MONASH University

Education

Designing tasks appropriate for instructional decisions

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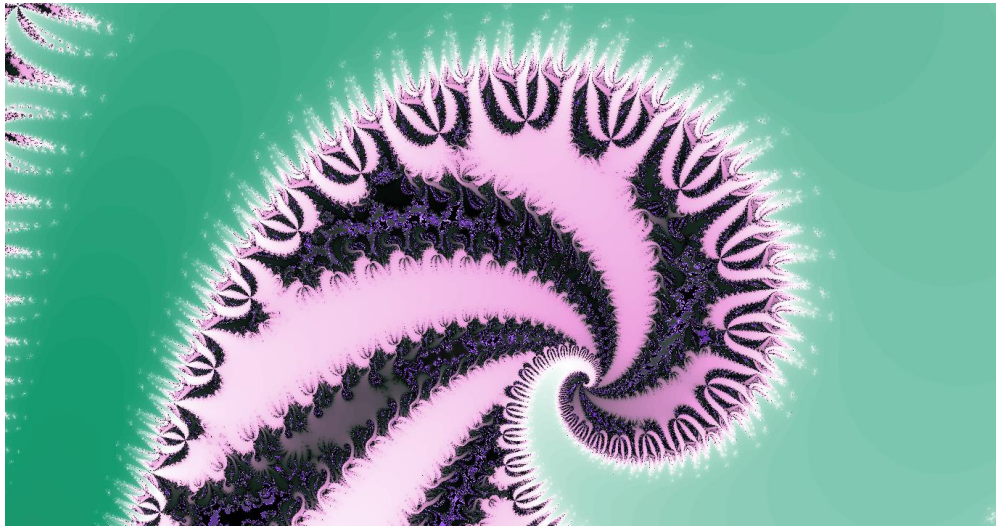
Asia-Pacific Education Assessment Conference
12 – 13 September 2013

