

DMISRS Project: Relevance of AL to students of Mathematics: Patterns in performance

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Overview

- National performance on NBT AL
- Focus on one institution
- Cohort enrolled for a specific course
- Groups within the cohort
- What do we do next?

AL Skills assessed in NBTs

Skill Assessed	Explanation of Skill Area
Cohesion	Identify links (anaphoric and cataphoric) and other mechanisms that connect parts of text.
Communicative function	Identify and understand function of parts of sentences / discourse : define; exemplify; support/endorse; contradict; or persuade etc.
Discourse relations	Understand the structure and organisation of discourse and argument : 1) transitions in argument, logical development; 2) how main idea, supporting ideas / 'evidence' are presented; 3) introductions / conclusions.
Essential / non-essential (Distinction making)	Make distinctions, classify / categorise and compare : identify main ideas and supporting detail; cause and effect; statements and examples; facts and opinions; propositions and their arguments; being able to 'label'
Grammar / syntax	Understand and analyse the grammatical and sentence structures in academic language, and how that affects / can change meaning
Extrapolation, application & inferencing	Draw conclusions and apply insights , either on the basis of what is stated in texts or is implied by these texts.
Metaphorical expression	Understand and work with metaphor in language . This includes the capacity to perceive language connotation, word play, ambiguity, idiomatic expressions, and so on.
Text genre	Can perceive 'audience' in text, purpose in writing and understand register and tone : includes an ability to understand text register (formality / informality) and tone (didactic / informative / persuasive / etc.)
Vocabulary	Derive/work out the meaning of words/terms from the context

AL Skills assessed in NBTs

Skill Assessed	Explanation of Skill Area
Cohesion	Identify links (conjunctions and connectives) and other mechanisms that connect parts of text.
Communicative function	Identify and understand functions (e.g. inform, persuade, entertain, etc.)
Discourse relations	Understand the structure and organization of text
Essential / non-essential (Distinction making)	Make distinctions, classify, categorise and compare information provided
Extrapolation, application & inferencing	Make inferences and identify implications, extrapolate facts, apply insights to procedure
Metaphorical expression	Become familiar with typical phrases used in the subject, connotations and jargon
Understanding vocabulary	Understand subject-specific terminology, general academic terms

AL Skills assessed in NBTs

Skill Assessed	Explanation of Skill Area	
Coherence	Identify links (connectives and other words)	
Grammar / syntax		Ability to understand scenarios that rely on noticing grammatical of syntactical elements that influence the meaning of a text may affect the ability to complete a task
Comprehension		
Discourse relations	Understand the structure and organization of text (e.g. transitions in argument, logical development, introductions / conclusions)	
Essential / non-essential (Distinction making)	Make distinctions, classify / categorize, identify main ideas and supporting detail, compare propositions and their argument, being able to	Understanding of text purpose and audience, appropriate language usage, register and tone
Grammar / syntax	Understand and analyse the grammatical structure of language, and how that affects /	
Extrapolation, application & inferencing	Draw conclusions and apply insights from texts or is implied by these texts.	Impact mostly limited to tasks requiring written or oral production of texts
Meta-cognition	Work with meta-cognition	
Text genre	'Genre' in text, p...	
Vocabulary	Ability to understand text	Ability to understand scenarios that rely on noticing like an author's bias may affect the ability to complete a task

Grammar / syntax



Ability to understand scenarios that rely on noticing grammatical of syntactical elements that influence the meaning of a text may affect the ability to complete a task

Text genre



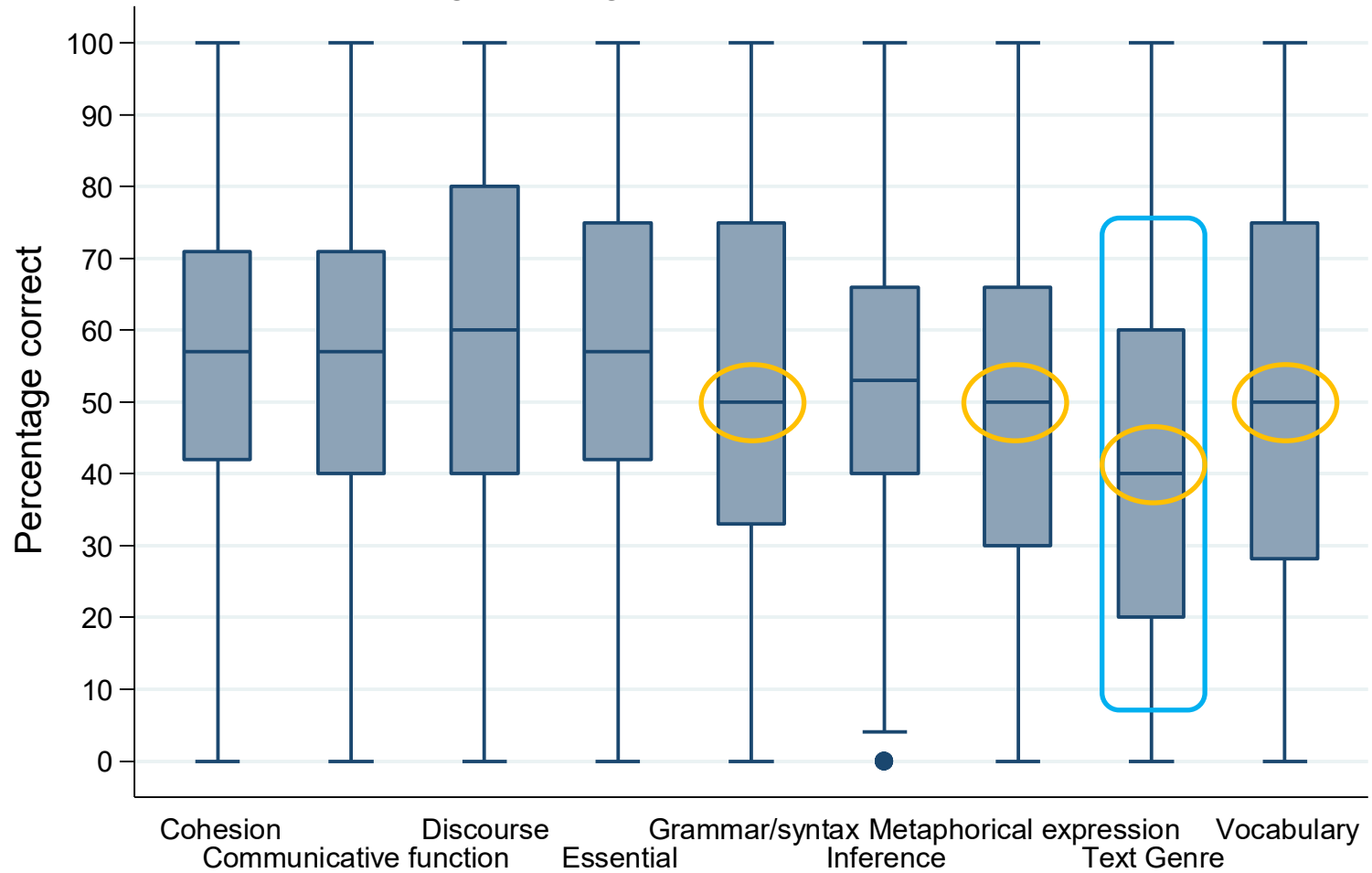
Understanding of text purpose and audience, appropriate language usage, register and tone

