

Answer Options	Vocabulary	Comprehension	Application
A1 HISTORY: History of computing and IT; computing	48.4%	35.7%	3.2%
A2 THE PROFESSION: Governing bodies and societies	46.3%	35.6%	11.3%
A3 SOCIAL RESPONSIBILITY AND IMPACT ON	9.4%	44.0%	43.4%
A4 IMPACT ON THE ENVIRONMENT: Green	28.9%	35.2%	27.0%
A5 CODES OF ETHICS: Codes of ethics of CIPS and	13.2%	27.0%	57.9%
A6 THE LABOUR MARKET: Current and projected	32.1%	37.1%	13.8%
A7 STANDARDS FOR SKILLS AND EDUCATION:	35.2%	32.1%	18.2%
A8 PROFESSIONAL RECOGNITION: Certifications	30.2%	34.6%	24.5%

Percentage point difference for practitioners as compared to the whole sample, which includes educators

A1 HISTORY: History of computing and IT; computing	4.1%	-10.7%	1.8%
A2 THE PROFESSION: Governing bodies and societies	-1.0%	4.9%	0.7%
A3 SOCIAL RESPONSIBILITY AND IMPACT ON	0.1%	-10.7%	9.0%
A4 IMPACT ON THE ENVIRONMENT: Green	-2.7%	10.0%	-5.6%
A5 CODES OF ETHICS: Codes of ethics of CIPS and	-3.7%	3.9%	-0.7%
A6 THE LABOUR MARKET: Current and projected	-1.1%	3.4%	0.4%
A7 STANDARDS FOR SKILLS AND EDUCATION:	0.5%	-3.5%	10.3%
A8 PROFESSIONAL RECOGNITION: Certifications	-1.6%	8.3%	4.0%

None needed

12.7%

6.9%

3.1%

8.8%

1.9%

17.0%

14.5%

10.7%

4.8%

-4.5%

1.6%

-1.7%

0.5%

-2.7%

-7.3%

-10.7%

They should know it to what level?

Answer Options	Vocabulary	Comprehension	Application
B1 TORT AND LIABILITY: Basic definitions and	40.4%	30.3%	8.3%
B2 CONTRACTS: Requirements of a valid contract;	31.8%	44.9%	14.0%
B3 PRIVACY AND ACCESS-TO-INFORMATION LAW:	22.2%	47.2%	25.9%
B4 INTELLECTUAL PROPERTY LAW: Patents,	31.5%	46.3%	16.7%
B5 ACCOUNTABILITY: Sarbanes Oxley and similar laws	40.0%	31.4%	14.3%
B6 WHISTLE BLOWING AND ETHICAL DISSENT:	40.0%	37.1%	8.6%
B7 LAW REGARDING ACCESS FOR THE DISABLED:	41.9%	30.5%	8.6%
B8 COMPUTER CRIME: Computer-based fraud, cyber	16.8%	51.4%	28.0%
B9 WORKPLACE HEALTH AND SAFETY: Freedom	30.2%	34.9%	23.6%

Percentage point difference for practitioners

B1 TORT AND LIABILITY: Basic definitions and	7.3%	-4.1%	3.6%
B2 CONTRACTS: Requirements of a valid contract;	3.9%	2.8%	0.3%
B3 PRIVACY AND ACCESS-TO-INFORMATION LAW:	-5.6%	2.8%	2.6%
B4 INTELLECTUAL PROPERTY LAW: Patents,	4.2%	-3.4%	4.8%
B5 ACCOUNTABILITY: Sarbanes Oxley and similar laws	-3.4%	5.2%	5.2%
B6 WHISTLE BLOWING AND ETHICAL DISSENT:	-1.0%	1.9%	3.6%
B7 LAW REGARDING ACCESS FOR THE DISABLED:	2.0%	-3.6%	6.1%
B8 COMPUTER CRIME: Computer-based fraud, cyber	-2.5%	1.0%	0.5%
B9 WORKPLACE HEALTH AND SAFETY: Freedom	5.5%	-6.3%	5.0%

None needed

21.1%

9.3%

4.6%

5.6%

14.3%

14.3%

19.0%

3.7%

11.3%

-6.8%

-7.0%

0.1%

-5.6%

-7.0%

-4.5%

-4.4%

1.0%

-4.2%

They should know it to what level?

