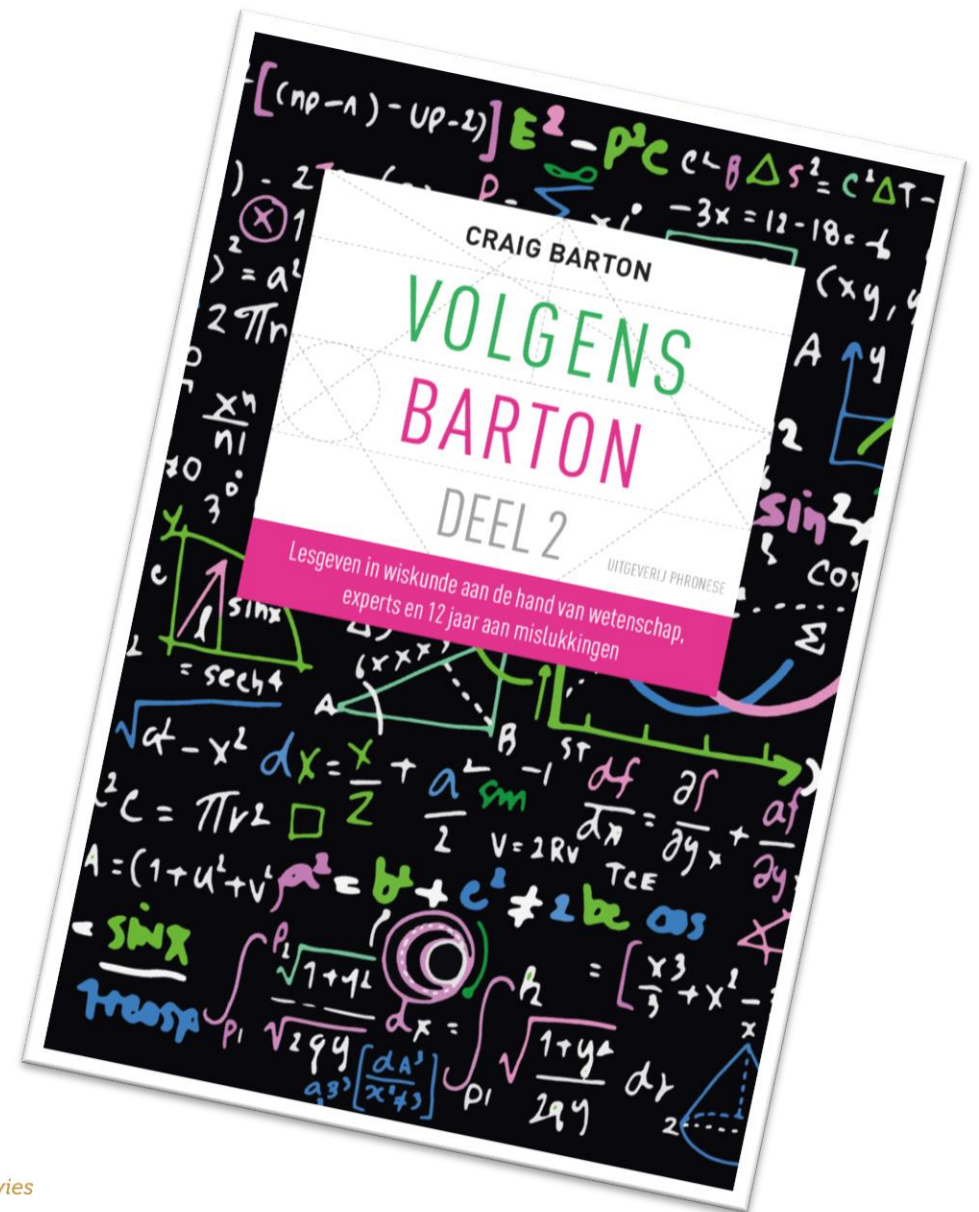
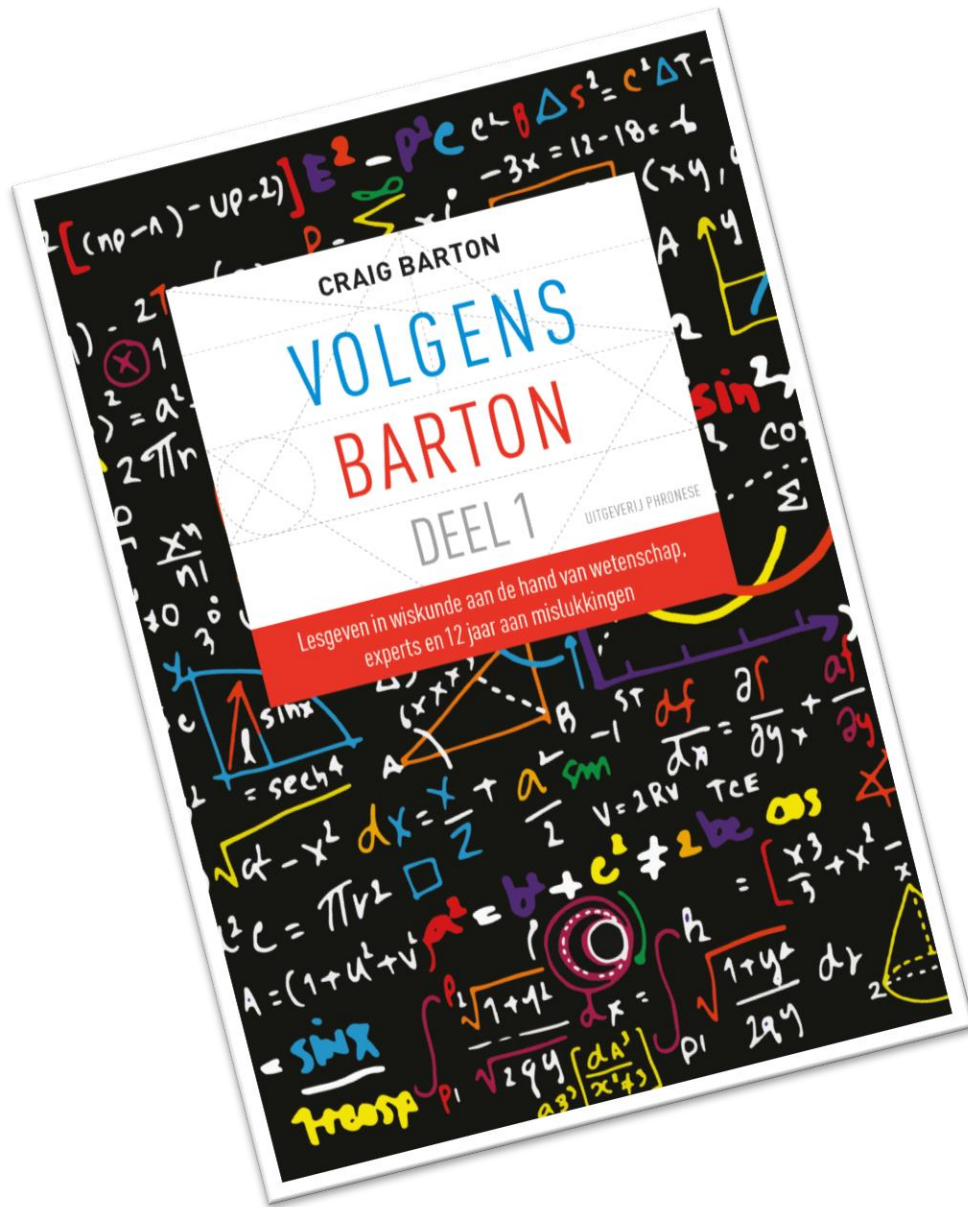