Impact mostly limited to tasks requiring written or oral production of texts

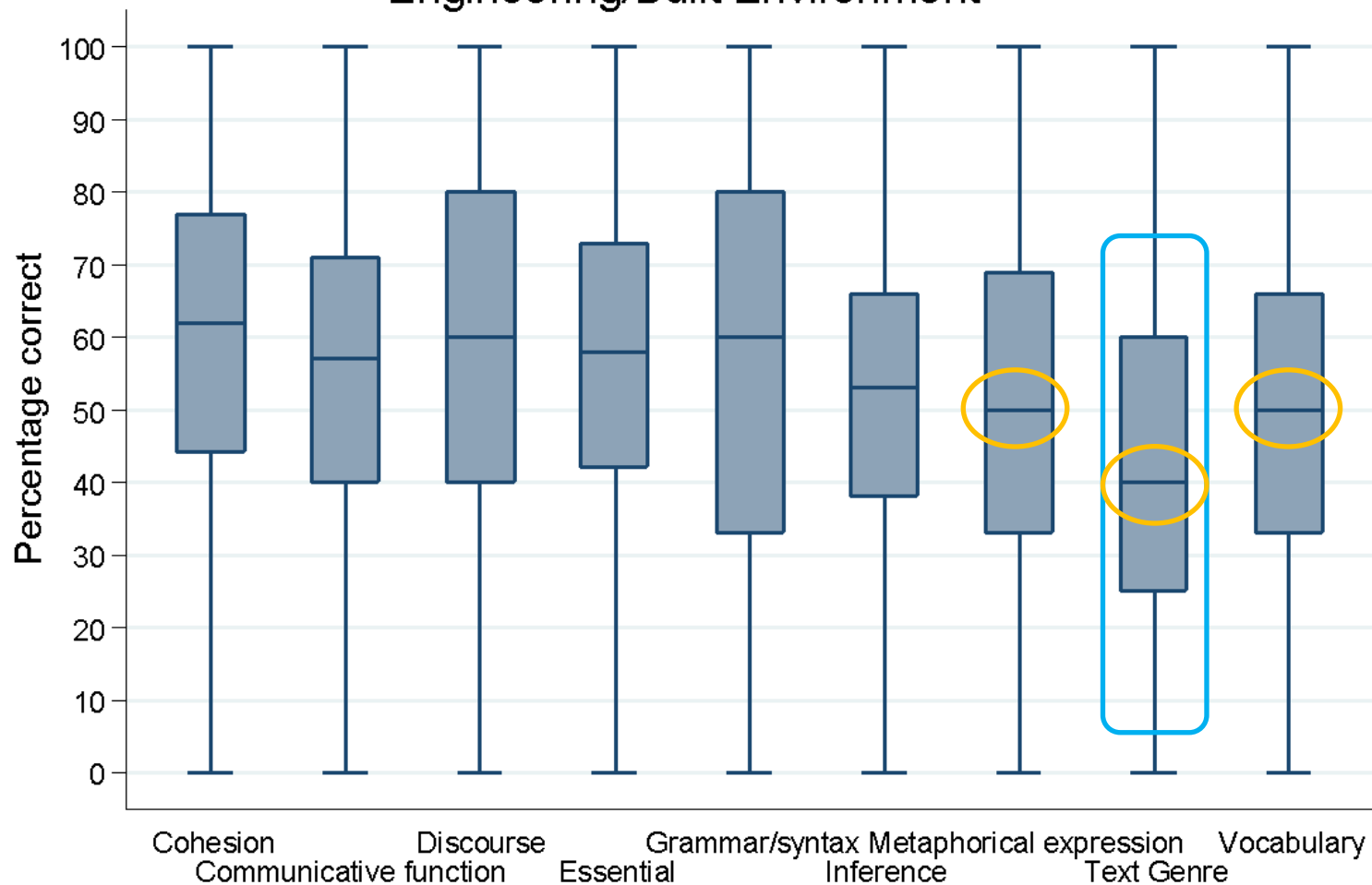
Ability to understand scenarios that rely on noticing like an author's bias may affect the ability to complete a task

NOTE: This subdomain is not concerned with the ability to work within a particular text genre but rather an awareness of different genres and their characteristics

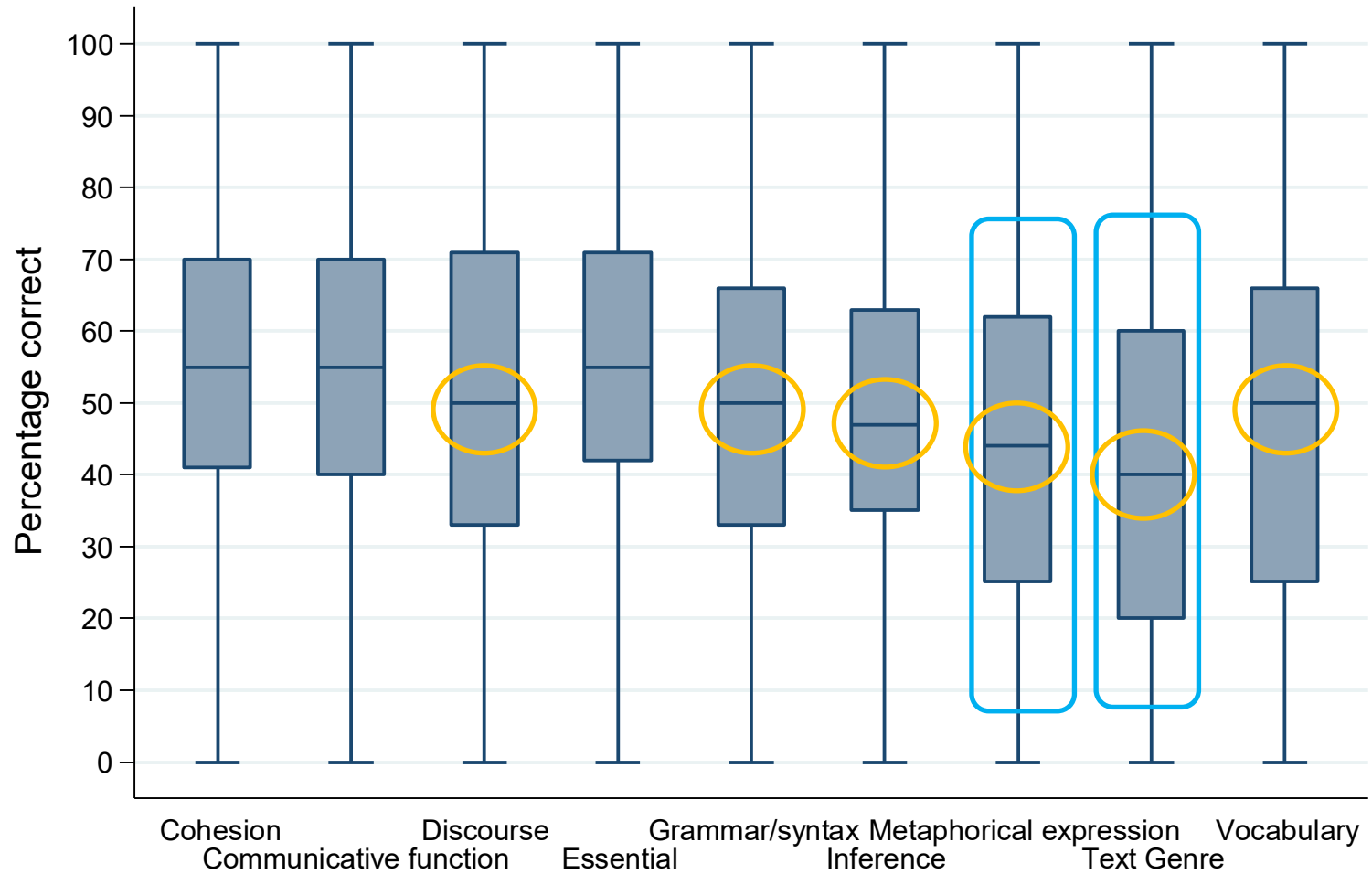
NBT 2018 AL Subdomain Scores for Engineering/Built Environment