Answer Options	Vocabulary	Comprehension	Application
C1 BOOLEAN LOGIC: Boolean operators, truth tables,	8.5%	32.1%	55.7%
C2 PROBABILITY AND STATISTICS: Rules of	13.2%	44.3%	37.7%
C3 PREDICATE LOGIC: Quantifiers, first order logic	20.4%	41.7%	29.1%
C4 DISCRETE MATHEMATICS	24.3%	38.8%	29.1%
C5 NUMERICAL COMPUTATION AND ANALYSIS:	23.8%	36.2%	29.5%
C6 DIFFERENTIAL AND INTEGRAL CALCULUS	36.9%	25.2%	14.6%

Percent difference for practitioners

C1 BOOLEAN LOGIC: Boolean operators, truth tables,	5.8%	-3.5%	-5.7%
C2 PROBABILITY AND STATISTICS: Rules of	10.6%	0.9%	-13.9%
C3 PREDICATE LOGIC: Quantifiers, first order logic	6.4%	-5.2%	-7.2%
C4 DISCRETE MATHEMATICS	0.1%	-2.2%	-4.7%
C5 NUMERICAL COMPUTATION AND ANALYSIS:	-1.9%	-4.5%	4.6%
C6 DIFFERENTIAL AND INTEGRAL CALCULUS	9.4%	-5.7%	0.1%

None needed

3.8%

4.7%

8.7%

7.8%

10.5%

23.3%

3.4%

2.4%

5.9%

6.9%

1.7%

-3.8%

They should know it to what level?

Answer Options	Vocabulary	Comprehension	Application
D1 CONCEPT OF A SYSTEM: Notion of a system in	17.2%	32.3%	49.5%
D2 USE OF COMPUTERS AND IT SYSTEMS: Use of	5.4%	22.6%	68.8%
D3 SOFTWARE ELEMENTS OF A COMPUTER	9.8%	47.8%	41.3%
D4 HARDWARE ELEMENTS OF A COMPUTER	17.4%	55.4%	26.1%
D5 PROGRAMMING BASICS: Control constructs (loops,	6.5%	30.4%	63.0%
D6 PROGRAMMING LANGUAGE TYPES: Procedural	19.6%	41.3%	38.0%
D7 DATA STRUCTURES: Arrays, linked lists, hash	15.2%	29.3%	52.2%
D8 ALGORITHMS: Searching (binary search); selecting	22.0%	29.7%	42.9%
D9 INFORMATION AND DATA MODELING: Modeling	20.7%	34.8%	42.4%
D10 DATABASES: Tables, columns, keys, querying	9.8%	38.0%	47.8%
D11 BUSINESS PROCESS AND ACTIVITY MODELING:	32.6%	33.7%	27.2%
D12 SOFTWARE ARCHITECTURE AND MODELING:	23.1%	46.2%	26.4%
D13 ENTERPRISE ARCHITECTURE AND MODELING:	33.7%	42.4%	16.3%
D14 NETWORKING: Network architecture; OSI model	26.1%	52.2%	18.5%
D15 ORGANIZATION OF A DATA CENTRE: Layout;	46.7%	32.6%	8.7%
D16 WEB CONCEPTS: Web pages and websites; tables	32.6%	31.5%	32.6%
D17 REAL TIME SYSTEMS: concepts Hard real time,	54.3%	27.2%	13.0%
D18 PARSING AND GRAMMARS: Writing grammars,	47.2%	29.2%	12.4%