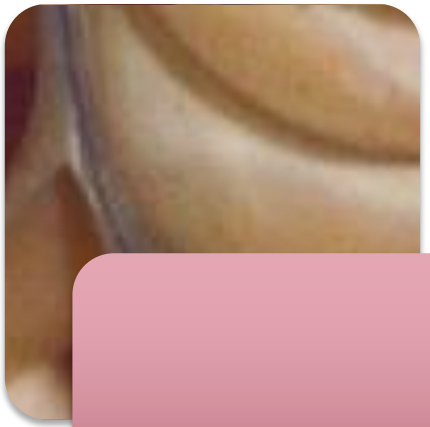


Purposes of assessment

Curriculum

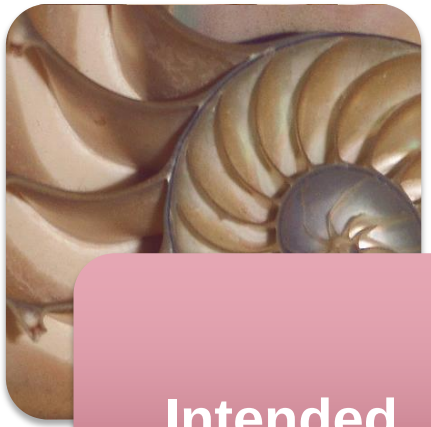
Intended

Implemented



Attained

Curriculum

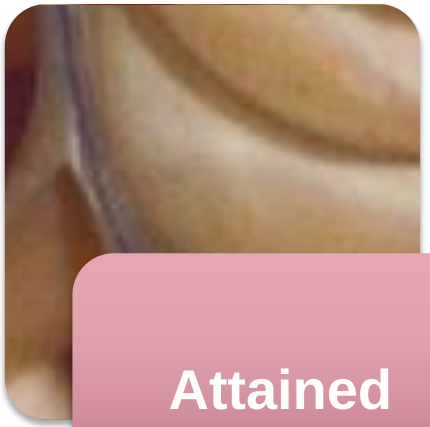


Intended

Select content

Implemented

Formative assessment

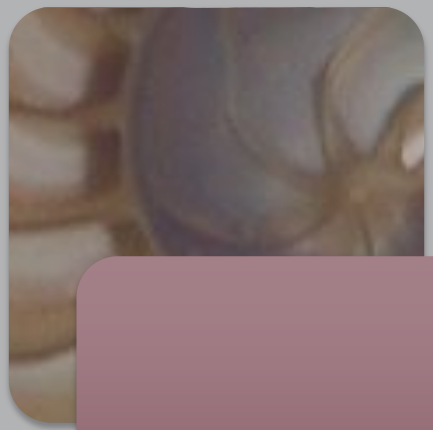


Attained

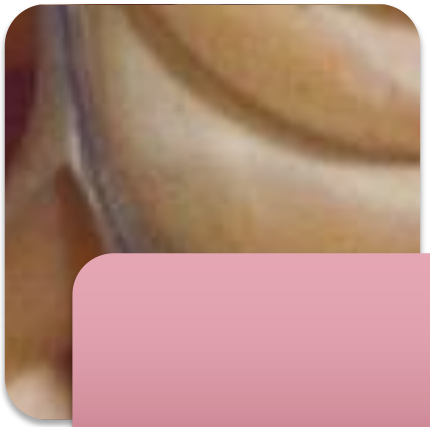
Summative assessment

Curriculum

Intended



Implemented



Attained

Assessments are …

Representational not Literal

Generalise beyond behaviours

- When we assess students, we are never interested in how well they do on the actual items on which they were assessed; we are interested in how we can generalise beyond the behaviors observed on the assessment.

  Nuttall, 1987

Generalising from assessment

Sample of well-defined content

46 + 35

75 + 28

Remainder of that content.