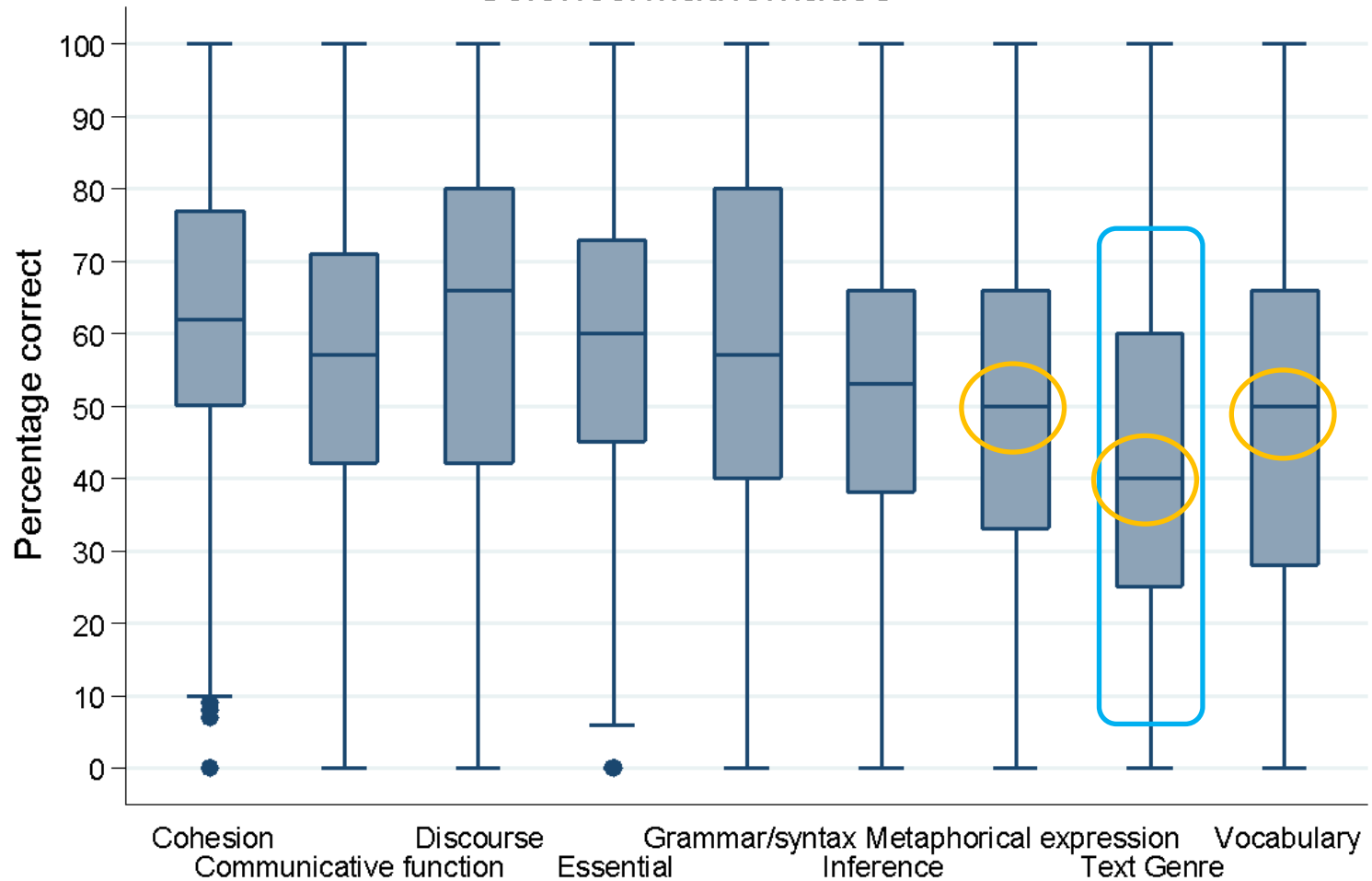
NBT 2019 AL Subdomain Scores for Engineering/Built Environment



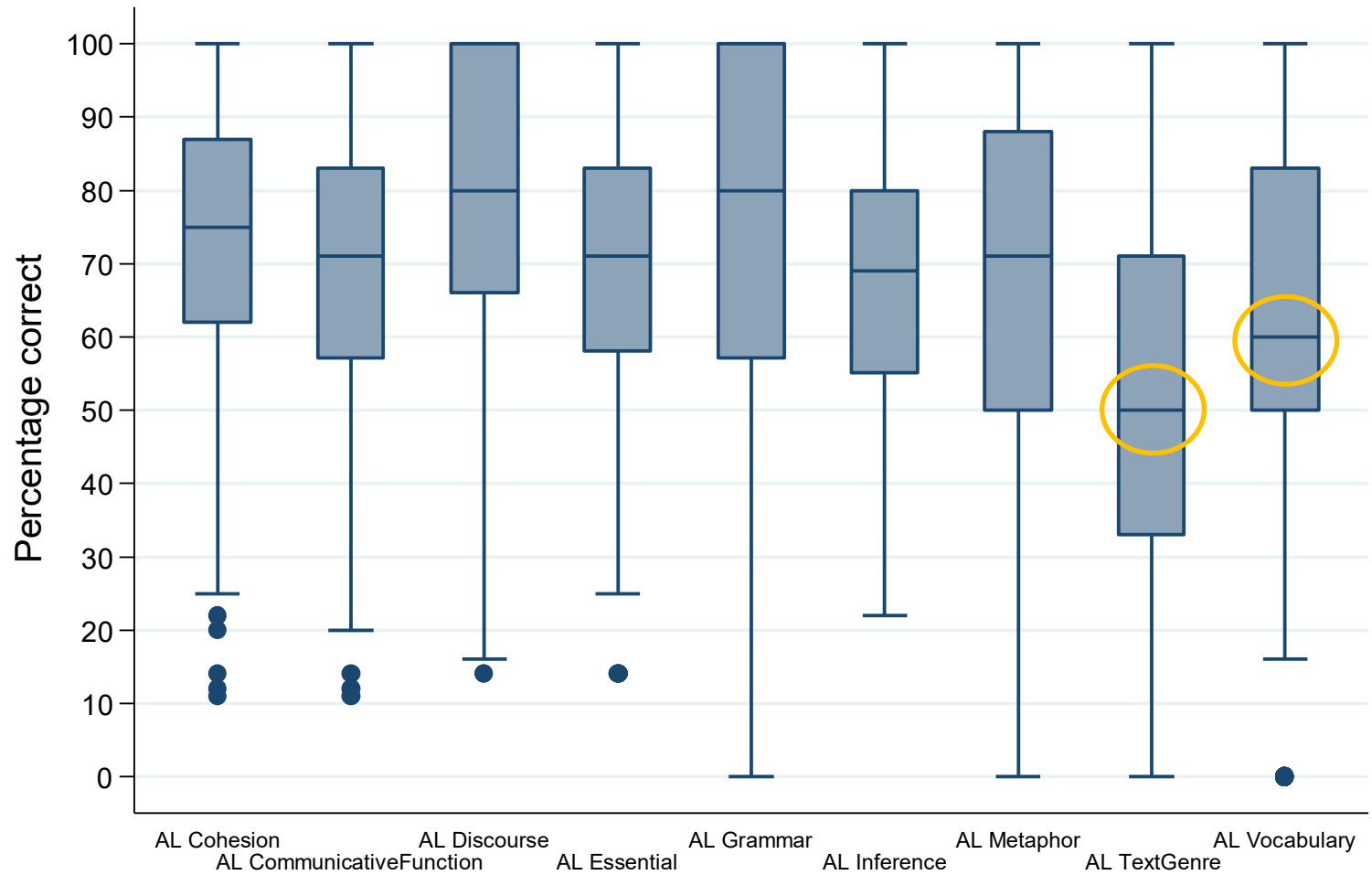
NBT 2018 AL Subdomain Scores for Science/Mathematics



