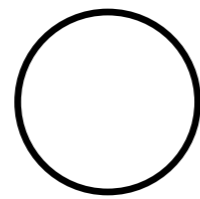


# Forelesning 7

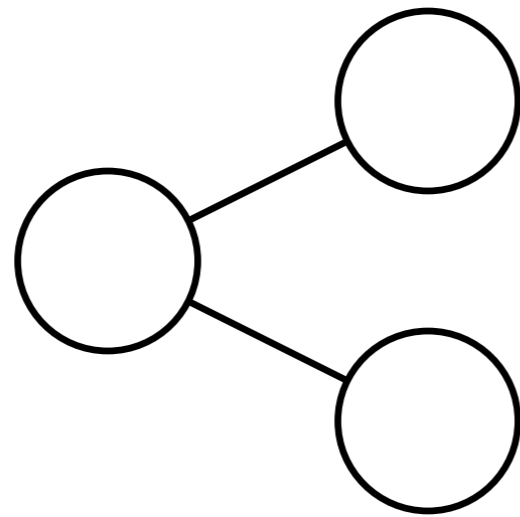
## Bonusmateriale

**Ting som ikke ble med i forelesningen,  
men som kanskje kan være av interesse**

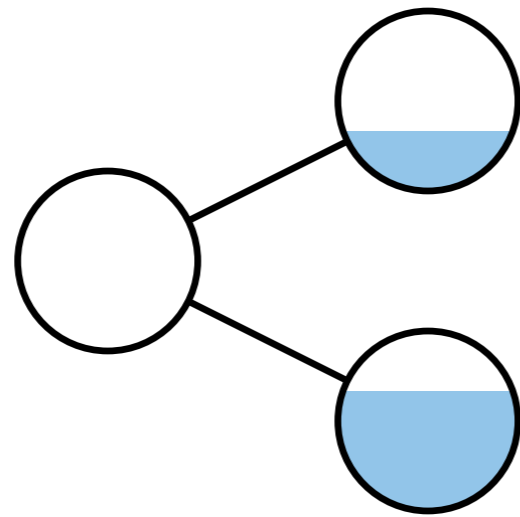
# Illustrasjon av grådighetsegenskapen



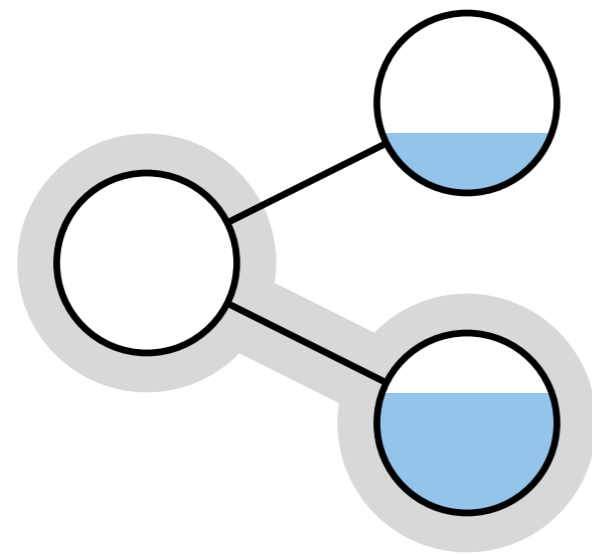
Vi har en instans av et optimeringsproblem, med en «tom løsning»



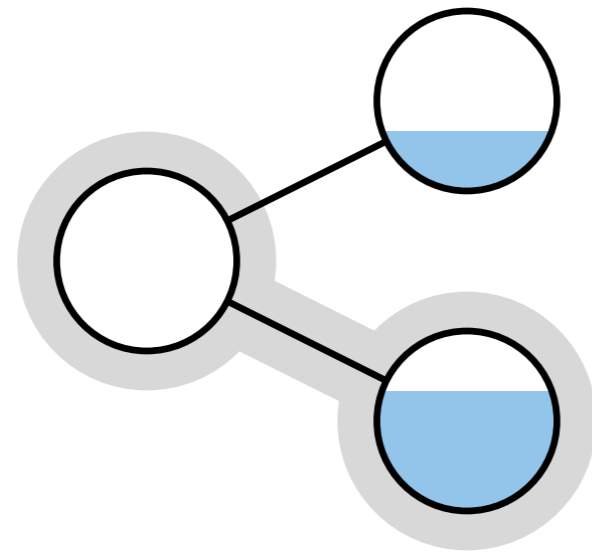
Vi dekomponerer ved å ta valg, og bygge bitvis på løsningen