The 1000 addition facts of pairs of numbers to 100

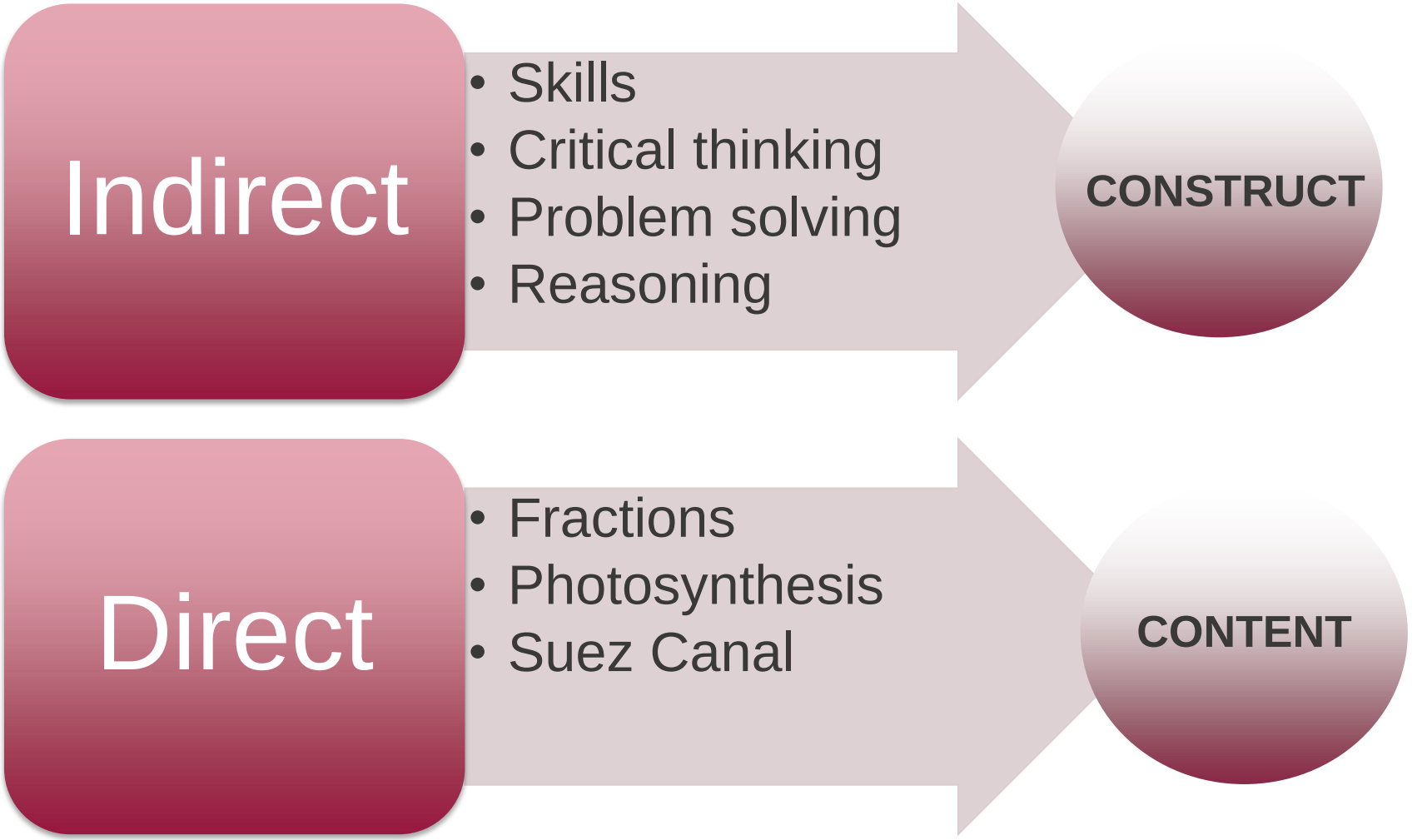

Full Mark
Do not overfill.
Dipstick
Add Mark
Add oil when level is at or
below this mark.
Note: It's best to maintain your engine's
oil level at or near the full mark.

The new average?

Make no mistake about it, the higher-order skills – critical thinking and reasoning, problem solving, communication (including listening), collaboration, digitally-based learning, citizenship – will become the new average for the rest of this century.

Fullan, 2011

Objects of learning



Construct

- A (usually) unobservable trait
  - Problem solving
  - Reasoning
  - Critical thinking