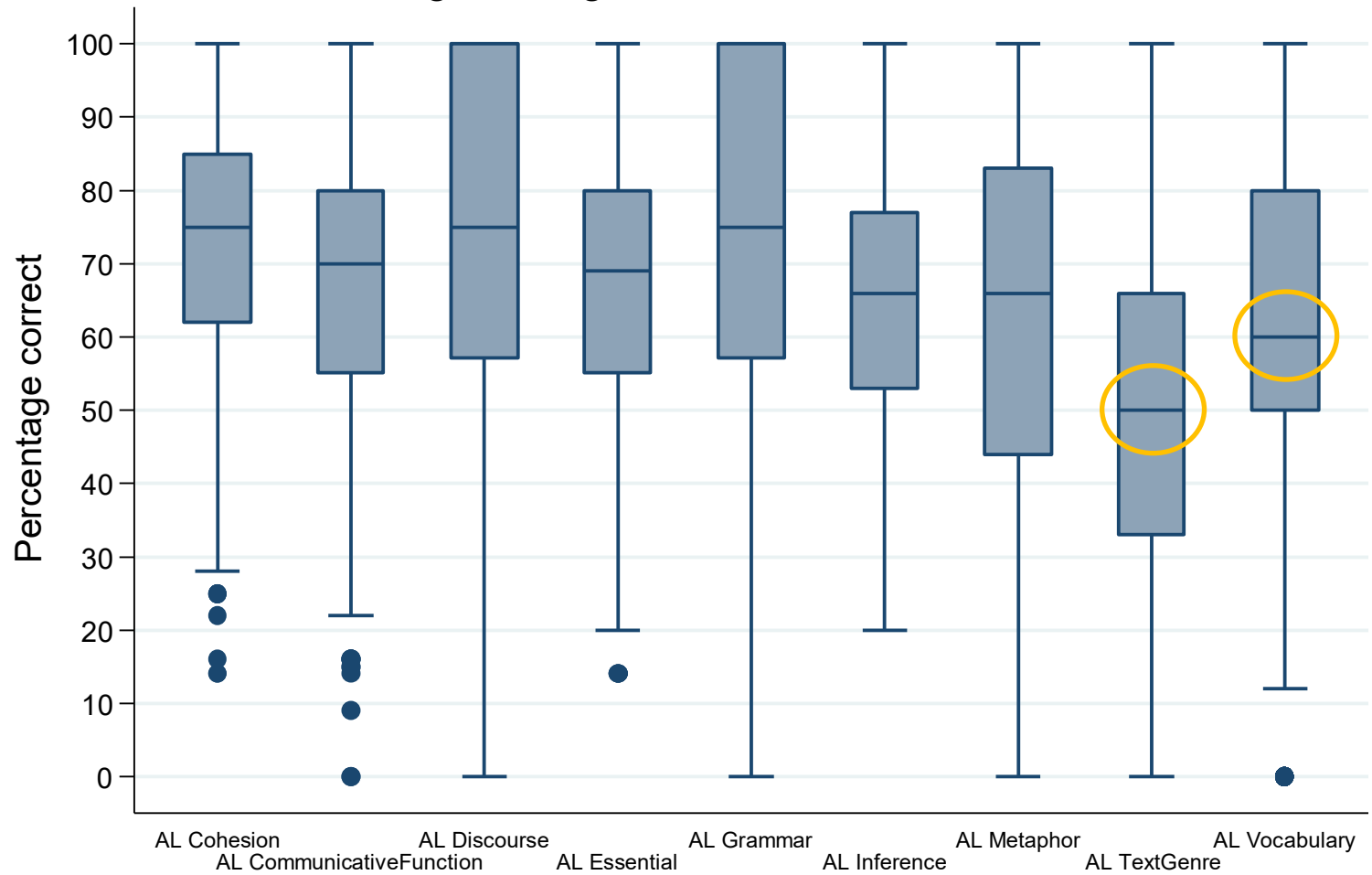
NBT 2019 AL Subdomain Scores for Science/Mathematics

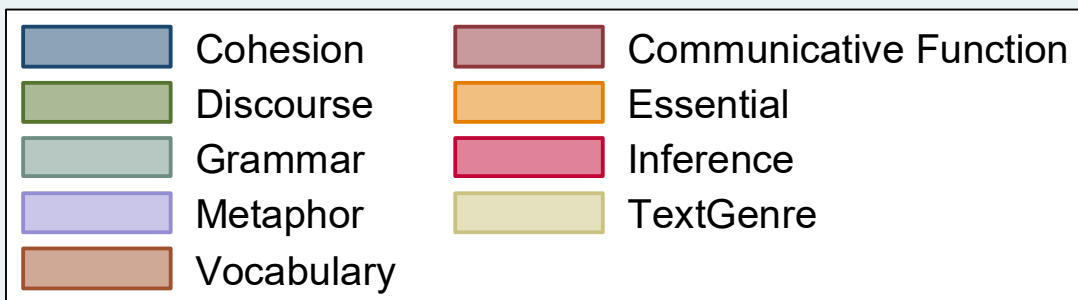
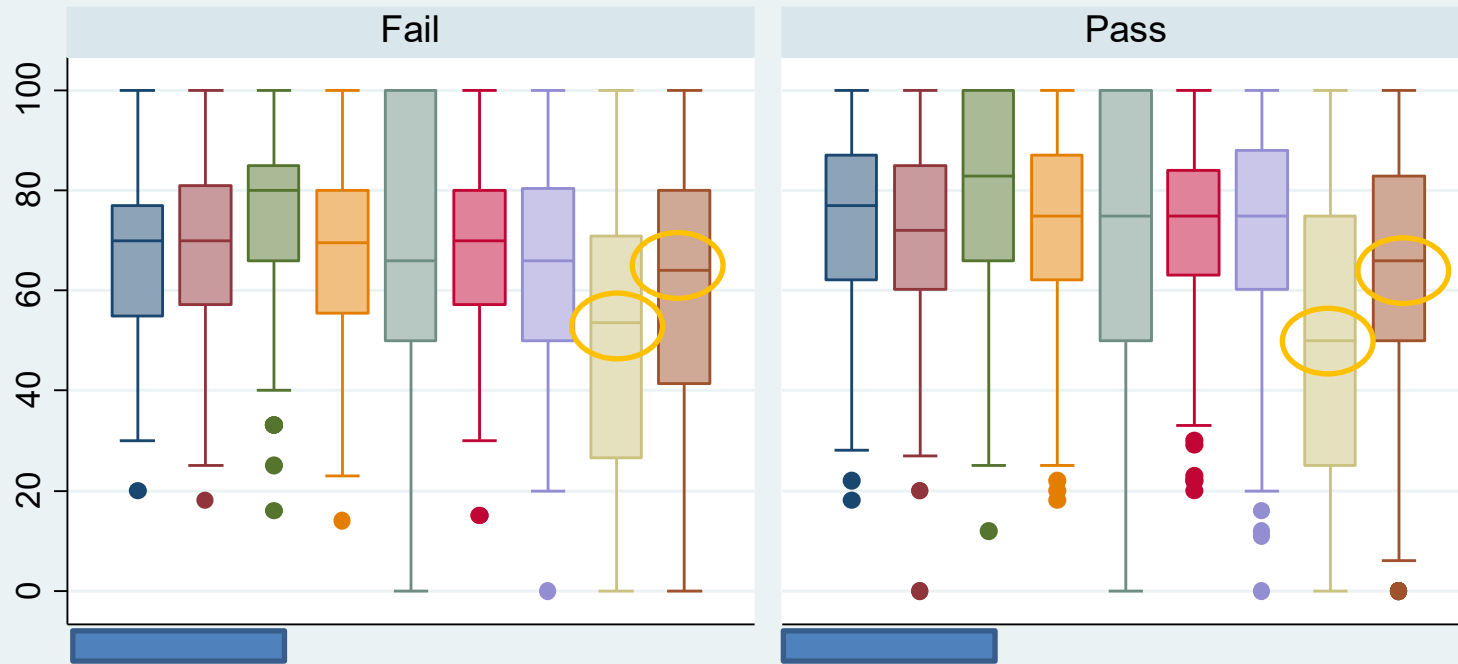