Percent difference for practitioners

D1 CONCEPT OF A SYSTEM: Notion of a system in	-2.9%	1.1%	2.9%
D2 USE OF COMPUTERS AND IT SYSTEMS: Use of	1.8%	-1.2%	0.2%
D3 SOFTWARE ELEMENTS OF A COMPUTER	-0.3%	-2.6%	3.9%
D4 HARDWARE ELEMENTS OF A COMPUTER	-3.1%	-0.7%	4.9%
D5 PROGRAMMING BASICS: Control constructs (loops,	3.0%	2.9%	-5.9%
D6 PROGRAMMING LANGUAGE TYPES: Procedural	-2.9%	8.7%	-4.7%
D7 DATA STRUCTURES: Arrays, linked lists, hash	3.8%	8.7%	-11.7%
D8 ALGORITHMS: Searching (binary search); selecting	11.4%	3.7%	-11.9%
D9 INFORMATION AND DATA MODELING: Modeling	10.3%	-6.2%	-1.9%
D10 DATABASES: Tables, columns, keys, querying	4.5%	0.1%	-0.2%
D11 BUSINESS PROCESS AND ACTIVITY MODELING:	0.7%	-5.1%	10.9%
D12 SOFTWARE ARCHITECTURE AND MODELING:	7.9%	1.5%	-7.3%
D13 ENTERPRISE ARCHITECTURE AND MODELING:	-2.7%	0.5%	7.5%
D14 NETWORKING: Network architecture; OSI model	2.5%	2.6%	-1.8%
D15 ORGANIZATION OF A DATA CENTRE: Layout;	-1.5%	7.9%	0.8%
D16 WEB CONCEPTS: Web pages and websites; tables	3.1%	1.8%	-1.7%
D17 REAL TIME SYSTEMS: concepts Hard real time,	5.2%	-3.4%	1.2%
D18 PARSING AND GRAMMARS: Writing grammars,	11.3%	-9.7%	2.3%

None needed

1.1%

3.2%

1.1%

1.1%

0.0%

1.1%

3.3%

5.5%

2.2%

4.3%

6.5%

4.4%

7.6%

3.3%

12.0%

3.3%

5.4%

11.2%

-1.1%

-0.8%

-1.1%

-1.1%

0.0%

-1.1%

-0.9%

-3.1%

-2.2%

-4.3%

-6.5%

-2.0%

-5.2%

-3.3%

-7.2%

-3.3%

-3.1%

-3.9%

They should know it to what level?

Answer Options	Vocabulary	Comprehension	Application
E1 QUALITY MODELS: Quality systems (people,	51.7%	31.5%	10.1%
E2 EXTERNAL QUALITY: Efficiency, reliability,	32.6%	37.1%	24.7%
E3 HUMAN FACTORS QUALITY: User interface design;	16.9%	55.1%	24.7%
E4 INTERNAL QUALITY: Maintainability, reusability,	16.9%	43.8%	37.1%
E5 SECURITY AND PRIVACY: Logical and physical	15.7%	46.1%	36.0%
E6 SAFETY AND CRITICAL SYSTEMS: Hazards,	36.8%	46.0%	12.6%

Percent difference for practitioners

E1 QUALITY MODELS: Quality systems (people,	-4.1%	4.3%	4.2%
E2 EXTERNAL QUALITY: Efficiency, reliability,	0.7%	1.0%	1.5%
E3 HUMAN FACTORS QUALITY: User interface design;	16.5%	-2.7%	-10.4%
E4 INTERNAL QUALITY: Maintainability, reusability,	2.2%	6.2%	-6.1%
E5 SECURITY AND PRIVACY: Logical and physical	0.9%	6.3%	-5.0%
E6 SAFETY AND CRITICAL SYSTEMS: Hazards,	3.7%	-3.1%	4.0%

None needed

6.7%

5.6%

3.4%

2.2%

2.2%

4.6%

-4.4%

-3.2%

-3.4%

-2.2%

-2.2%

-4.6%

They should know it to what level?

Answer Options	Vocabulary	Comprehension	Application
F1 STAKEHOLDERS: Clients, users, management	33.3%	29.9%	28.7%
F2 SYSTEM DEVELOPMENT LIFECYCLE: Stages	12.8%	38.4%	45.3%
F3 CATEGORIES OF DEVELOPMENT METHODS:	29.4%	36.5%	28.2%
F4 TYPES OF REQUIREMENTS: Quality, platform,	32.9%	31.8%	31.8%
F5 GATHERING AND VALIDATING REQUIREMENTS:	21.2%	34.1%	41.2%
F6 DESIGN PRINCIPLES: Divide and conquer, reduce	22.6%	33.3%	41.7%
F7 TESTING PRINCIPLES: Unit vs. system; black vs.	21.2%	30.6%	45.9%
F8 INSPECTION PRINCIPLES: Examining or	31.8%	40.0%	23.5%
F9 DECISION-MAKING METHODS: Intervention,	36.9%	42.9%	11.9%
F10 PROCESS VISUALIZATION TECHNIQUES: Pert	35.3%	34.1%	22.4%
F11 CHANGE, VERSION AND CONFIGURATION	18.8%	36.5%	41.2%
F12 RISK MANAGEMENT: Types of risks, including	30.6%	44.7%	21.2%
F13 INFORMATION MANAGEMENT: Functional	46.4%	32.1%	14.3%
F14 STANDARDS: Standards bodies; categorization of	47.1%	35.3%	9.4%
F15 CONTINUOUS IMPROVEMENT	27.4%	36.9%	26.2%