Delløsninger gir gjenværende delinstanser, der noen er mer «lovende»

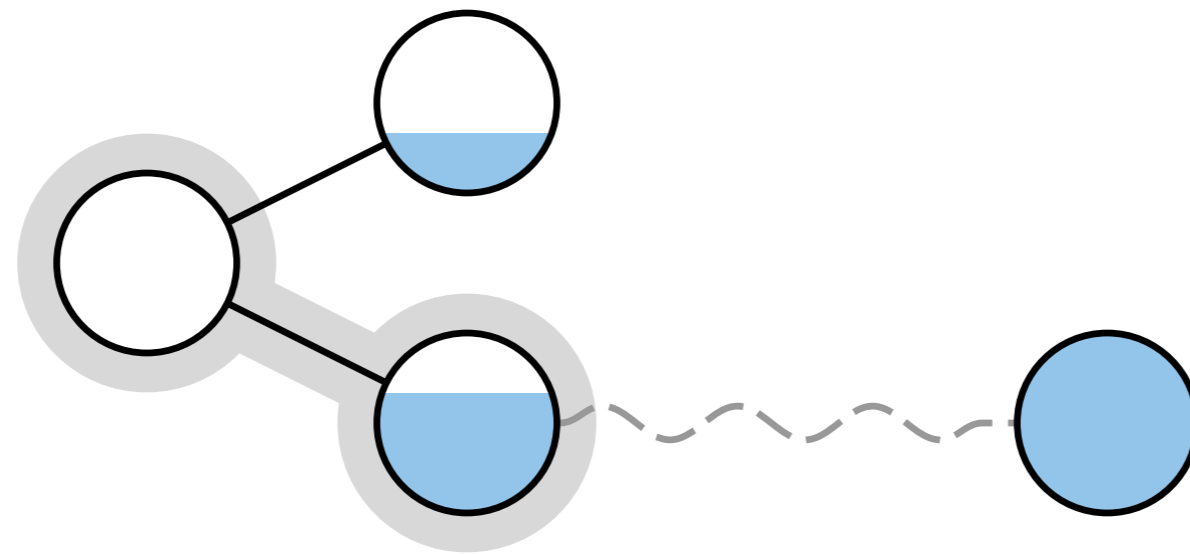


Grådighet: Vi velger det som ser best ut lokalt, og binder oss til det