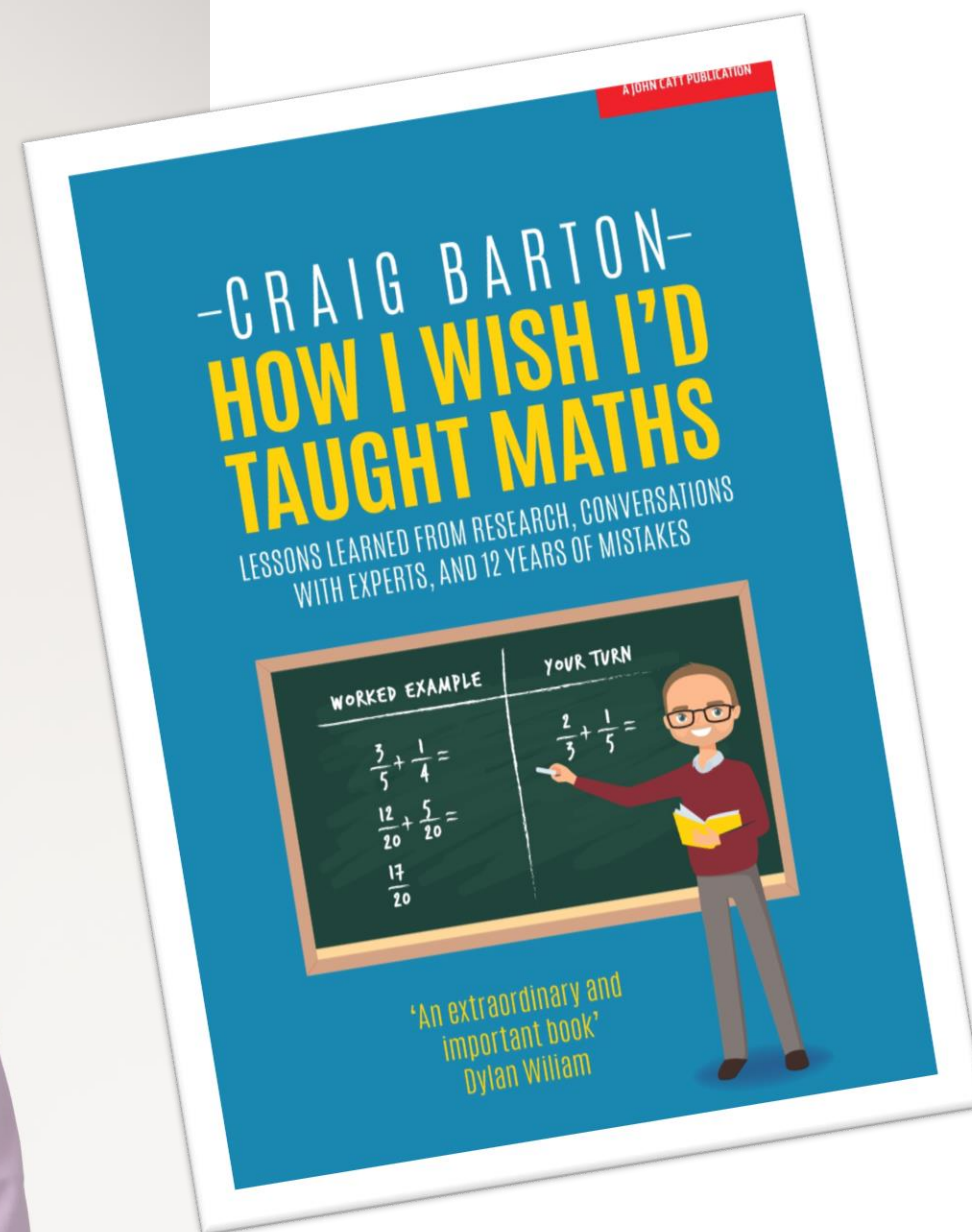
Phronese | Training & Advies

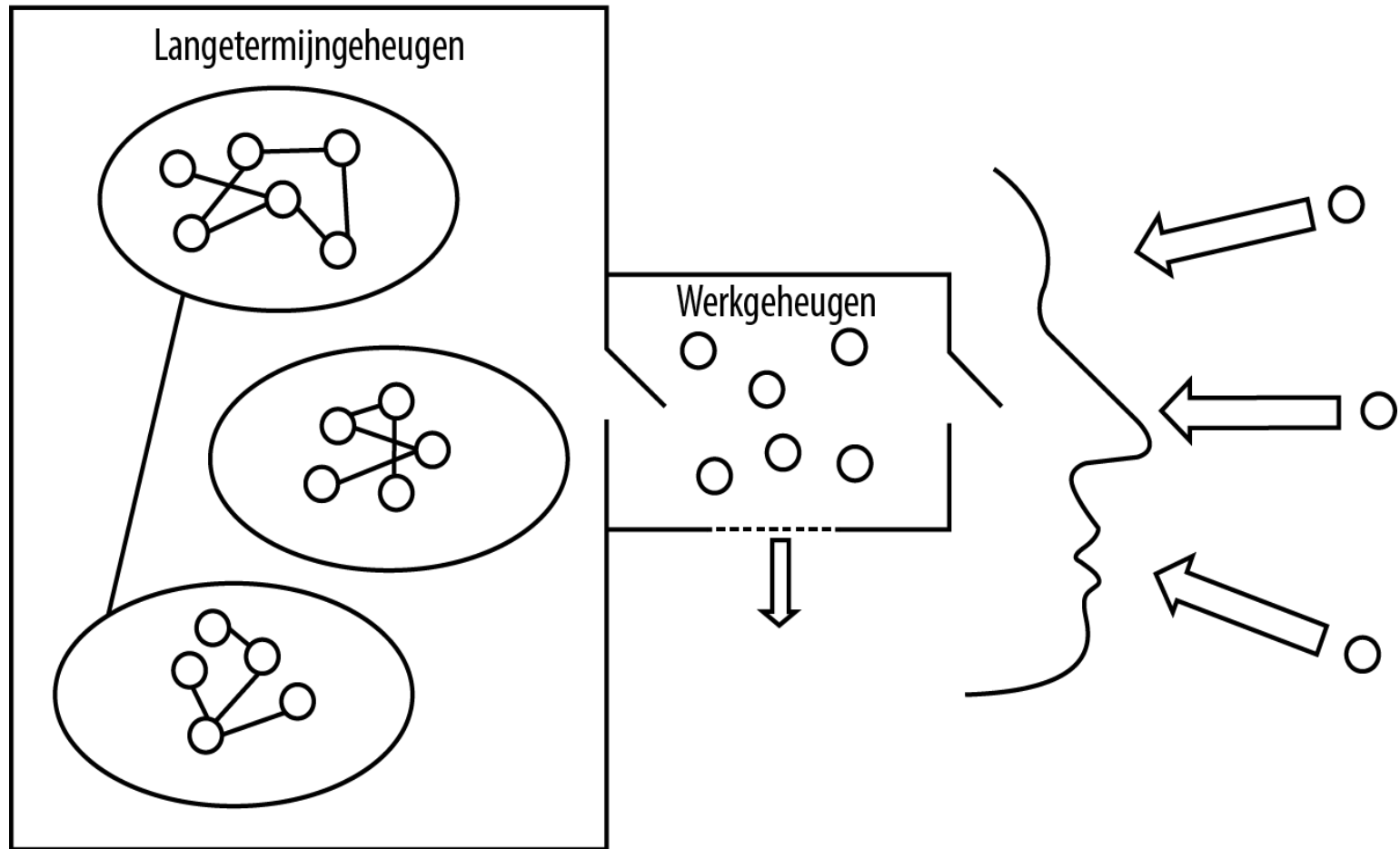
http://www.uitgeverijphronese.nl/?page_id=466
ook voor nieuwsbrief & inschrijving 31 maart.

René Kneyber

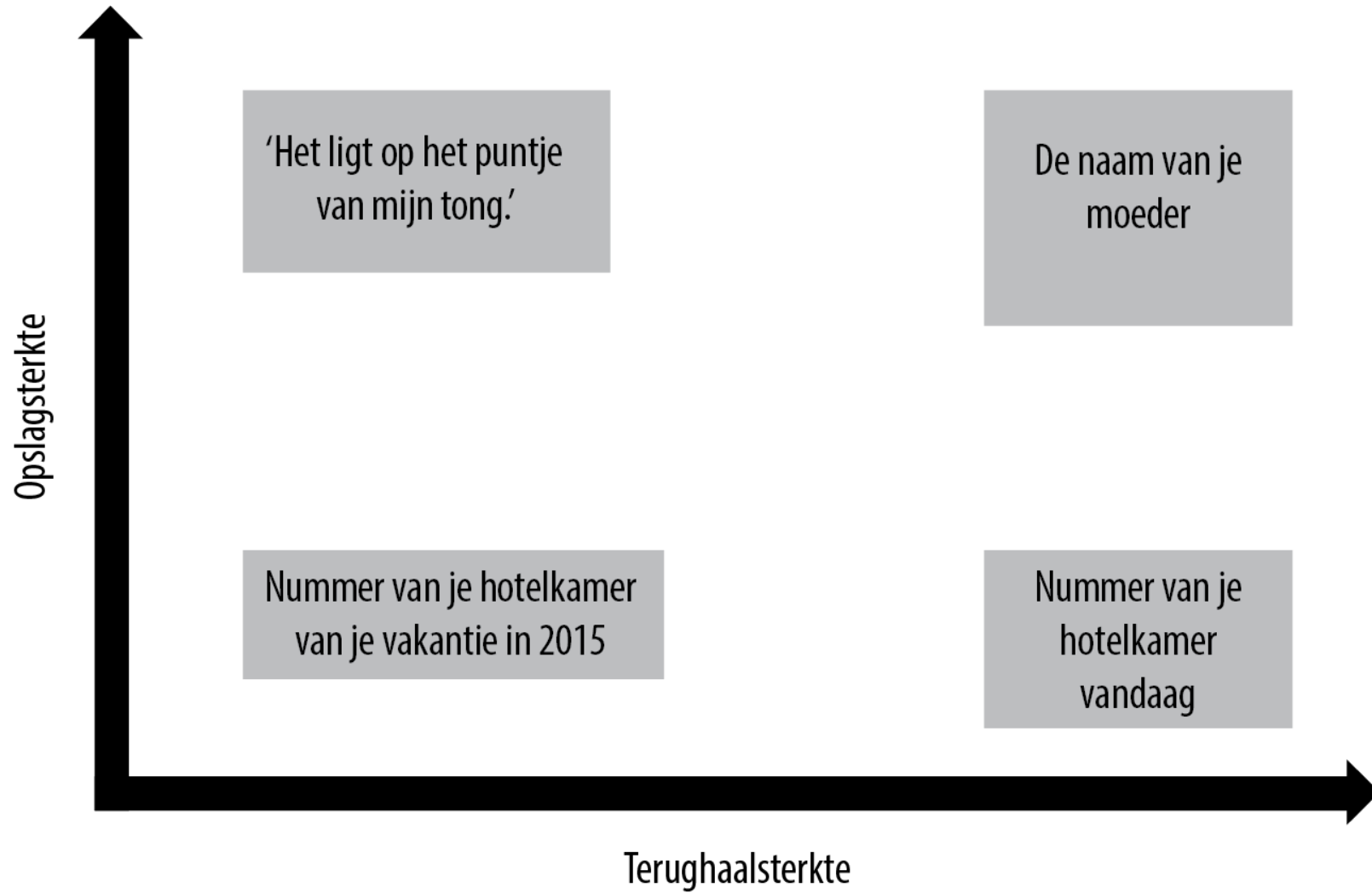
- Leraar wiskunde
- Cursussen & lezingen in klassenmanagement en formatief 'toetsen'
- (Internationaal) expert op het gebied van lerarenbeleid en onderwijsverbetering.
- Kroonlid van de Onderwijsraad (2015-2022)
- 10+ boeken (waaronder *Toetsrevolutie*)
- Ex-columnist Trouw
- Vertaler (Dylan Wiliam, Craig Barton, Gert Biesta)
- Uitgever
- Geen leven...







Uit Volgens Barton Deel 1 & 2







Waardoor onthouden leerlingen iets beter?

- A. Alles bestuderen en toetsen (ST)
- B. Wat je niet wist nogmaals bestuderen, maar alles blijven toetsen (S_nT)
- C. Alles steeds bestuderen, maar wat je eerder niet wist toetsen (ST_n)
- D. Wat je niet wist nogmaals bestuderen, en alleen dat toetsen (S_nT_n)

(40 woorden leren)