Percent difference for practitioners

F1 STAKEHOLDERS: Clients, users, management	-7.1%	3.4%	7.0%
F2 SYSTEM DEVELOPMENT LIFECYCLE: Stages	6.3%	4.5%	-9.6%
F3 CATEGORIES OF DEVELOPMENT METHODS:	1.5%	1.6%	-2.0%
F4 TYPES OF REQUIREMENTS: Quality, platform,	5.2%	-8.0%	6.3%
F5 GATHERING AND VALIDATING REQUIREMENTS:	2.6%	4.0%	-5.5%
F6 DESIGN PRINCIPLES: Divide and conquer, reduce	4.2%	8.1%	-10.0%
F7 TESTING PRINCIPLES: Unit vs. system; black vs.	12.2%	-2.0%	-10.2%
F8 INSPECTION PRINCIPLES: Examining or	8.7%	0.5%	-6.9%
F9 DECISION-MAKING METHODS: Intervention,	2.1%	3.5%	0.3%
F10 PROCESS VISUALIZATION TECHNIQUES: Pert	7.6%	1.6%	-5.7%
F11 CHANGE, VERSION AND CONFIGURATION	0.2%	18.3%	-15.0%
F12 RISK MANAGEMENT: Types of risks, including	5.1%	-6.6%	5.0%
F13 INFORMATION MANAGEMENT: Functional	-5.0%	6.9%	2.8%
F14 STANDARDS: Standards bodies; categorization of	2.9%	5.2%	0.1%
F15 CONTINUOUS IMPROVEMENT	1.2%	3.6%	2.4%

None needed

8.0%

3.5%

5.9%

3.5%

3.5%

2.4%

2.4%

4.7%

8.3%

8.2%

3.5%

3.5%

7.1%

8.2%

9.5%

-3.3%

-1.1%

-1.1%

-3.5%

-1.1%

-2.4%

0.0%

-2.3%

-5.9%

-3.5%

-3.5%

-3.5%

-4.7%

-8.2%

-7.1%

They should know it to what level?

Answer Options	Vocabulary	Comprehension	Application
G1 ORGANIZATION OF A BUSINESS INVOLVING IT	33.7%	32.6%	15.1%
G2 VALUE ANALYSIS: Time value of money; discounted	32.1%	32.1%	3.6%
G3 BUSINESS SOFTWARE APPLICATION TYPES:	40.5%	31.0%	10.7%
G4 BUSINESS CONTINUITY, DISASTER RECOVERY	31.8%	42.4%	11.8%
G5 INTERNATIONAL BUSINESS	52.9%	15.3%	1.2%
G6 ELECTRONIC COMMERCE	29.4%	42.4%	9.4%
G7 SERVICE MANAGEMENT: Help desk; service desk;	34.1%	36.5%	14.1%
G8 SECURITY MANAGEMENT: Policies, procedures	28.2%	44.7%	18.8%
G9 SYSTEM ACQUISITION: Consider Business Cases,	36.5%	25.9%	7.1%

Percent difference for practitioners

G1 ORGANIZATION OF A BUSINESS INVOLVING IT	6.8%	5.5%	1.6%
G2 VALUE ANALYSIS: Time value of money; discounted	9.3%	9.3%	-1.1%
G3 BUSINESS SOFTWARE APPLICATION TYPES:	1.0%	5.6%	6.4%
G4 BUSINESS CONTINUITY, DISASTER RECOVERY	1.6%	12.4%	-2.2%
G5 INTERNATIONAL BUSINESS	11.3%	1.4%	1.2%
G6 ELECTRONIC COMMERCE	11.1%	-4.3%	0.1%
G7 SERVICE MANAGEMENT: Help desk; service desk;	-5.5%	11.1%	2.5%
G8 SECURITY MANAGEMENT: Policies, procedures	-4.4%	12.4%	0.2%
G9 SYSTEM ACQUISITION: Consider Business Cases,	8.8%	7.5%	0.1%

None needed

18.6%

32.1%

17.9%

14.1%

30.6%

18.8%

15.3%

8.2%

30.6%

-13.8%

-17.5%

-13.0%

-11.7%

-13.9%

-6.9%

-8.2%

-8.2%

-16.3%

They should know it to what level?