2019 AL subdomain scores for Science



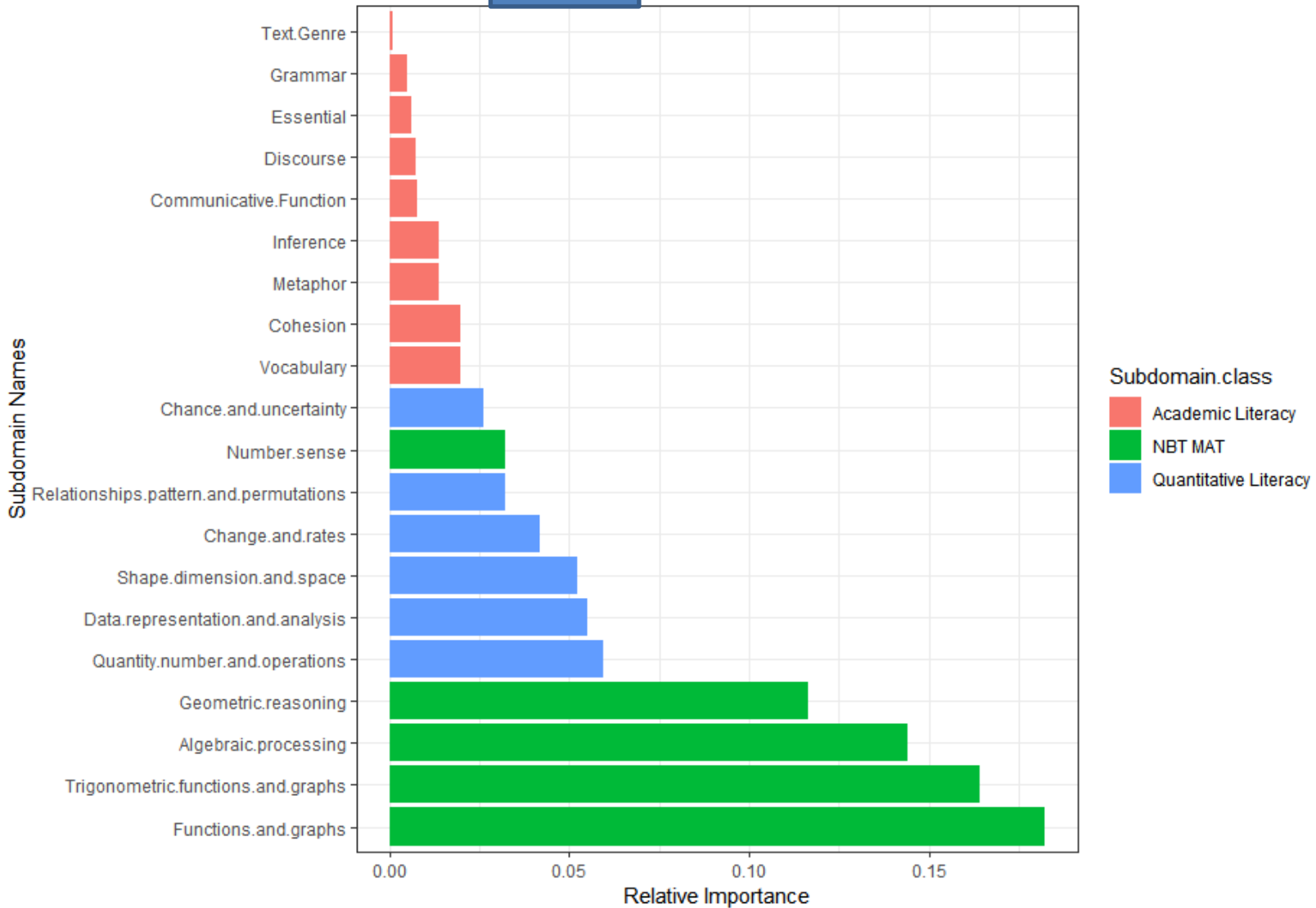
2019 AL subdomain scores for Engineering & Built Environment