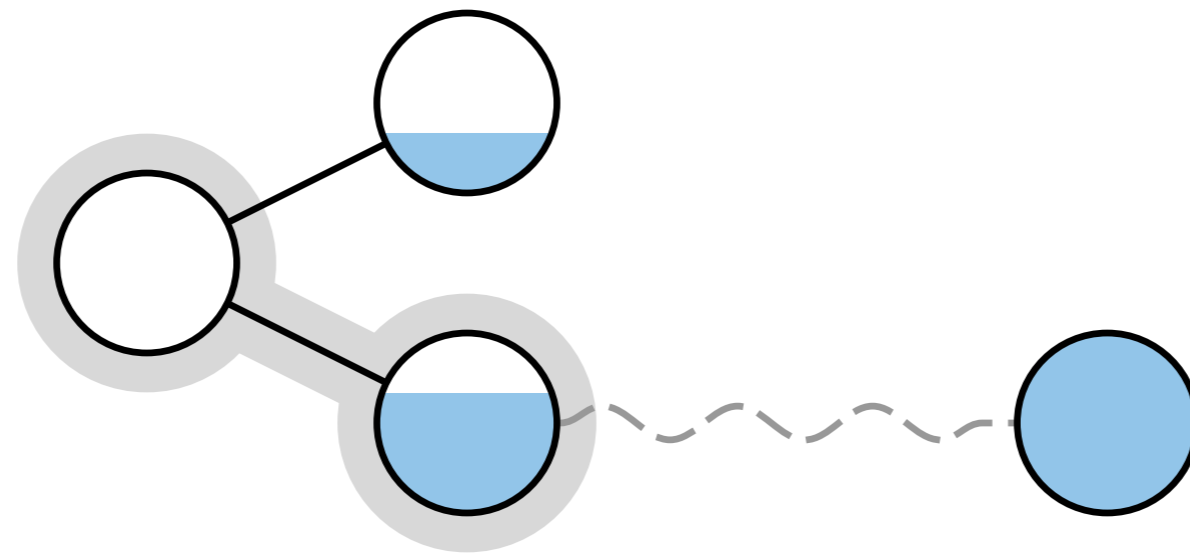


Krav: Vi må ikke ha skutt oss selv i foten ved å velge grådig



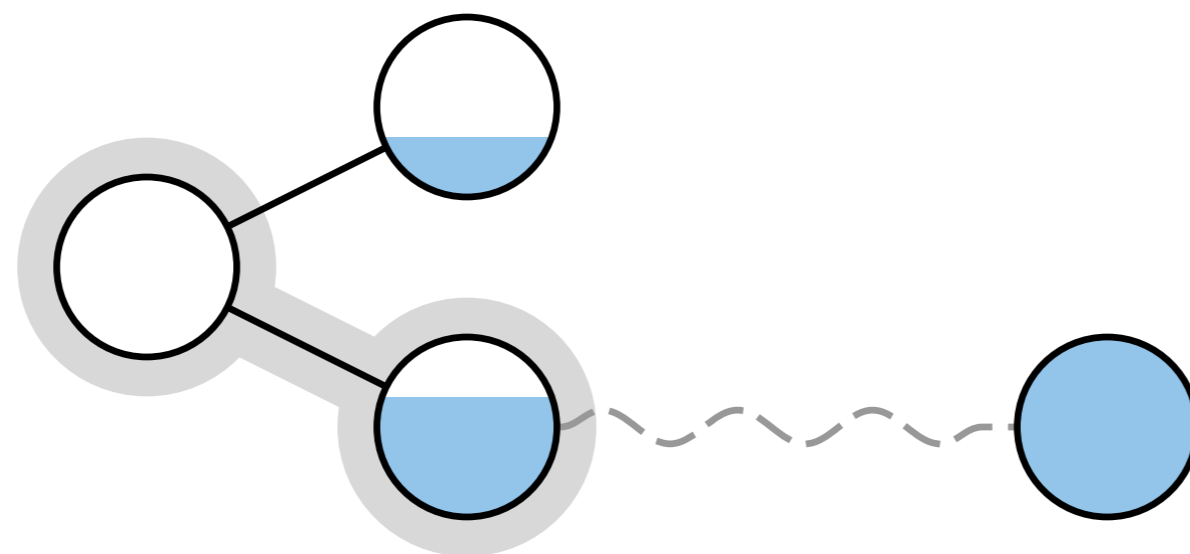


Dvs.: Vi må ikke ha eliminert alle mulige optimale løsninger!