Answer Options	Vocabular y	Comprehe nsion	Applicatio n	None needed
H1 PROBLEM SOLVING: Reasoning methods, research	12.8%	22.1%	65.1%	0.0%
H2 WRITTEN COMMUNICATION: Reports, business cases,	5.9%	21.2%	71.8%	1.2%
H3 ORAL COMMUNICATION: Presentations, speeches,	8.2%	23.5%	67.1%	1.2%
H4 NEGOTIATING SKILLS: Listening, bargaining, win-win	20.2%	46.4%	27.4%	6.0%
H5 WORKPLACE CULTURE: Shared belief system of values	31.8%	41.2%	20.0%	7.1%
H6 CHANGE MANAGEMENT: Leading people through	27.4%	36.9%	20.2%	15.5%
H7 LEADERSHIP: Leading by example, and not having to be	29.4%	31.8%	25.9%	12.9%
H8 TEAMWORK: Cooperating with others	5.9%	17.6%	70.6%	5.9%
H9 STRATEGIC PLANNING: Theory and application of	38.8%	36.5%	10.6%	14.1%
H10 PORTFOLIO MANAGEMENT: Priority Setting; investment	41.7%	32.1%	8.3%	17.9%

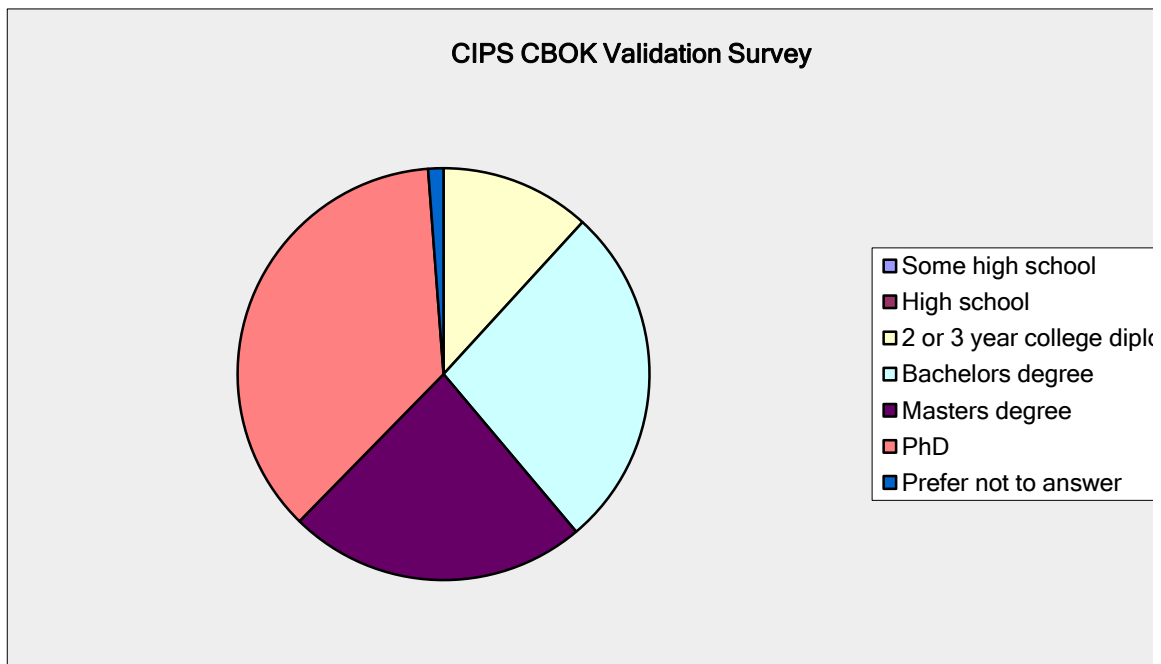
Percent difference for practitioners

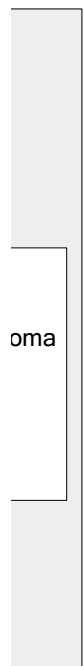
H1 PROBLEM SOLVING: Reasoning methods, research	3.9%	6.5%	-10.4%	0.0%
H2 WRITTEN COMMUNICATION: Reports, business cases,	3.6%	7.4%	-12.2%	1.2%