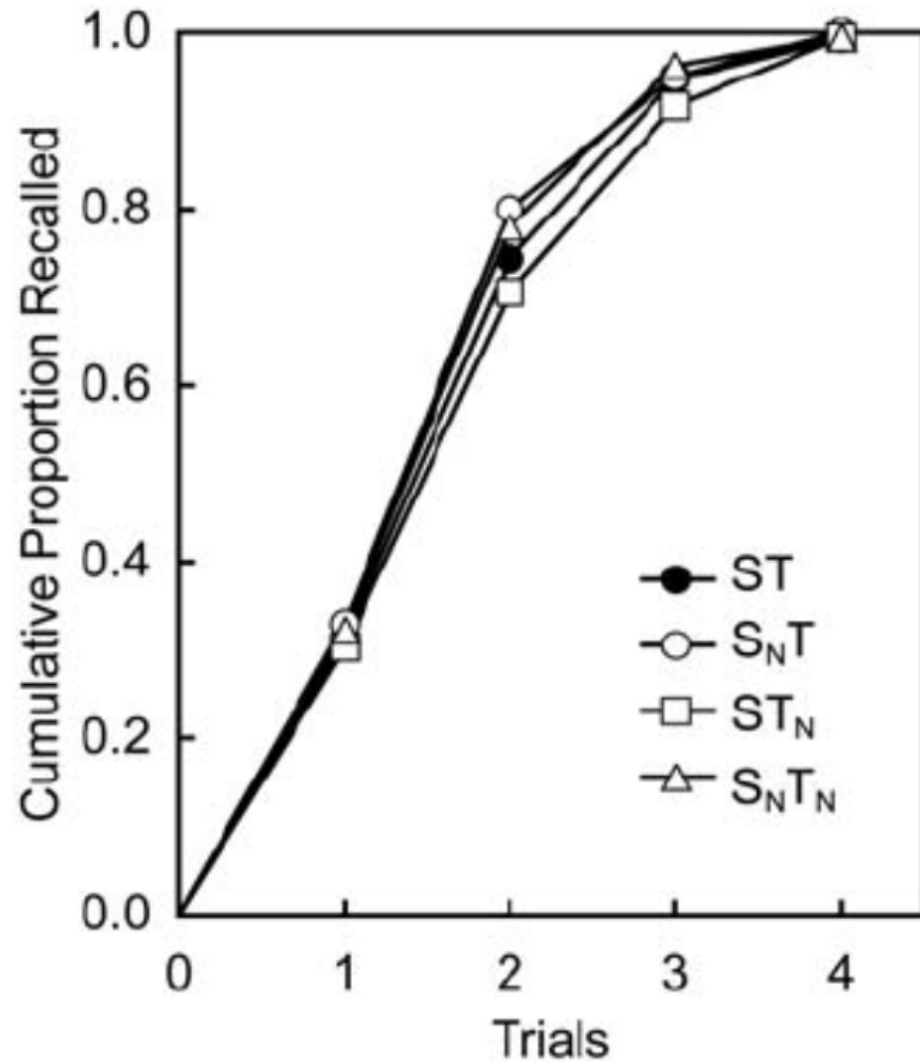


Fig. 1. Cumulative performance during the learning phase.

Na vier keer
bestuderen/toetsen
kan iedereen het....

Maar na een week...

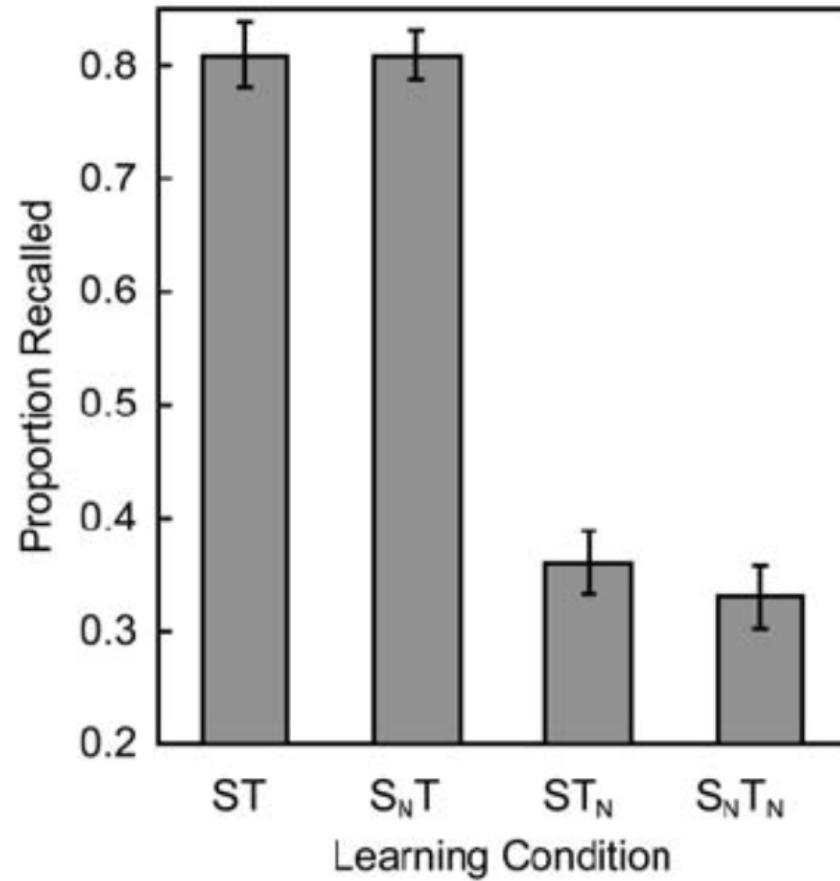
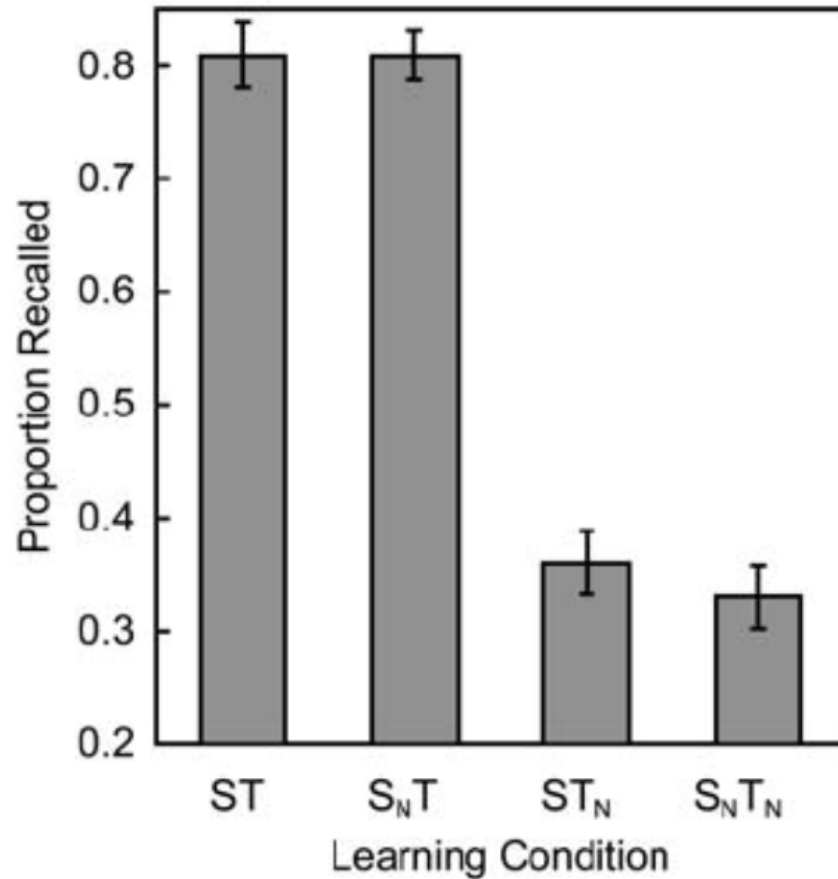


Fig. 2. Proportion recalled on the final test 1 week after learning. Error bars represent standard errors of the mean.

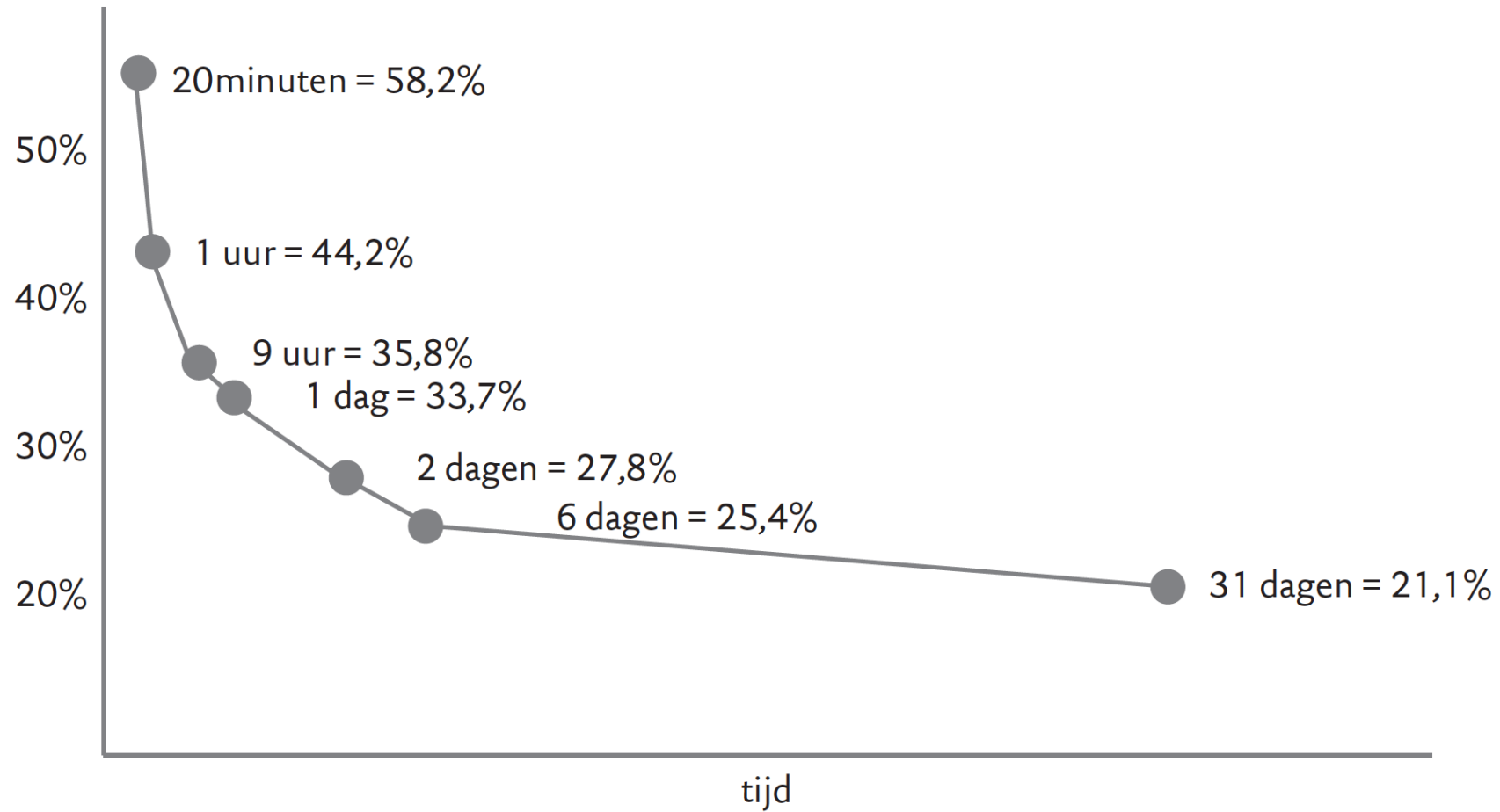


Maar na een week...