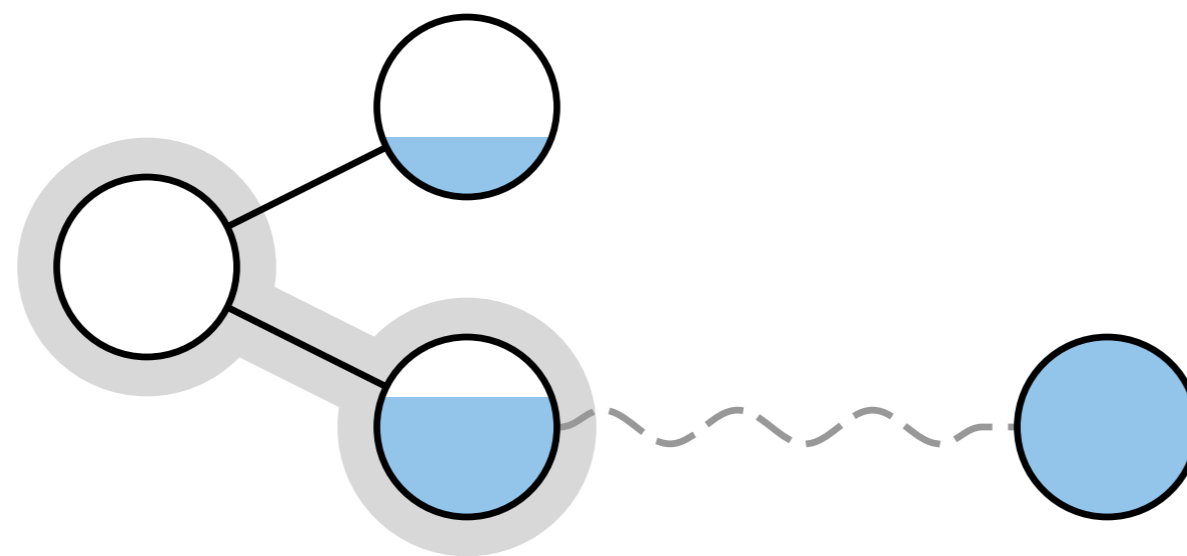
## The Greedy-Choice Property

Dette er grådighetsegenskapen eller *the greedy-choice property*



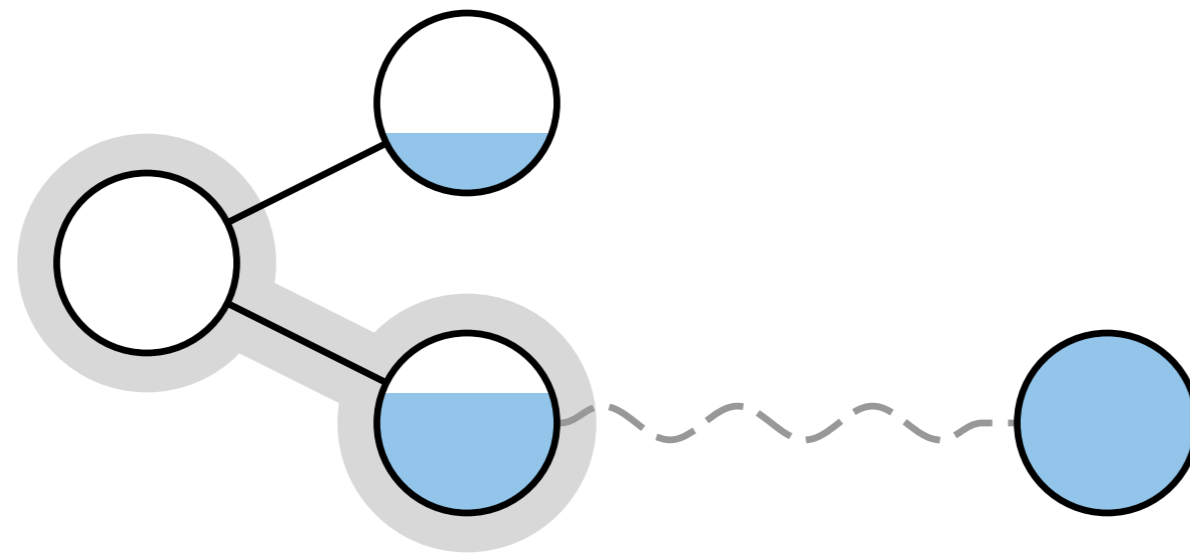
## The Greedy-Choice Property

Rekursiv dekomponering: Egenskapen gjelder også for delinstanser!