H3 ORAL COMMUNICATION: Presentations, speeches,	6.1%	5.0%	-12.3%	1.2%
H4 NEGOTIATING SKILLS: Listening, bargaining, win-win	1.2%	-3.6%	1.2%	1.2%
H5 WORKPLACE CULTURE: Shared belief system of values	3.9%	-3.1%	3.8%	-4.7%
H6 CHANGE MANAGEMENT: Leading people through	-0.6%	4.6%	4.2%	-8.2%
H7 LEADERSHIP: Leading by example, and not having to be	1.5%	-0.8%	5.1%	-5.8%
H8 TEAMWORK: Cooperating with others	1.3%	6.2%	-3.9%	-3.5%
H9 STRATEGIC PLANNING: Theory and application of	4.0%	-0.8%	1.3%	-4.6%
H10 PORTFOLIO MANAGEMENT: Priority Setting; investment	9.6%	2.0%	1.4%	-13.0%

CIPS CBOK Validation Survey

What is your highest level of education?

Answer Options	Response Percent	Response Count
Some high school	0.0%	0
High school	0.0%	0
2 or 3 year college diploma	11.8%	10
Bachelors degree	27.1%	23
Masters degree	23.5%	20
PhD	36.5%	31
Prefer not to answer	1.2%	1
<i>answered question</i>		85

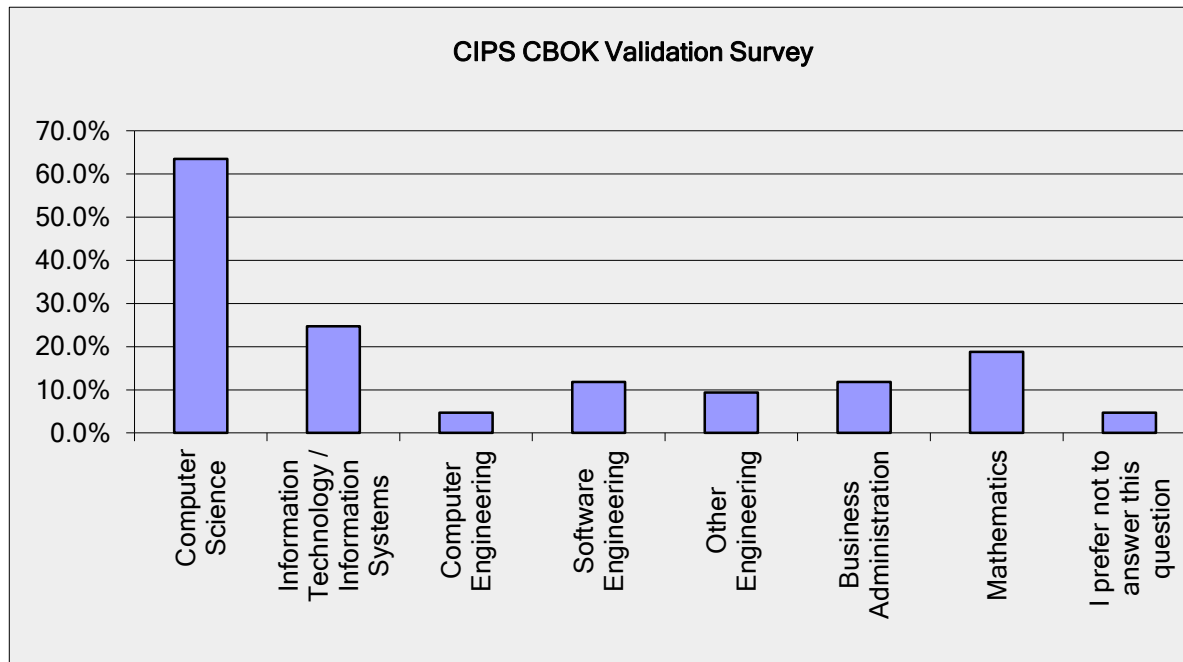




CIPS CBOK Validation Survey

What degrees/diplomas do you possess? (Check all that apply)