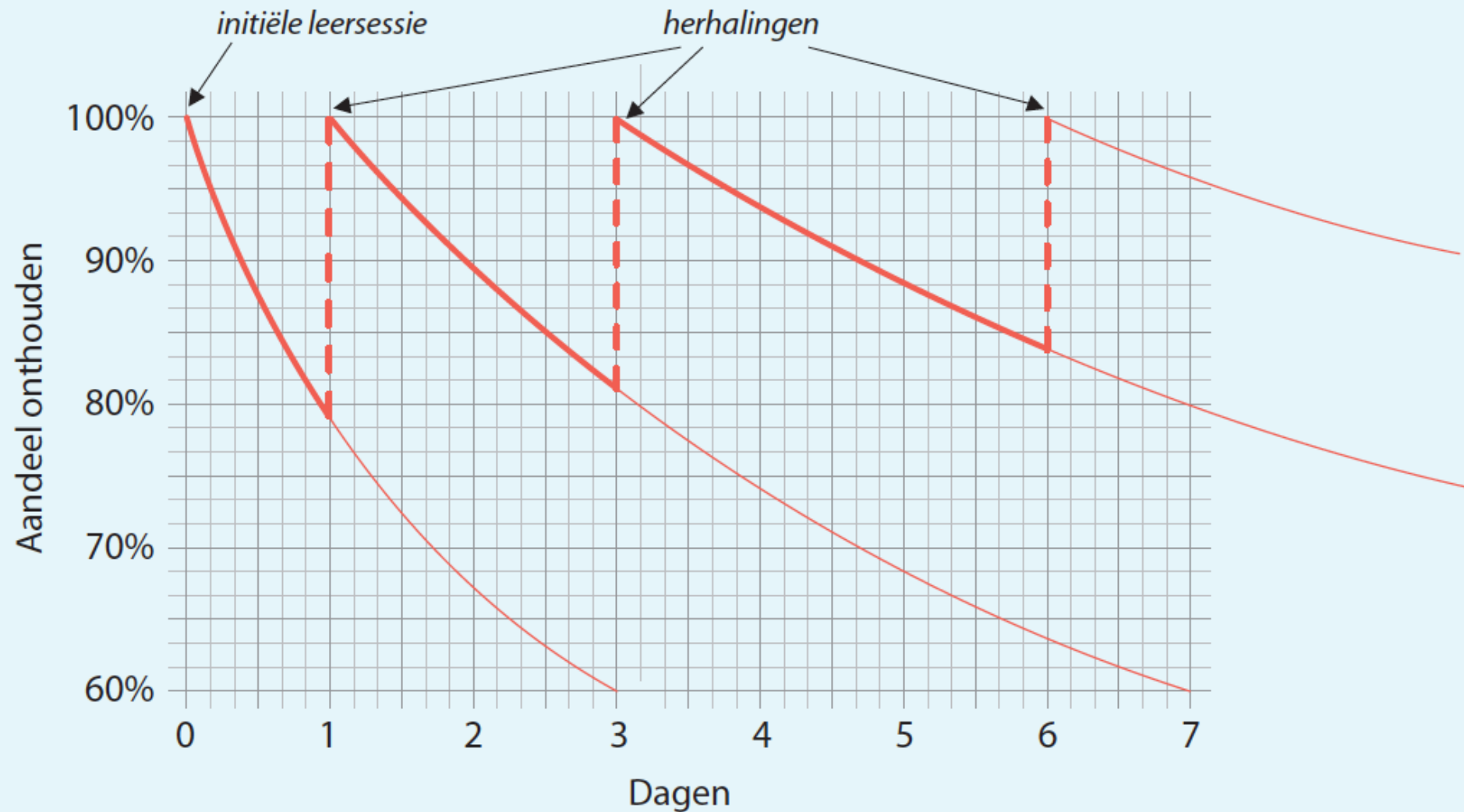
Fig. 2. Proportion recalled on the final test 1 week after learning. Error bars represent standard errors of the mean.

Test-effect (of terughaal-effect)

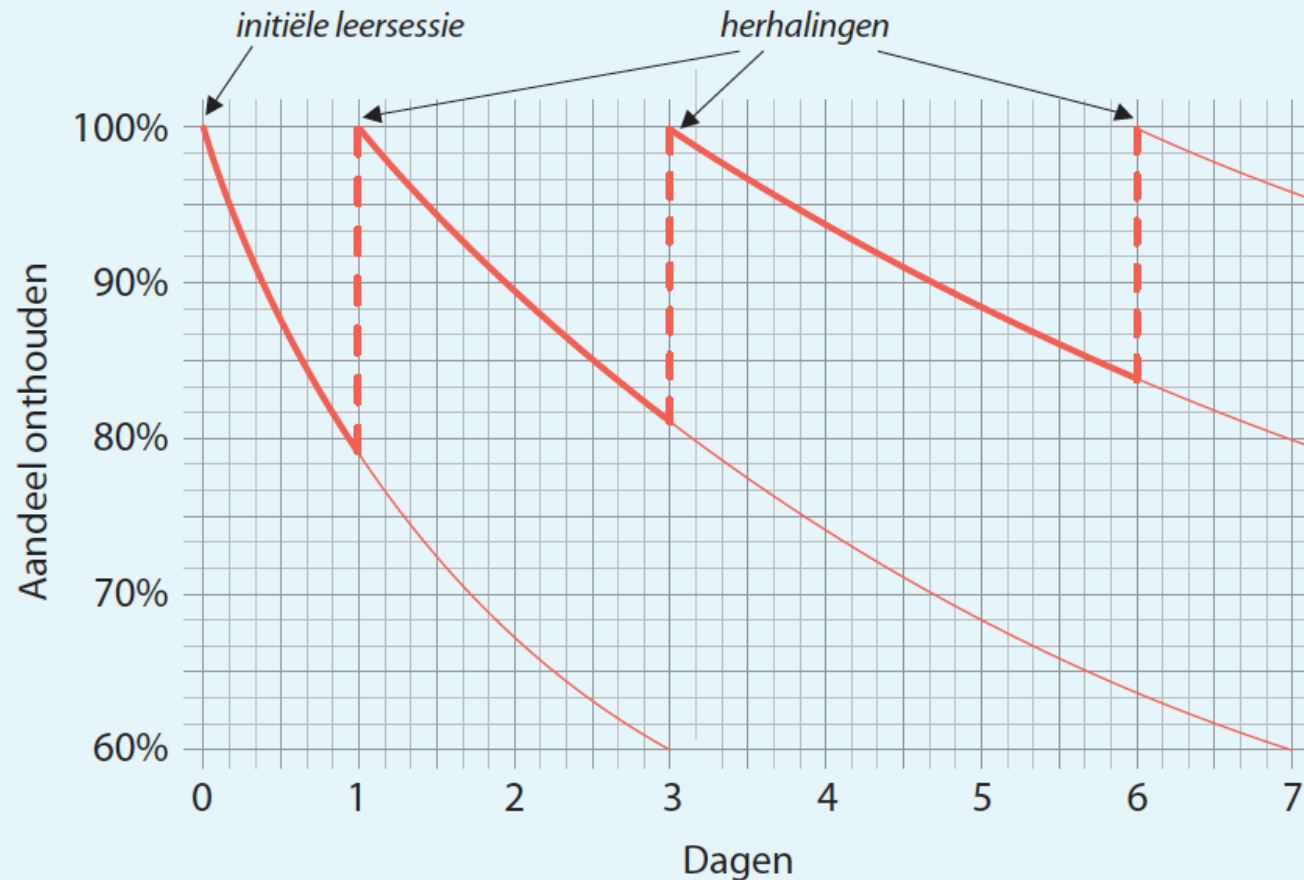
VERGEETCURVE VAN EBBINGHAUS



Gespreid-oefenen-effect

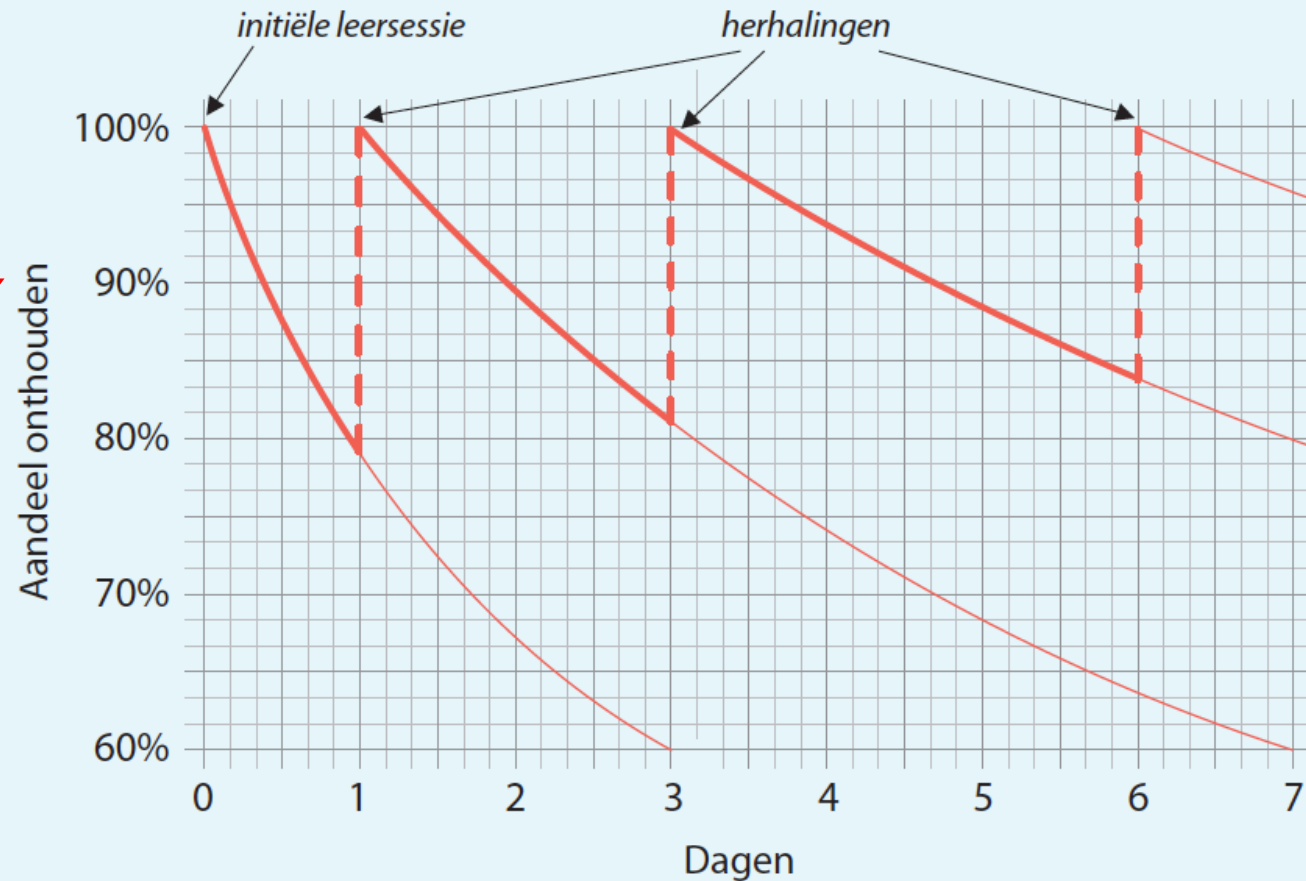


Hoe zie je hier de terughaal- en opslagsterkte in terug?