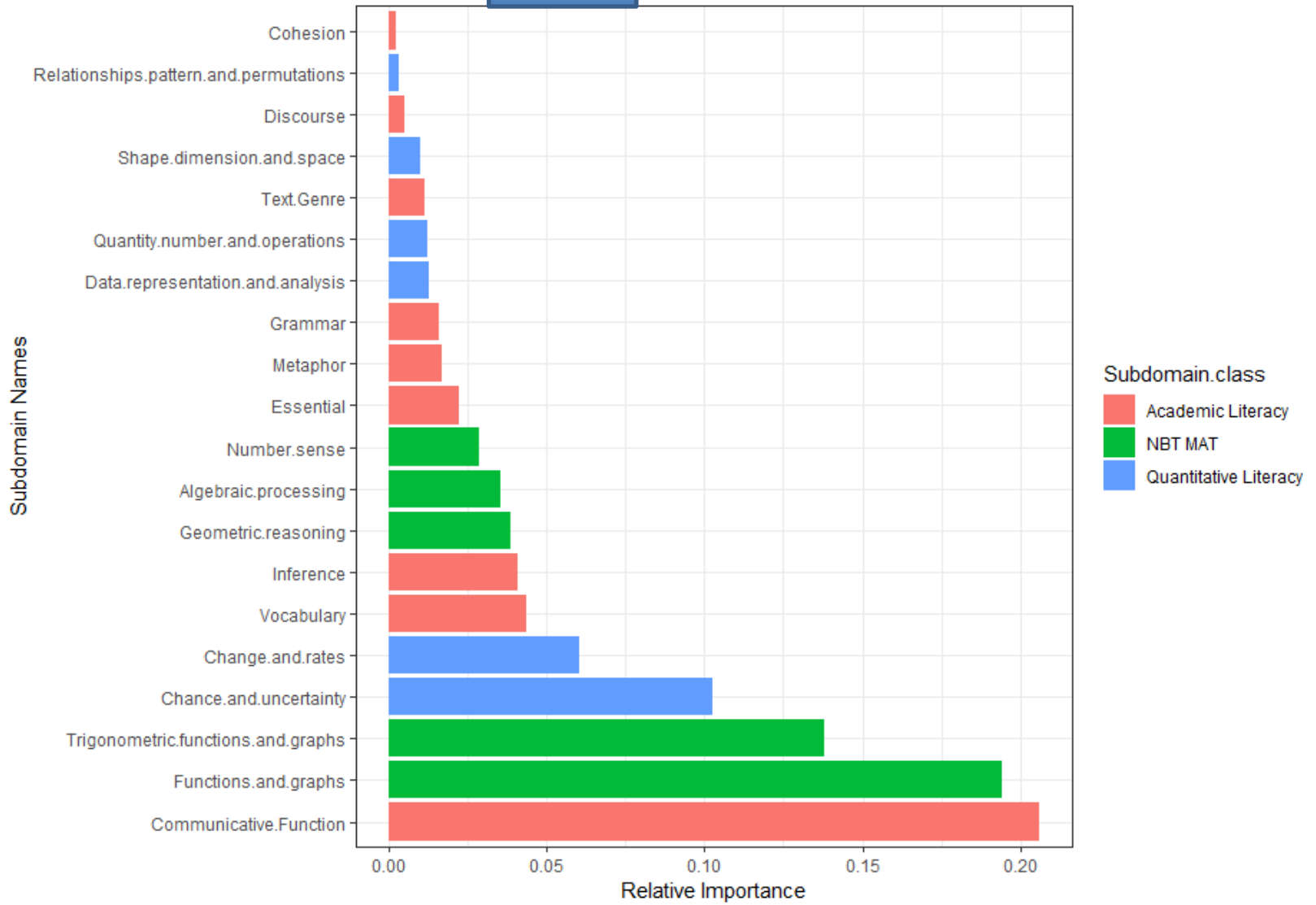


Graphs by CourseStatus

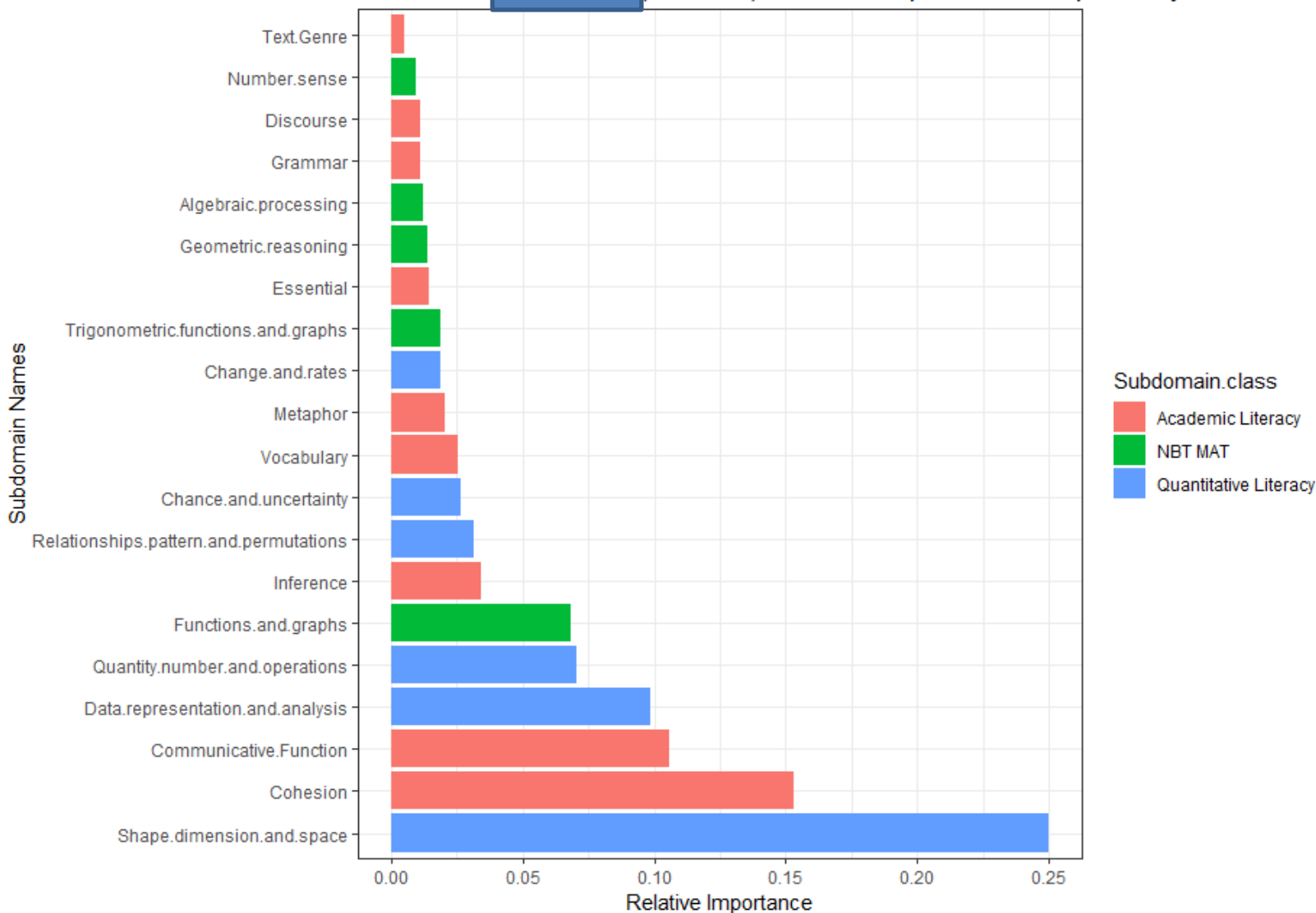
2015-2017: [] - Relative Importance of Explanatory Variables



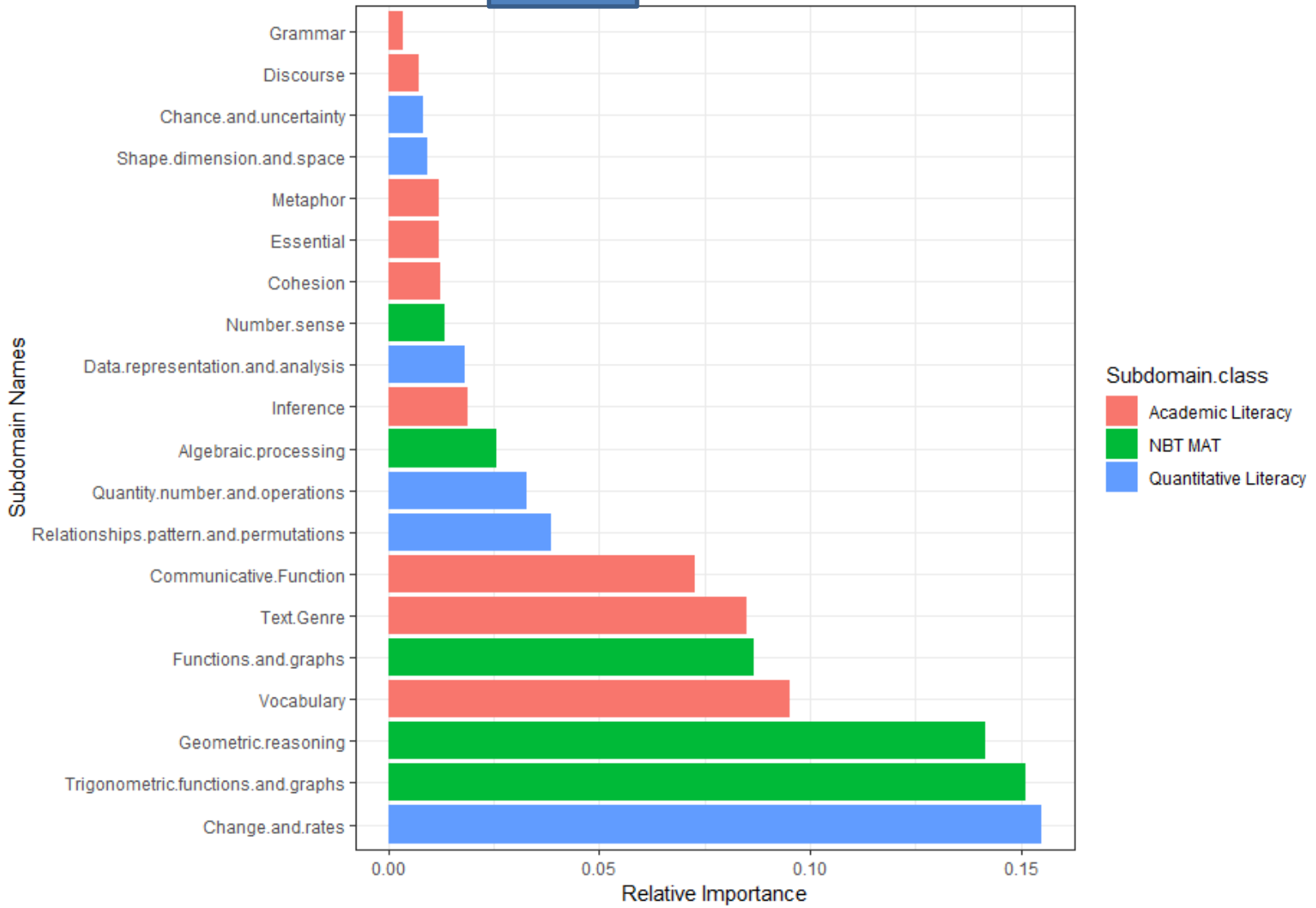
2015-2017: (0to39%) - Relative Importance of Explanatory Variables