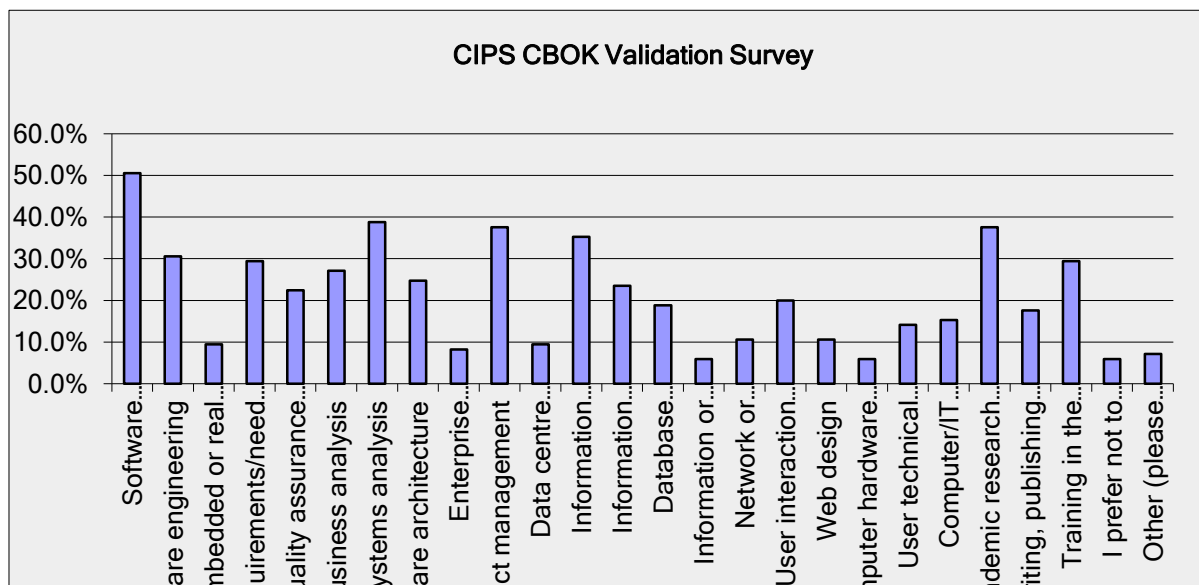
Answer Options	Response Percent	Response Count
Computer Science	63.5%	54
Information Technology / Information Systems	24.7%	21
Computer Engineering	4.7%	4
Software Engineering	11.8%	10
Other Engineering	9.4%	8
Business Administration	11.8%	10
Mathematics	18.8%	16
I prefer not to answer this question	4.7%	4
Other (please specify)		22
<i>answered question</i>		85
<i>DUPLICATES ALLOWED</i>		



CIPS CBOK Validation Survey

In which of the following professional roles do you consider yourself an expert (if any)?

Answer Options	Response Percent	Response Count
Software development/programming	50.6%	43
Software engineering	30.6%	26
Embedded or real time development	9.4%	8
Requirements/needs analysis	29.4%	25
Quality assurance or testing	22.4%	19
Business analysis	27.1%	23
Systems analysis	38.8%	33
Software architecture	24.7%	21
Enterprise architecture	8.2%	7
Project management	37.6%	32
Data centre operation	9.4%	8
Information technology management	35.3%	30
Information technology services and support	23.5%	20
Database management / Data administration	18.8%	16
Information or records management	5.9%	5
Network or telecommunications management	10.6%	9
User interaction design and evaluation / Human-Web design	20.0%	17
Computer hardware design / Computer or Electrical	10.6%	9
User technical support	5.9%	5
Computer/IT technology or technical support	14.1%	12
Computer/IT technology or technical support	15.3%	13
Academic research and teaching in the IT/Computer field	37.6%	32
Writing, publishing or broadcasting in the IT/Computer	17.6%	15
Training in the IT/Computer field	29.4%	25
I prefer not to answer this question	5.9%	5
Other (please specify)	7.1%	6
<i>answered question</i>		85