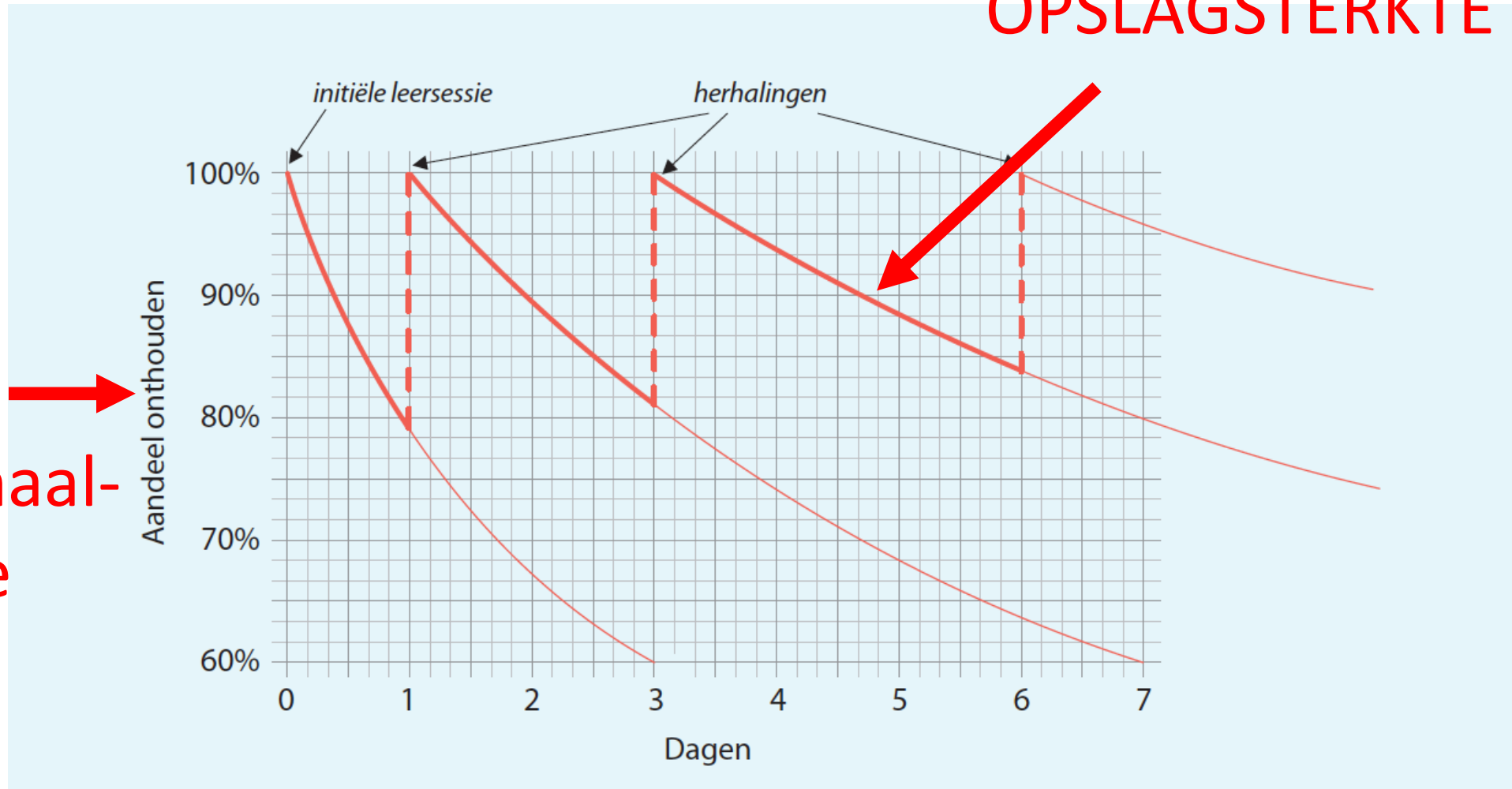
Gespreid-oefenen-effect

Terughaal-
sterkte



Gespreid-oefenen-effect

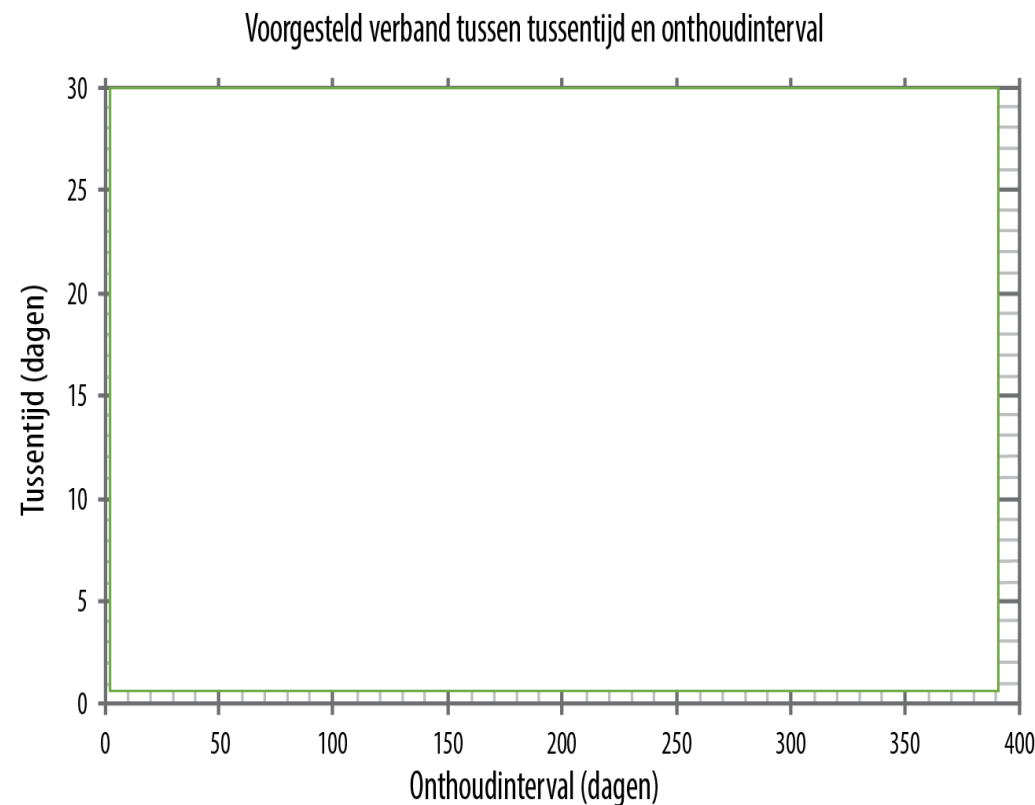
Terughaal-
sterkte



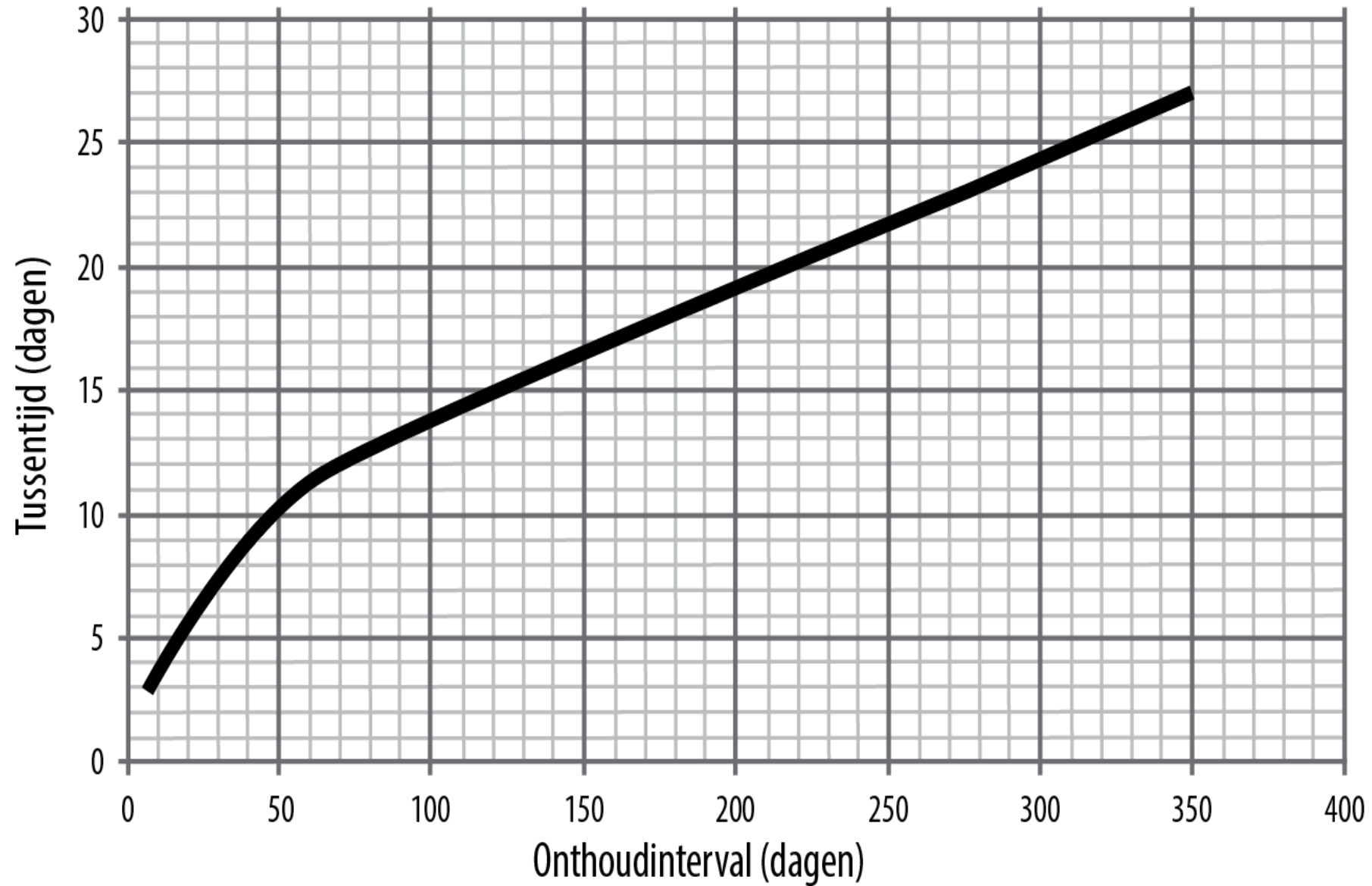


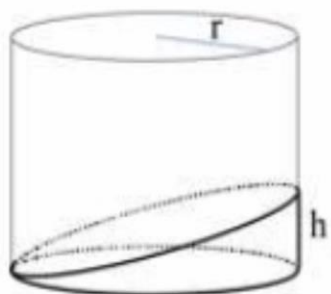


Schets op een papiertje, of mentaal, het verband tussen de tussentijd en het onthoudinterval...