- No single empirical measure

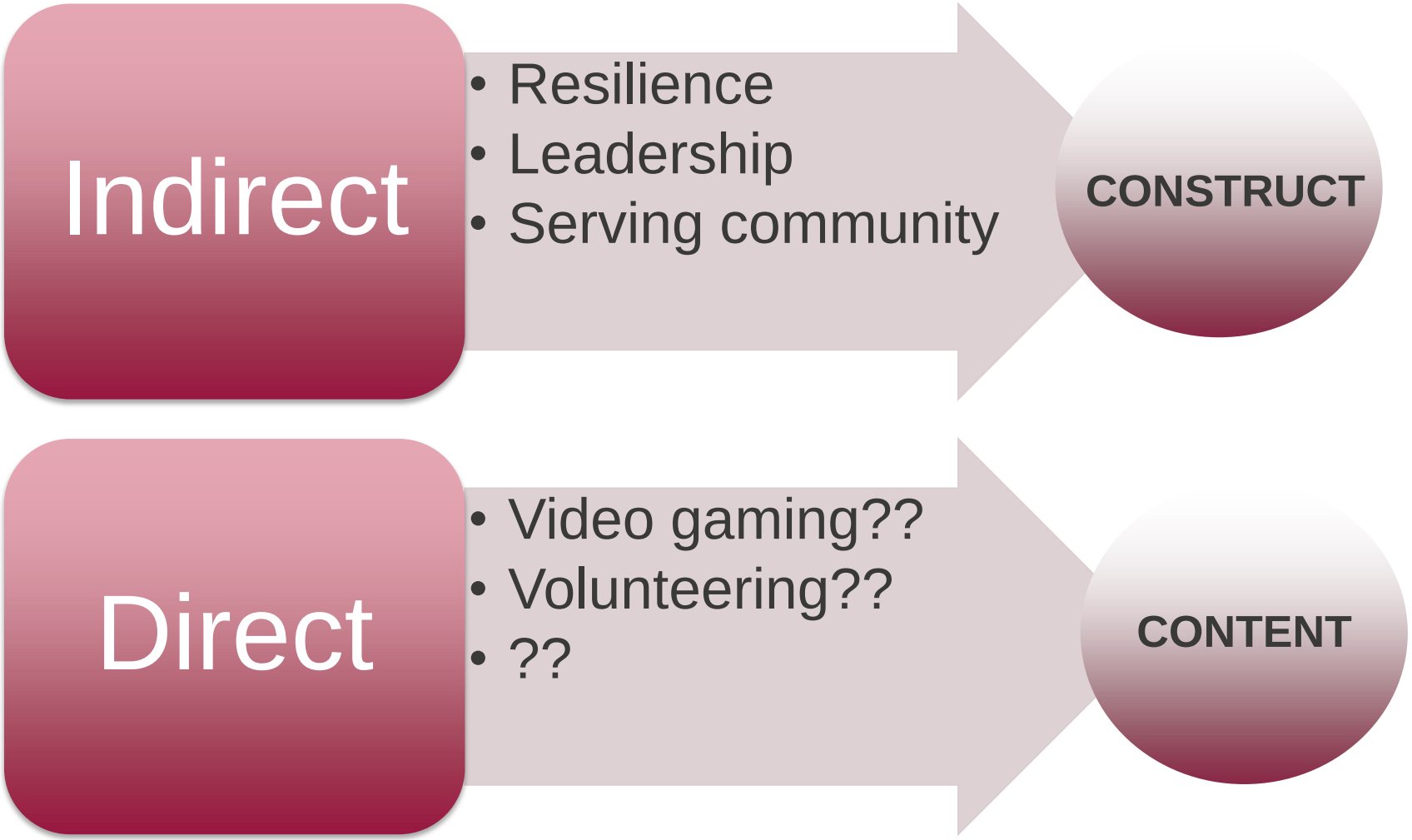
Cronbach & Meehl, 1955

Defining constructs

- Constitutively
  - In terms of other constructs
- Operationally
  - What to observe and measure

Character and citizenship education

Character and citizenship education

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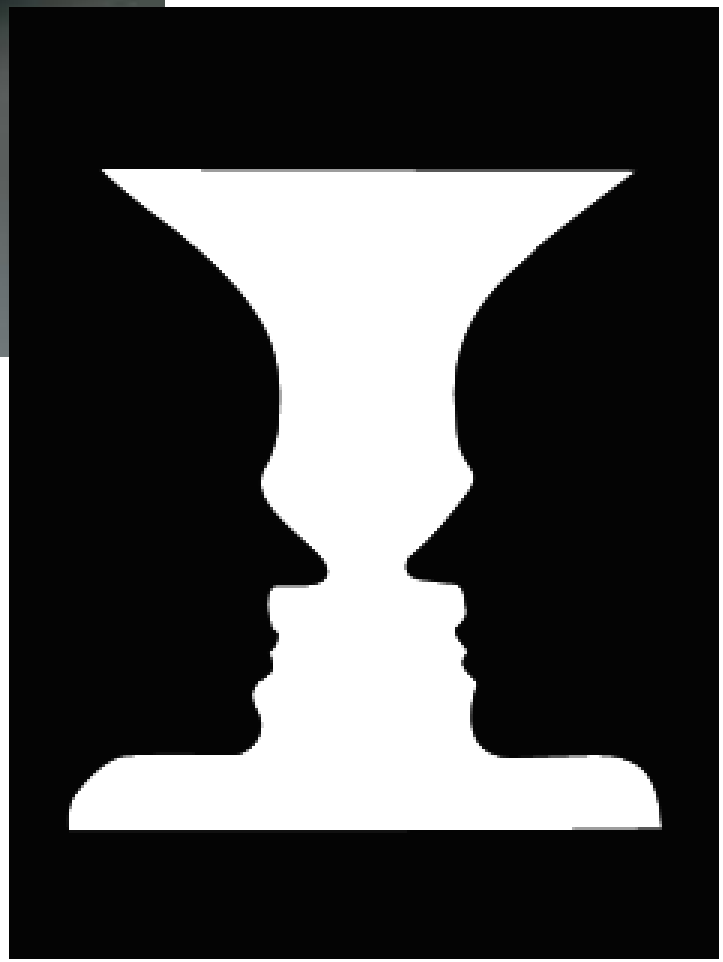


Tool and result

- The search for method becomes one of the most important problems of the entire enterprise of understanding the uniquely human forms of psychological activity. In this case, the method is simultaneously prerequisite and product, the tool and result of the study.