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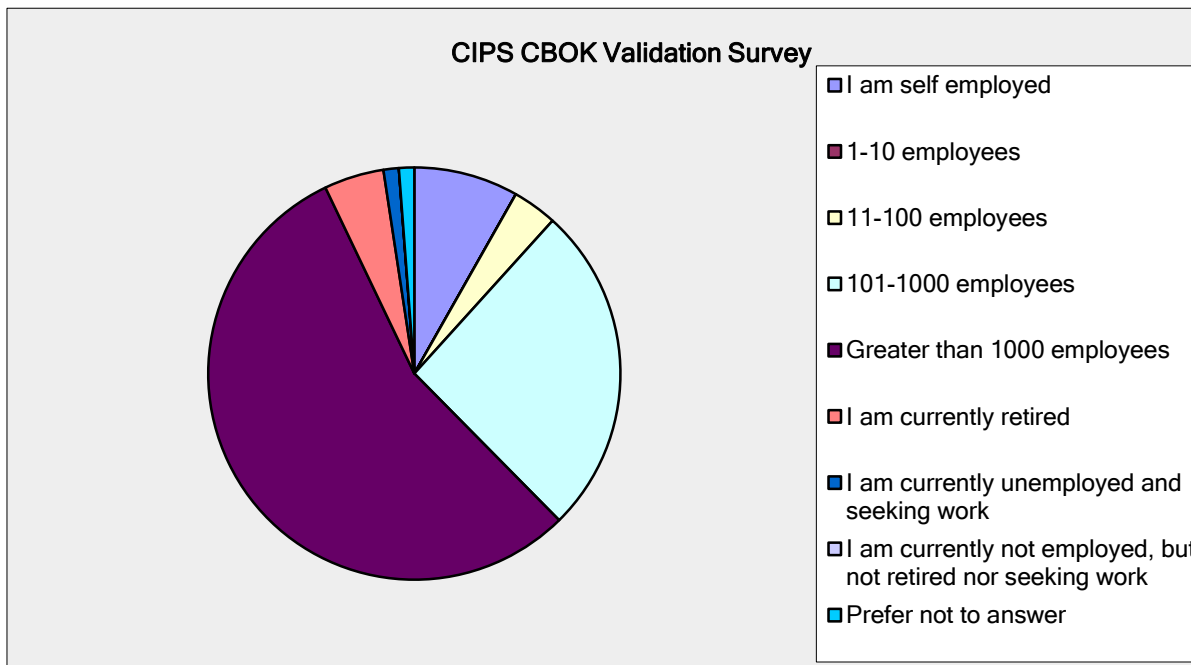
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Sheet 102

CIPS CBOK Validation Survey

How large is your employer?		
Answer Options	Response Percent	Response Count
I am self employed	8.2%	7
1-10 employees	0.0%	0
11-100 employees	3.5%	3
101-1000 employees	25.9%	22
Greater than 1000 employees	55.3%	47
I am currently retired	4.7%	4
I am currently unemployed and seeking work	1.2%	1
I am currently not employed, but not retired nor seeking	0.0%	0
Prefer not to answer	1.2%	1
<i>answered question</i>		85





CIPS CBOK Validation Survey

What is the primary industry in which you work?

Answer Options	Response Percent	Response Count
Government (Federal, non-military)	7.1%	6
Government (Provincial)	7.1%	6
Government (Municipal)	1.2%	1
Military	0.0%	0
Education	50.6%	43
Health care	1.2%	1
Non-profit	1.2%	1
Retail / Wholesale / Sales / Marketing / Advertising	1.2%	1
Finance / Accounting / Management consulting	3.5%	3
IT Services / Software Development / High Technology	10.6%	9
Telecommunications / Internet Service	1.2%	1
Gas / Oil / Mining/ Electricity / Energy	7.1%	6
Agriculture / Fishing / Forestry	1.2%	1
Automotive / Aerospace / Transportation	1.2%	1
Publishing / Broadcasting / Web Content	0.0%	0
Construction / Renovation	0.0%	0
Other Engineering	0.0%	0
Other Manufacturing	0.0%	0
Prefer not to answer	0.0%	0
Other (please specify)	5.9%	5
<i>answered question</i>		85