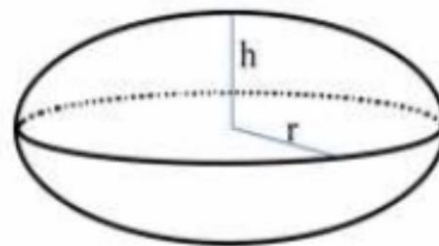


Voorgesteld verband tussen tussentijd en onthoudinterval

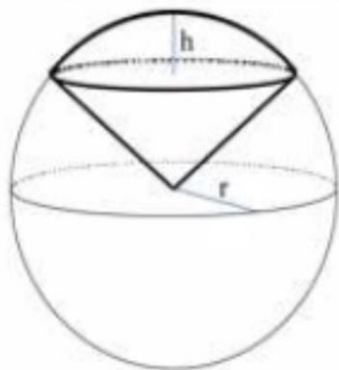


A

Wedge $V = \frac{r^2 h \pi}{2}$

B

Spheroid $V = \frac{4r^2 h \pi}{3}$

C

Spherical Cone $V = \frac{2r^2 h \pi}{3}$

D

Half Cone $V = \frac{7r^2 h \pi}{3}$

- **Gebulkte oefening (grouping/blocking):**

AAAAAA BBBBBB CCCCCC DDDDDD

- **Gevarieerde oefening (interleaving):**

ABCD ACDB DBAC CBDA DCAB ADBC

A Practice Procedure

week 1

week 2

week 3

Mixers

Set 1
interleaved

Set 2
interleaved

test

Blockers

Set 1
grouped

Set 2
grouped

test

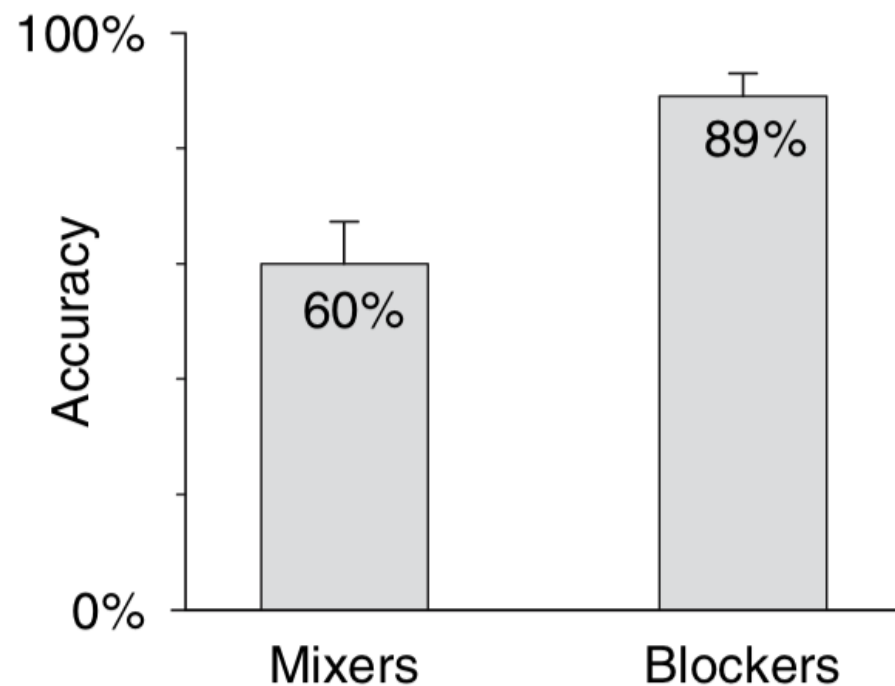
B**Problem**

Find the volume of a wedge with $r = 2$ and $h = 3$.

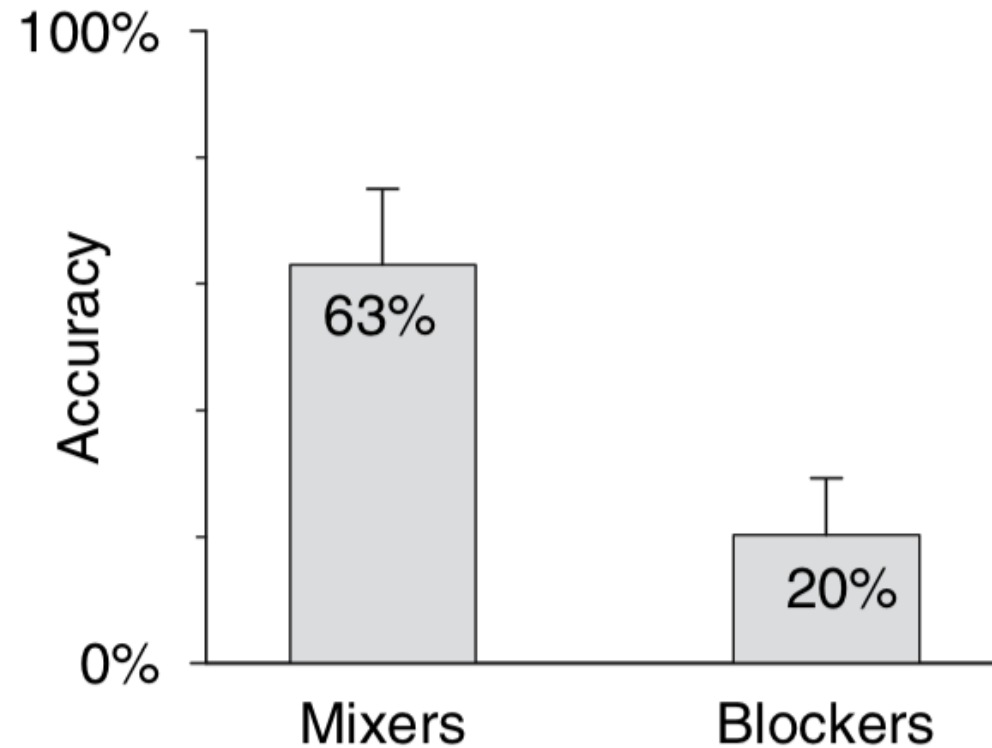
Write the formula in the box; write the answer in the oval.

Solution

$$\begin{aligned} & \boxed{\frac{r^2 h \pi}{2}} \\ = & \frac{\cancel{2} \cdot 2 \cdot 3 \pi}{\cancel{2}} \\ = & \text{oval}(6 \pi) \end{aligned}$$