Vygotsky, 1978

Problem solving

Gilbert and Hazel have some postcards.
After Gilbert give 18 postcards to Hazel, he has 20 postcards more than her.
How many more postcards than Hazel does Gilbert have at first?

Peta has some plums to give to her friends.
If she gives each friend 4 plums, she will have 6 plums over.
She cannot give each friend 5 plums because she would need 4 more plums.
How many plums does Peta have?

Given 86 + 57 = 143

Quickly figure out	Correct at end of primary
57 + 86	91%
143 - 86	80%
86 + 86 + 57 + 57	79%
860 + 570	76%

“Backward” design

Wiggins & McTighe

Singapore Mathematics 2013: Process

Singapore Mathematics 2013: Content

Example: Compare two fractions

Choice of fractions	G5 success rate
7/8 5/8	> 90%
5/7 5/9	< 20%

Measurement and geometry

- Connect three-dimensional objects with their nets and other two-dimensional representations

Objects of learning

- **Indirect**
  - Skills
  - Reasoning
  - Problem solving
- **Direct**
  - Connect three-dimensional objects with their nets and other two-dimensional representations

Objects of learning

Indirect

- Skills
  - Using measuring tools accurately
  - Compass and ruler constructions

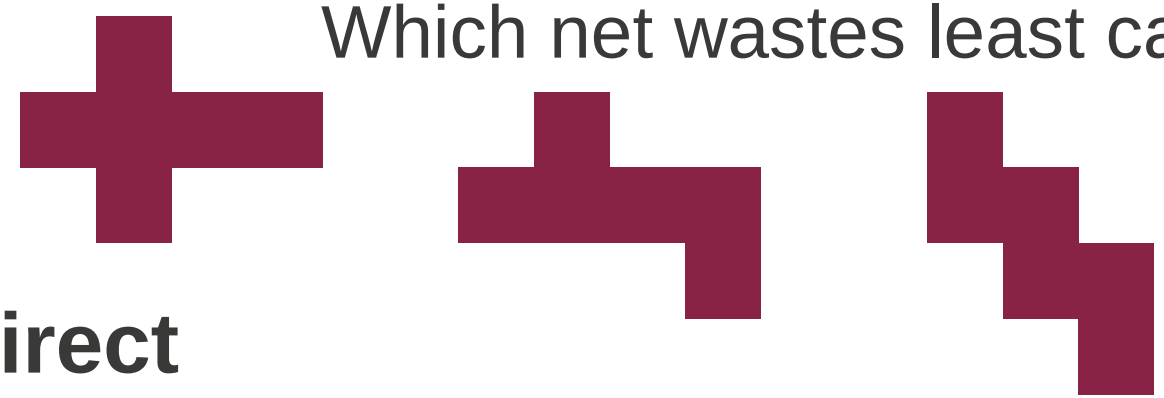
Direct

- Connect three-dimensional objects with their nets and other two-dimensional representations

Objects of learning

Indirect

- Problem solving
  - Imagine you are a box manufacturer. Which net wastes least card?



Direct

- Connect three-dimensional objects with their nets and other two-dimensional representations

Objects of learning

Indirect

– Reasoning

Which of these nets will not fold up to make a cube?

Direct

– Connect three-dimensional objects with their nets and other two-dimensional representations

Threats

- Construct under-representation
- Construct irrelevant variance

Messick, 1980

Construct under-representation

Pre-test	Correct
8 + 4 = [ ] + 5	58%
32 + 19 = [ ] + 20	53%
68 - 39 = [ ] - 40	26%

Construct irrelevant variance?