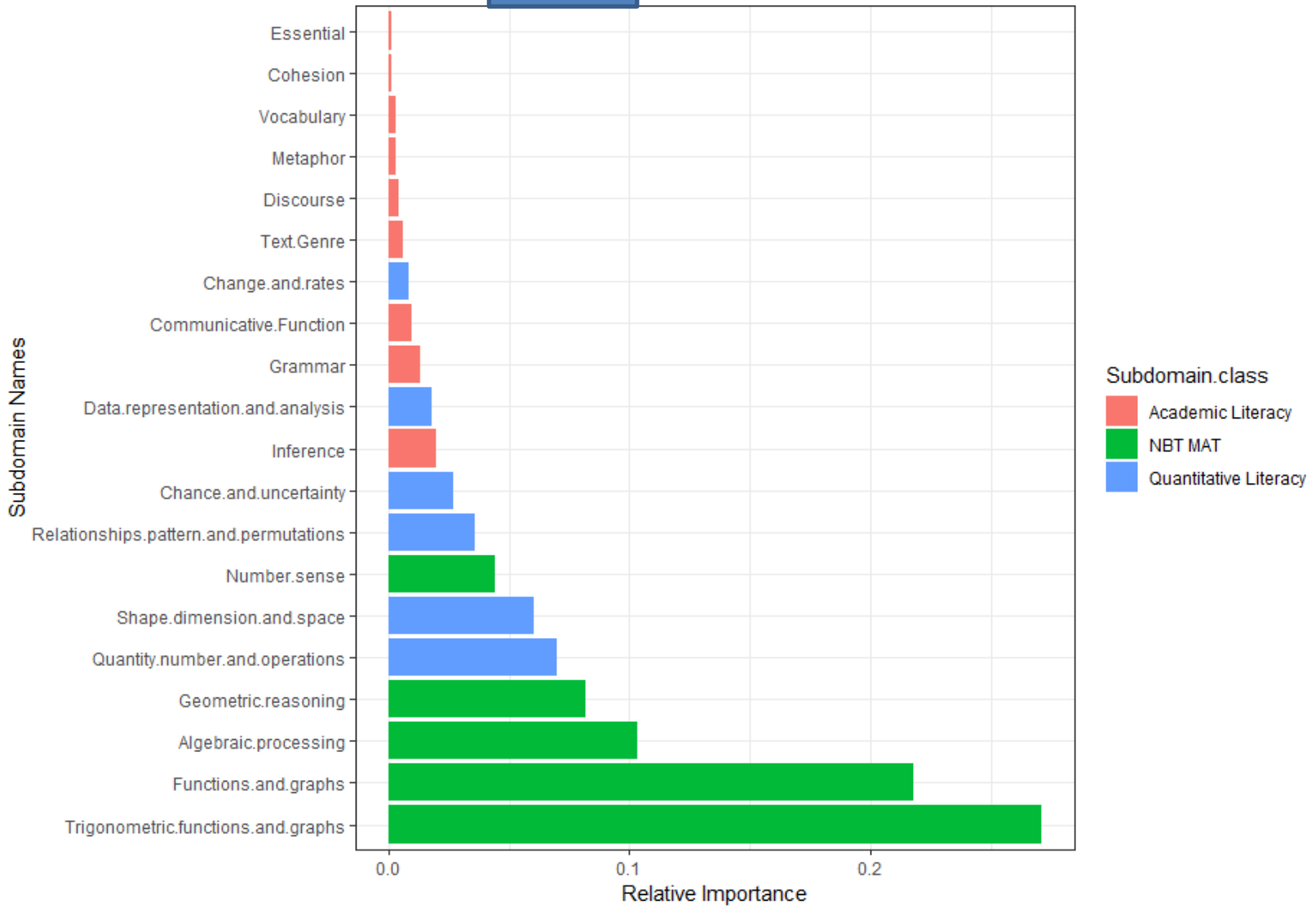
2015-2017: (40to49%) - Relative Importance of Explanatory Variables



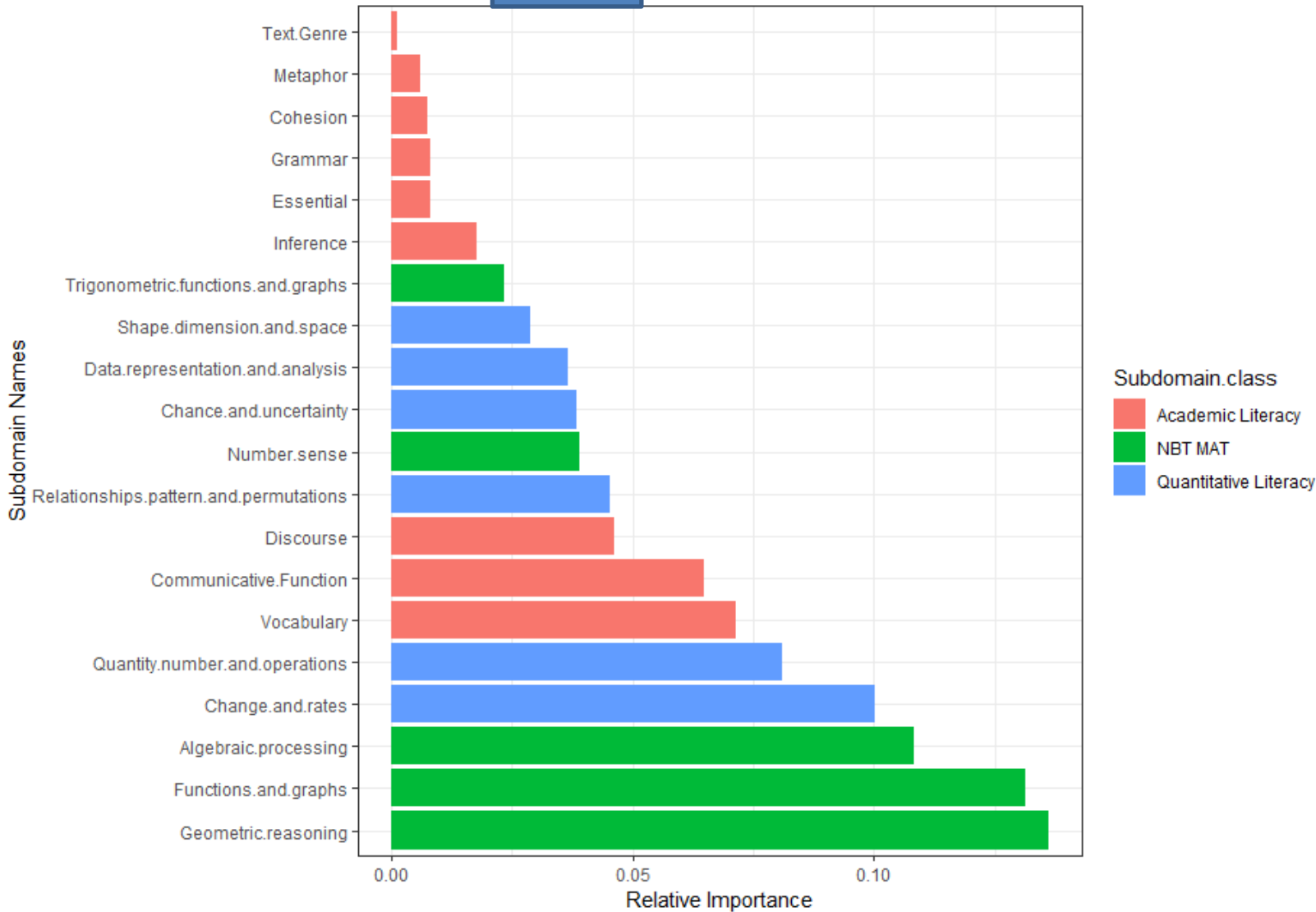
2015-2017: (50to59%) - Relative Importance of Explanatory Variables