B Practice Performance

C Test Performance

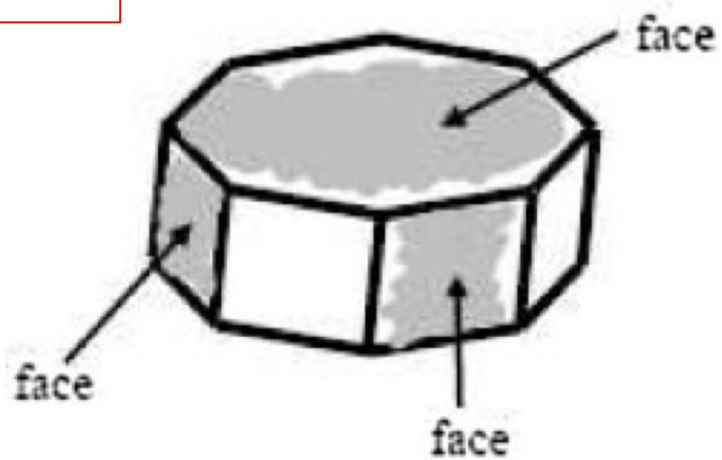


***Maar in
week 3...***

Het gevarieerd-oefenen-effect

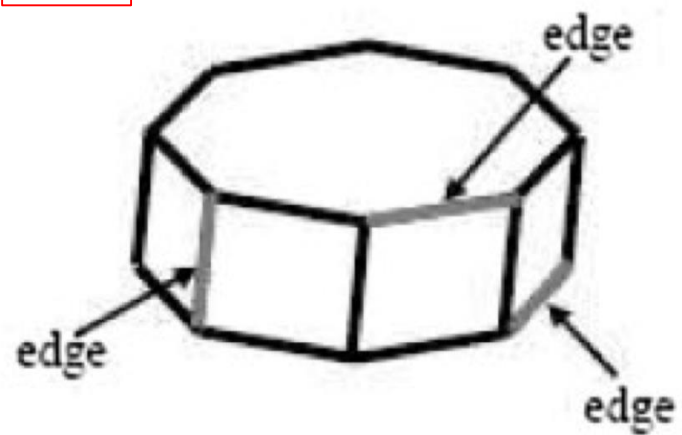
A

$$\text{faces} = b + 2$$



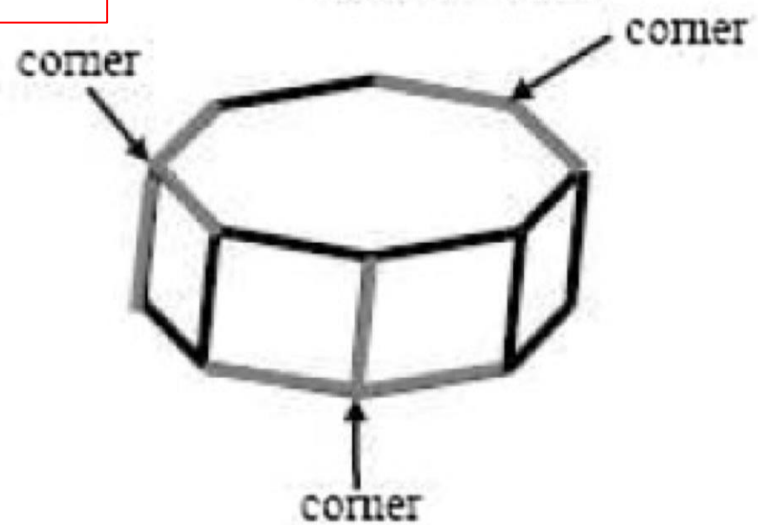
B

$$\text{edges} = b \times 3$$



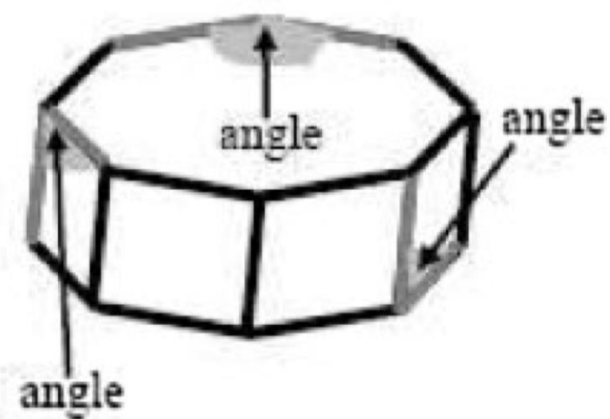
C

$$\text{corners} = b \times 2$$



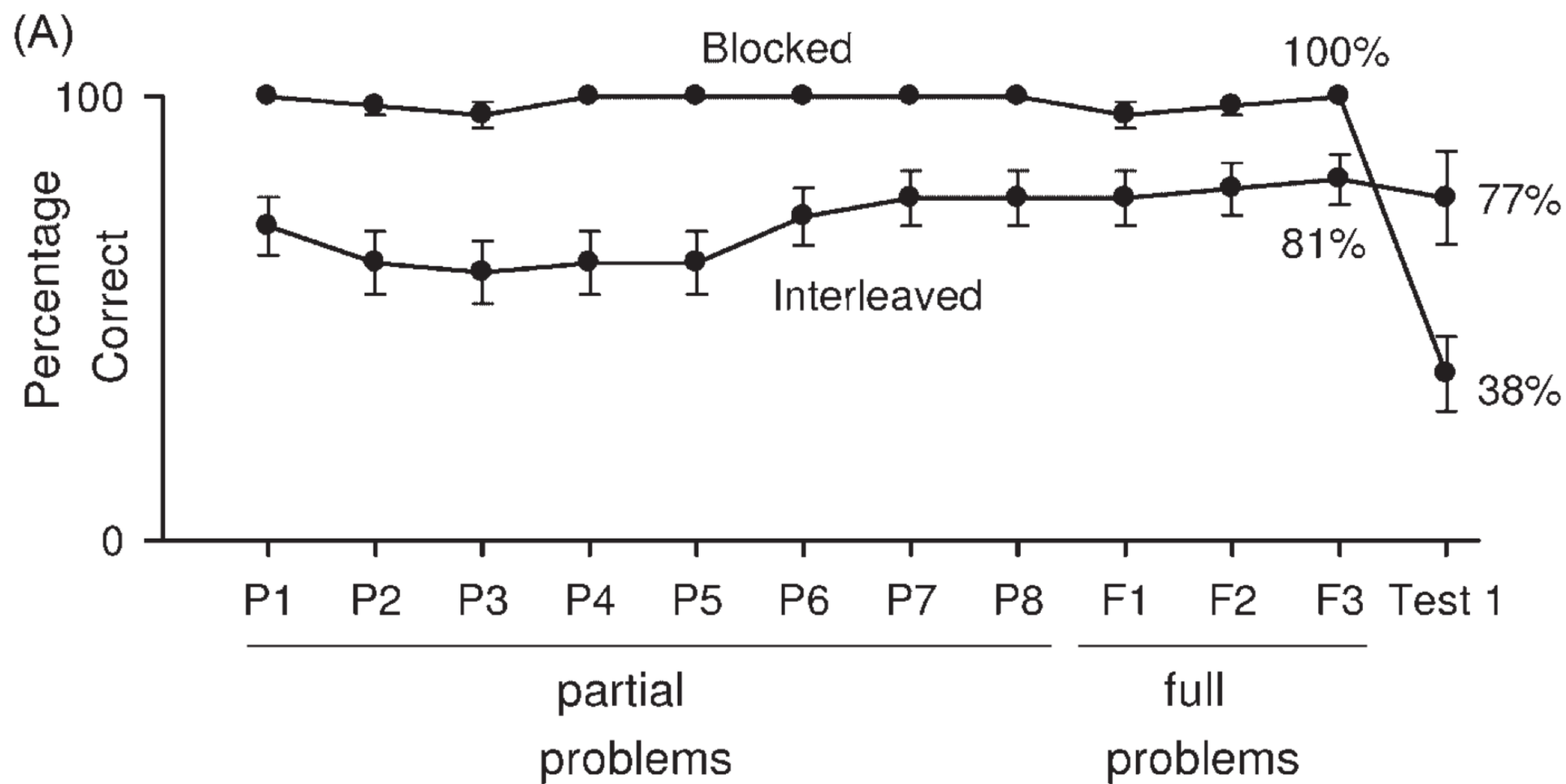
D

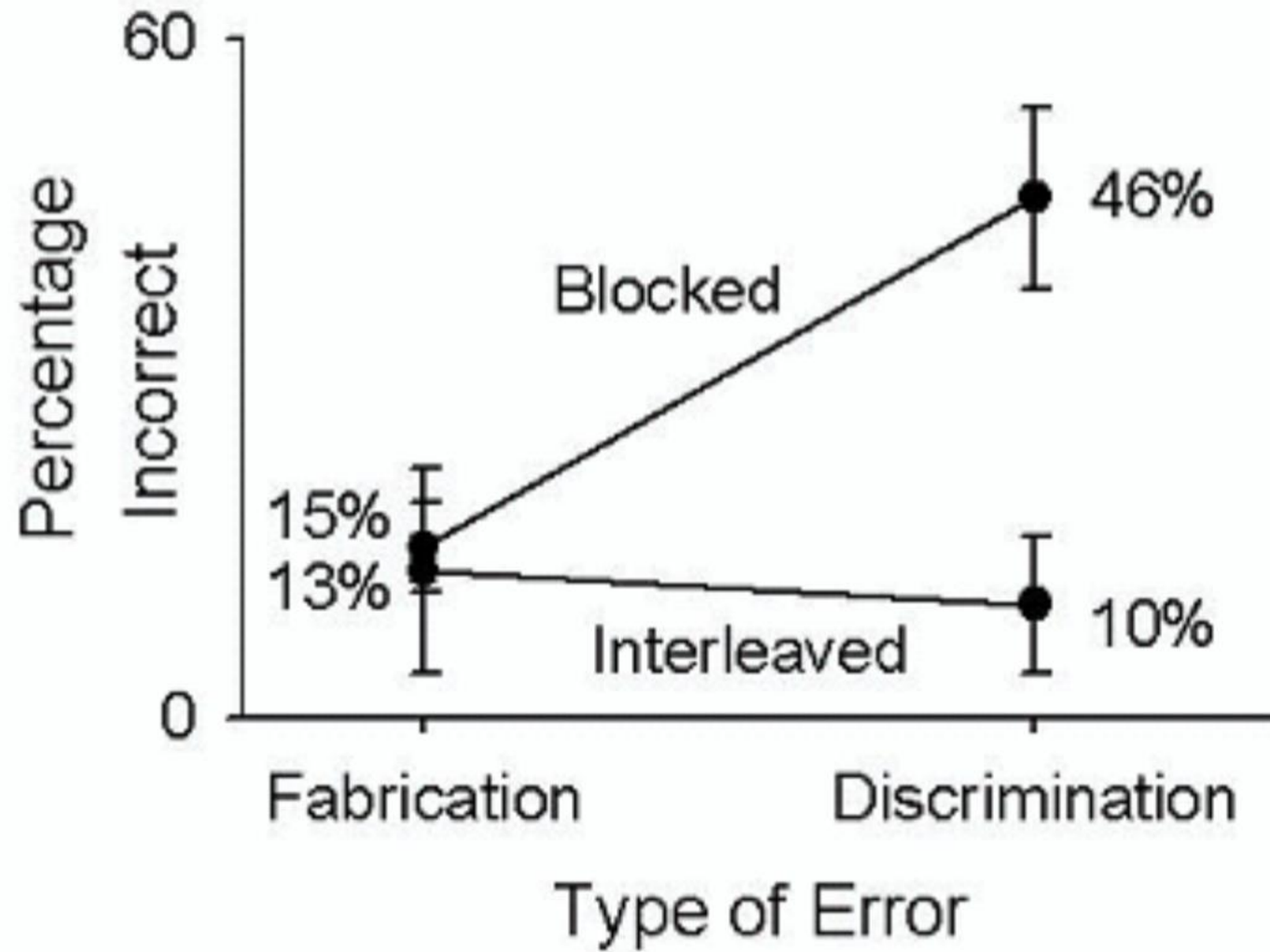
$$\text{angles} = b \times 6$$



Interleaved : ABCD abcd cadb dcba bdac bdac dcba cadb abcd ffffffffffffffffffffffffff

Blocked : Aafafafafafafa Bbfbfbfbfbfbfbfbfb Ccfcfcfcfcfcfcfc Ddfddfddfddfd

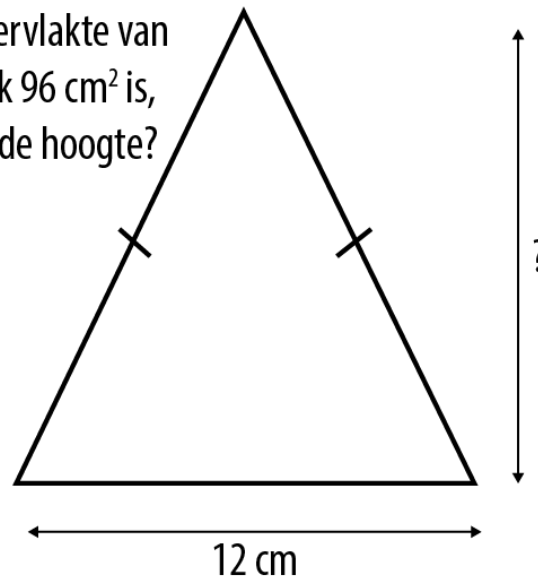




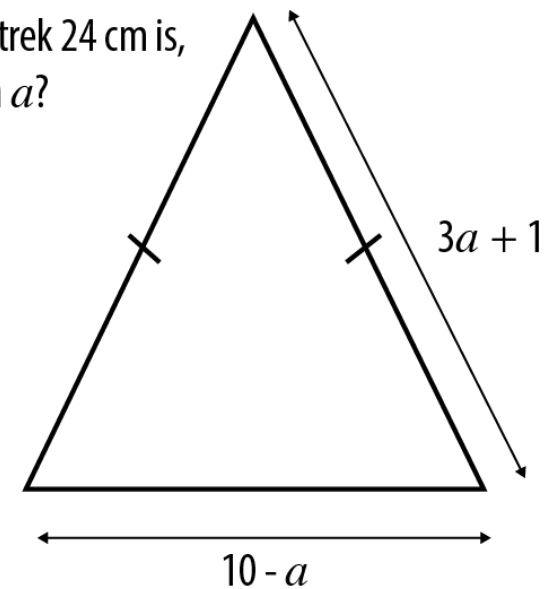
ZOAD

Zelfde
Oppervlakte
Andere
Diepte

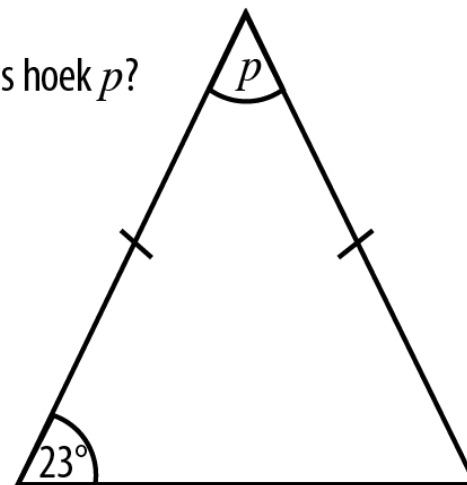
Als de oppervlakte van de driehoek 96 cm^2 is, wat is dan de hoogte?



