superintendent: Pension Commission](#) including, but not limited to:

- Pension Benefit Act
- Pension Benefit Act Regulations
- Policy Bulletins and Updates
- Frequently Asked Questions
- Overview of Manitoba Pension Law

New Brunswick – [Financial and Consumer Services Commission](#) including, but not limited to:

- Pension Benefit Act
- Pension Benefit Act Regulations
- Bulletins, Notices & Guidelines
- Frequently Asked Questions

Newfoundland and Labrador – [Newfoundland and Labrador, Insurance and Pensions Division](#) including, but not limited to:

- Pension Benefit Act
- Pension Benefit Act Regulations
- Directives

Nova Scotia – [Finance and Treasury Board, Pension Regulation Division](#) including, but not limited to:

- Pension Benefit Act
- Pension Benefit Act Regulations
- Notices
- Publications
- Frequently Asked Questions

Resources by Broad Category: Actuarial Resources (R); Actuarial Methods (M); Economic Environment (E); Tax/Legal Environment (T); Specialist Knowledge (S)	
T	<p>Ontario – Financial Services Commission of Ontario (FSCO) including, but not limited to:</p> <ul style="list-style-type: none"> • Pension Benefit Act • Pension Benefit Act Regulations • Actuarial Guidance Notes • Pension Policies • Frequently Asked Questions
T	<p>Prince Edward Island – Act not proclaimed at time of writing</p>
T	<p>Québec – Retraite Québec including, but not limited to:</p> <ul style="list-style-type: none"> • Supplemental Pension Plans Act • Supplemental Pension Plans Regulation • Simplified Pension Plans (SIPP) • Partition of Benefits • Funding Rules • Accounting Information • Legal References
T	<p>Saskatchewan – Saskatchewan Financial and Consumer Affairs Authority (FCAA) including, but not limited to:</p> <ul style="list-style-type: none"> • Pension Benefit Act • Pension Benefit Act Regulations • Pension Bulletins and Guides
S	<p>CPA Canada Handbook – Accounting: https://www.cpacanada.ca/en/business-and-accounting-resources/CPA-Canada-Handbook-The-Standards-and-Guidance-Collection/CPA-Canada-Handbook-Accounting</p>
S	<p>CPA Canada Public Sector Accounting Handbook: https://www.cpacanada.ca/en/business-and-accounting-resources/CPA-Canada-Handbook-The-Standards-and-Guidance-Collection/CPA-Canada-Public-Sector-Accounting-Handbook</p>
S	<p>Investments. 10th Edition New York: McGraw-Hill-Irwin: Bodie, Zvi, Alex Kane, and Alan J. Marcus: 2014</p>

Skills and Knowledge Inventory – Pension

Resources by Broad Category:

Actuarial Resources (R); Actuarial Methods (M); Economic Environment (E); Tax/Legal Environment (T); Specialist Knowledge (S)

S	Investment Guarantees – Modeling and Risk Management for Equity-Linked Life Insurance: Hoboken, John Wiley & Sons Inc.: Hardy, M: 2003
S	Pension Actuary's Guide to FINANCIAL ECONOMICS - Joint AAA/SOA Task Force on Financial Economics and the Actuarial Model

To assist in keeping the above reference list current and relevant to CIA Members, we encourage practitioners to share with the Committee additional documents and references not included in the above list. Please send the information to ski@cia-ica.ca.

Links to Pension Standards of Practice (SOPs) and Continuing Professional Development (CPD) Requirements:

- Standards of Practice – Complete (Part 1000 – Part 7000): <http://www.cia-ica.ca/docs/default-source/standards/sc022218e.pdf>
- Standards of Practice – Pension (Part 3000): <http://www.cia-ica.ca/docs/default-source/standards/sp020118e.pdf>
- Qualification Standards – Requirements for Continuing Professional Development: <http://www.cia-ica.ca/docs/default-source/2008/208055e.pdf>

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