2015-2017: (60to74%) - Relative Importance of Explanatory Variables



2015-2017: (75to100) - Relative Importance of Explanatory Variables



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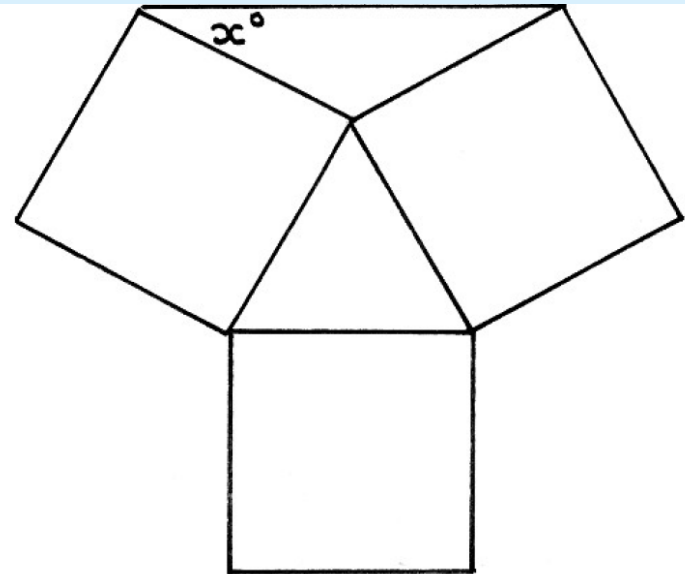
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Example 1

6. In the figure, an equilateral triangle is surrounded by three squares.

What is the value of x ?

In die diagram is daar 'n vierkant op elkeen van die drie sye van 'n gelyksydige driehoek. Wat is die waarde van x ?



(1) 15

(2) 18

(3) 24

(4) 30

(5) 36

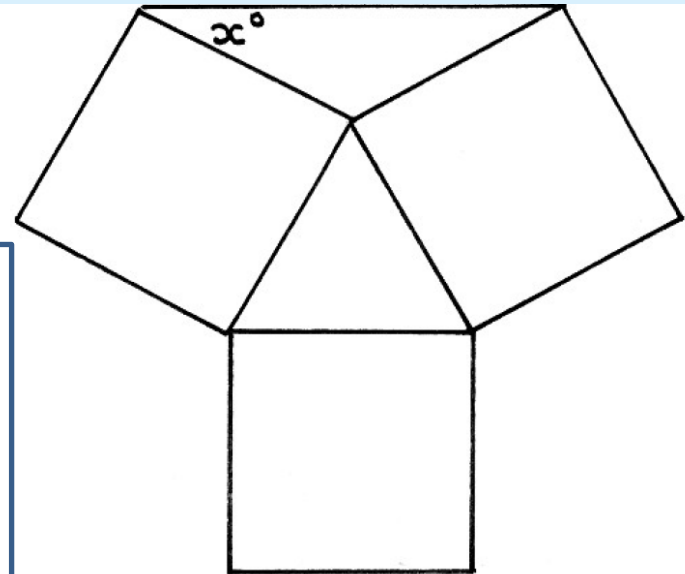
Example 1

6. In the figure, an equilateral triangle is surrounded by three squares.
What is the value of x ?

1. Recognise and understand important vocabulary items
 - equilateral triangle
 - squares (surrounded by)
2. Recognise typical expression in mathematics
 - 'What is the value of x ?' – What is x equal to? What is the size of the angle x° ? etc.

This problem may be presented with or without an illustration.
Careful reading is therefore of paramount importance.

**Related AL Subdomains: Vocabulary,
Metaphorical expression**



(4) 30

(5) 36

Example 1

6. In the figure, an equilateral triangle is surrounded by three squares.

What is the value of x ?

3. What do we know?

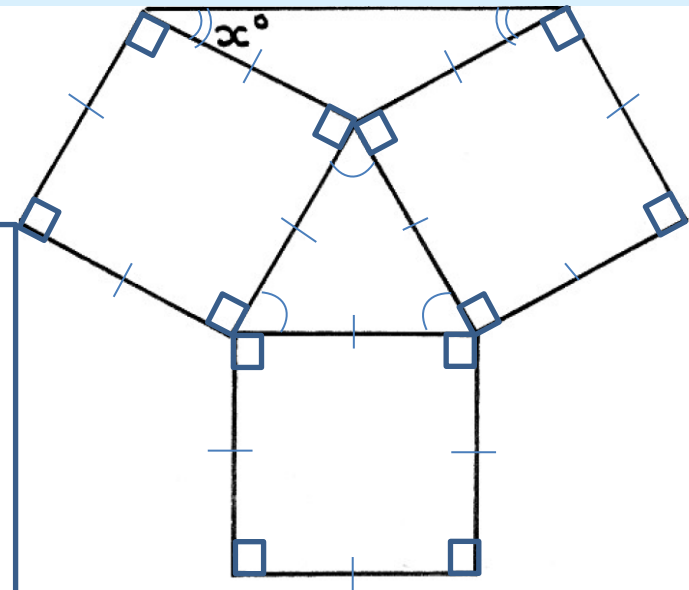
Equilateral triangle:

- Three sides are the same length
- Three angles inside the triangle are equal
- Sum of angles within a triangle is always 180°

Squares:

- One on each side of triangle, share one side
- Four sides are the same length
- Angles are all 90°

Also, triangle with x is an isosceles triangle – two of the three sides share a side with one of the squares.
etc.



(4) 30

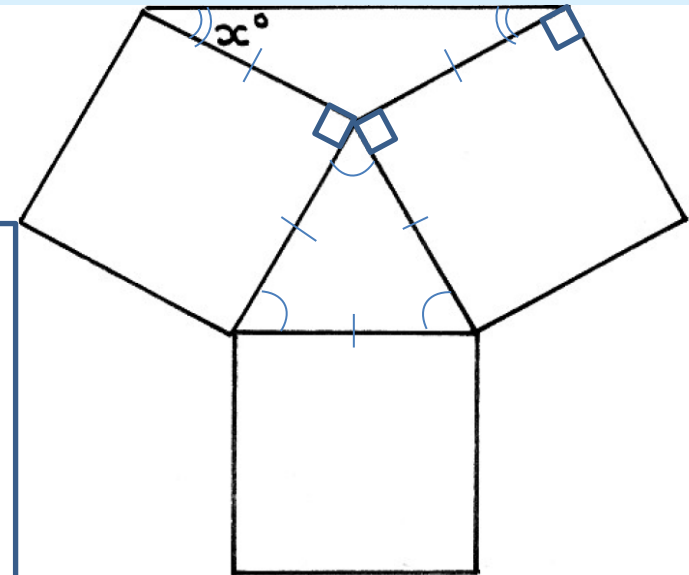
(5) 36

Related AL Subdomains:
Inferencing and extrapolation

Example 1

6. In the figure, an equilateral triangle is surrounded by three squares.

What is the value of x ?



4. Focus only on relevant information – eliminate unnecessary detail. (See illustration) For example, the fact that the base angles are acute when the vertex/apex angle is obtuse in an isosceles triangle, may not be important to the calculations. What is important, though, is that the base angles (x being one) are the same size and that one could calculate x if you know the size of the vertex angle.

5. Depending on the task, you may need to show your calculations as a type of “narrative” that presents the various steps in your thinking process. There is a particular structure to this. (Link with discourse relations – argument structure.) If you are asked to motivate an answer, then your assumptions and calculations need to be presented in a particular order and format. (Another link with structural awareness.)

(4) 30

(5) 36

Related AL Subdomains:

Essential / non-essential, (Discourse relations)

References

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