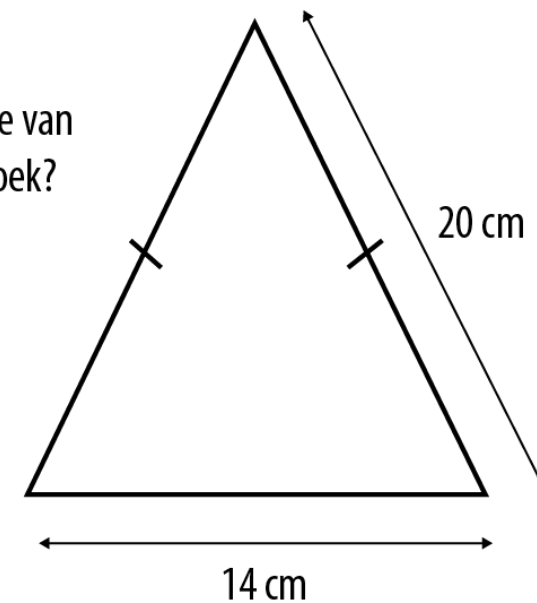
Als de omtrek 24 cm is, wat is dan a ?



Hoe groot is hoek p ?



Wat is de oppervlakte van deze driehoek?

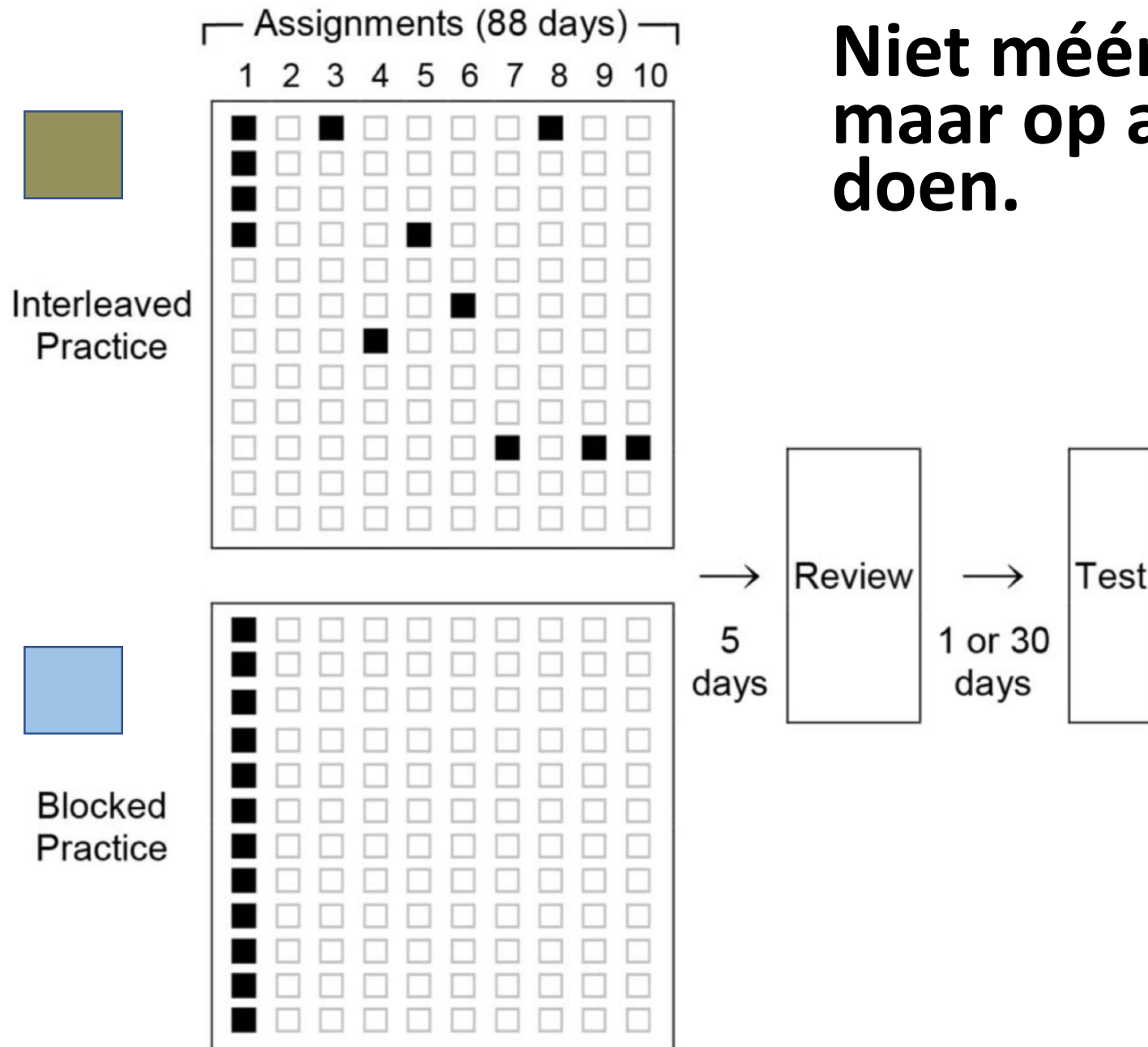


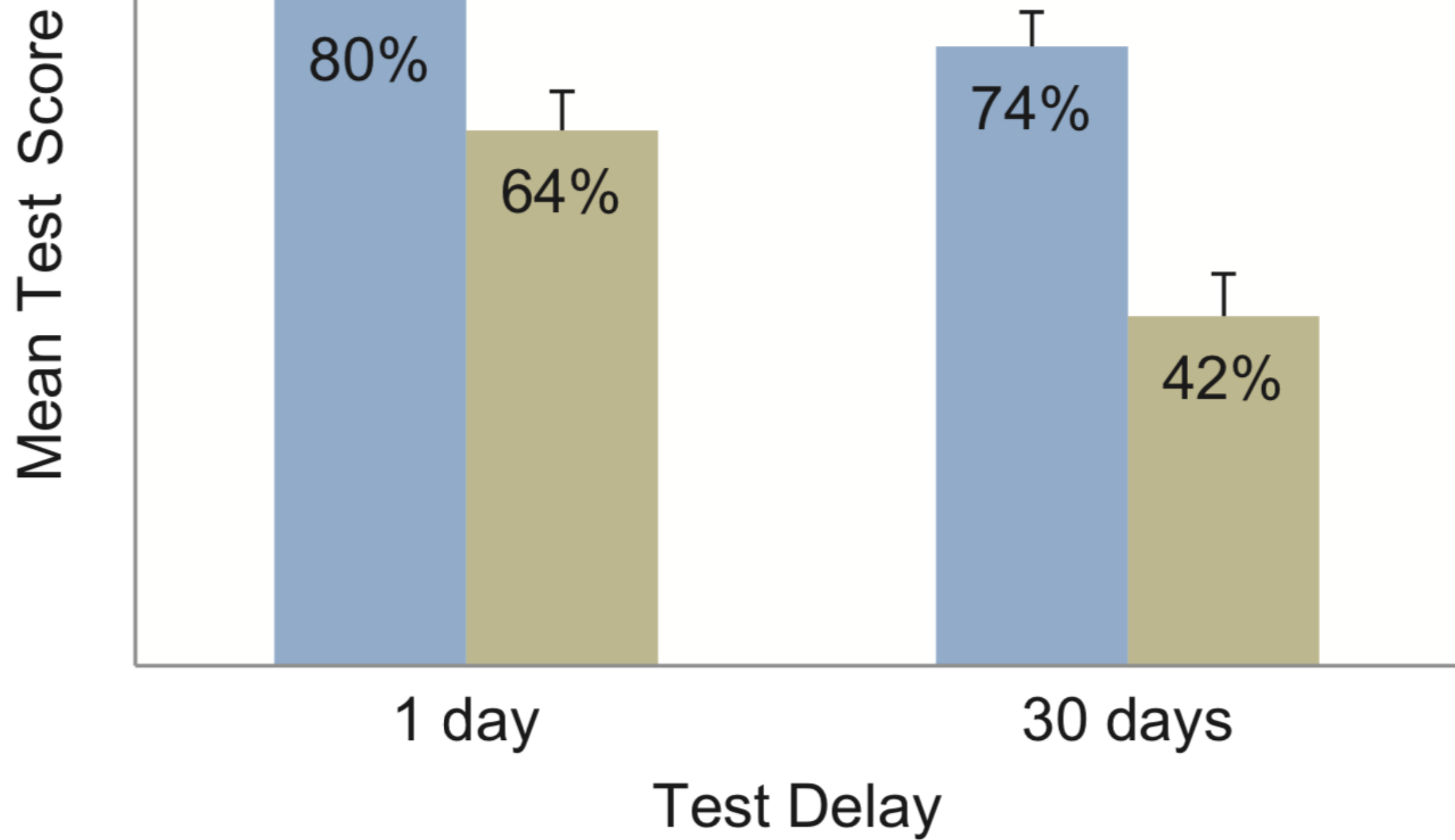
Gewenste moeilijkheden

Op het oog lijken de kortetermijnprestaties slechter, maar op de lange termijn zijn de prestaties beter

**Niet méér doen,
maar op andere momenten doen.**

Niet méér doen, maar op andere momenten doen.





Quizjes waarbij weinig op het spel staat

- Te maken in 5 tot 10 minuten
- Max 1 A4.
- 1/3 nieuwe stof,
- 1/3 van dit jaar
- 1/3 van eerdere jaren
- Leerlingen kijken zelf na
- Bewaren in eigen map
- Noteren score op a4 aan de binnenkant.
- Jij houdt geen administratie bij.