When a number is divided by 3, the remainder is 2.
When the same number is divided by 4,
the remainder is also 2.

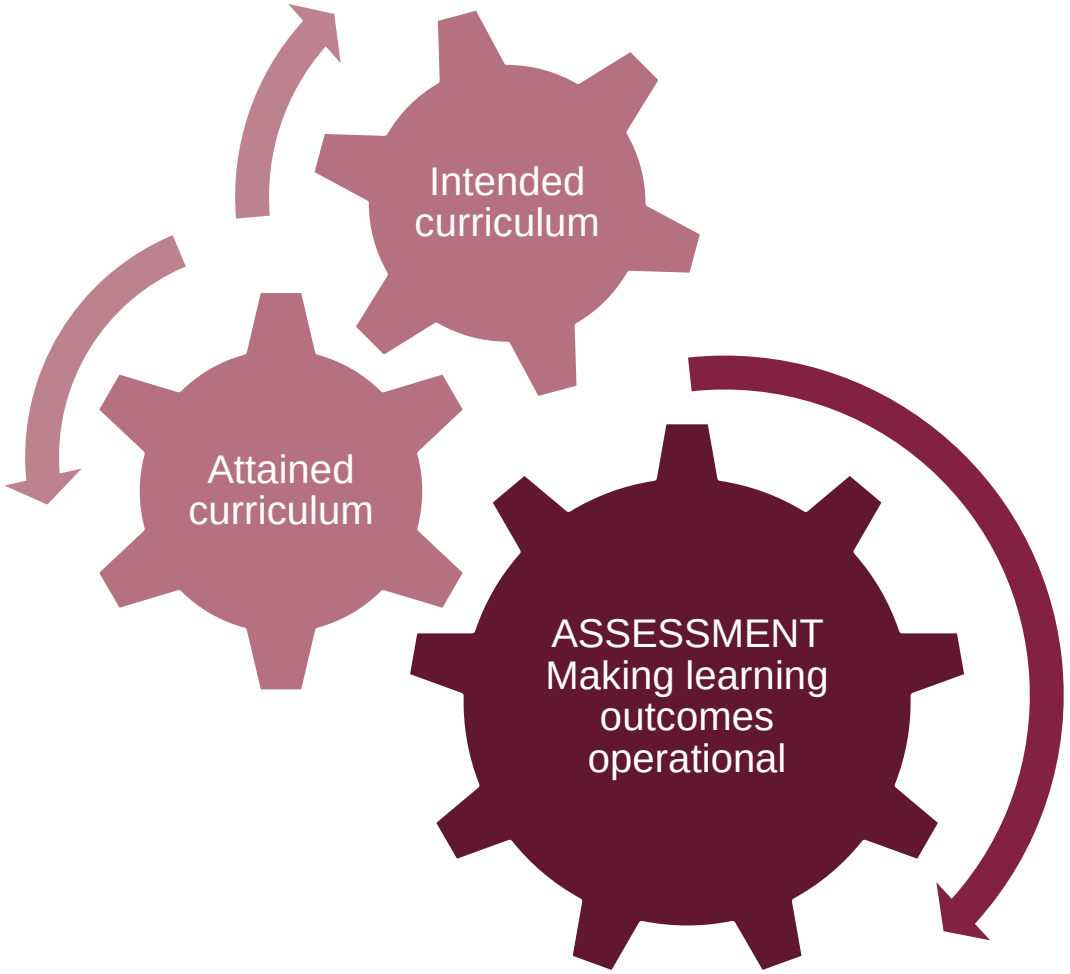
Find the number.

Peta has some plums to give to her friends.
If she gives each friend 4 plums, she will have 6 plums over.
She cannot give each friend 5 plums because she would need 4 more plums.
How many plums does Peta have?

Construct irrelevance variance?

- There were ¾ as many chocolates in Miss Churcher's box as there were in Miss Goder's.
  ½ of the sweets in Miss C's box were eaten and 3/8 of Miss G's box were eaten.
  There were 152 chocolates altogther (left over).
  How many sweets were in each box to start?

Overlooked purpose



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