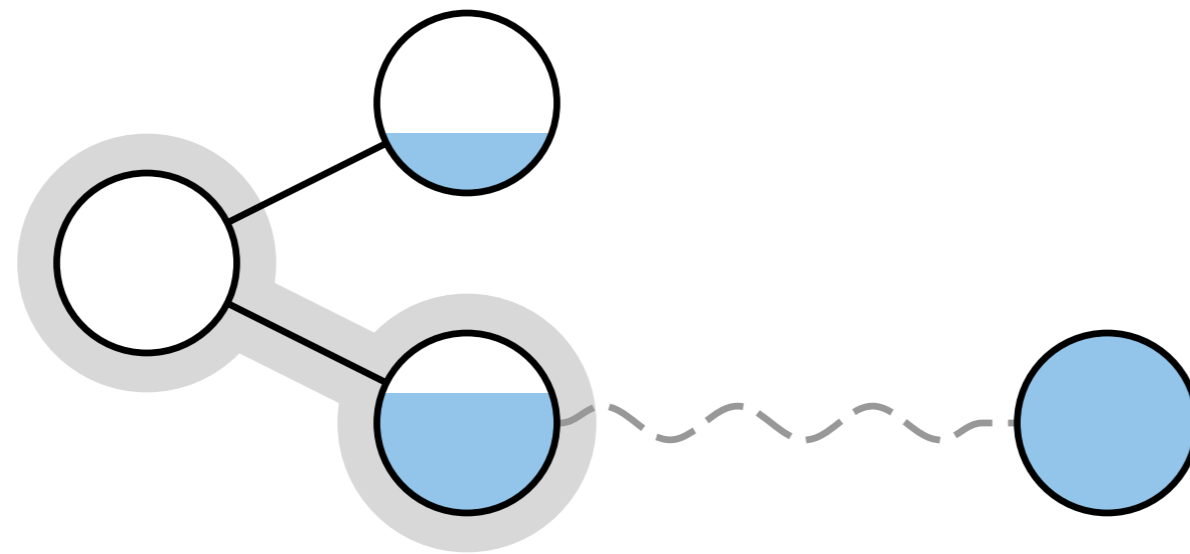
## The Greedy-Choice Property

Vi ser (induktivt) at vi dermed må ende med et optimum



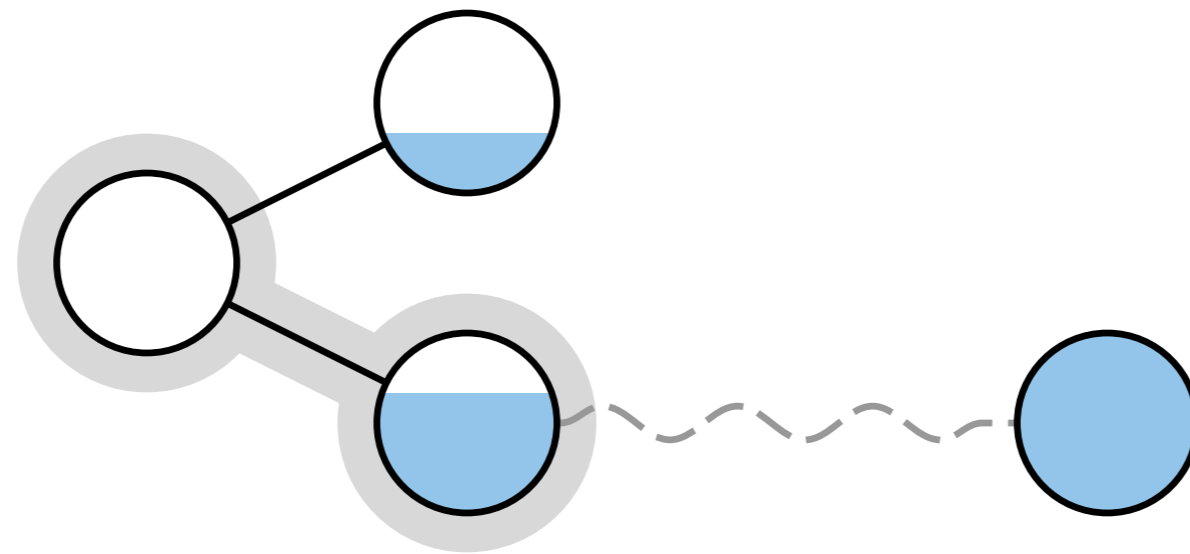
## The Greedy-Choice Property

Fungerer altså om vi faktisk har rekursiv dekomponering



## The Greedy-Choice Property

(Det gir optimal delstruktur, som for DP)



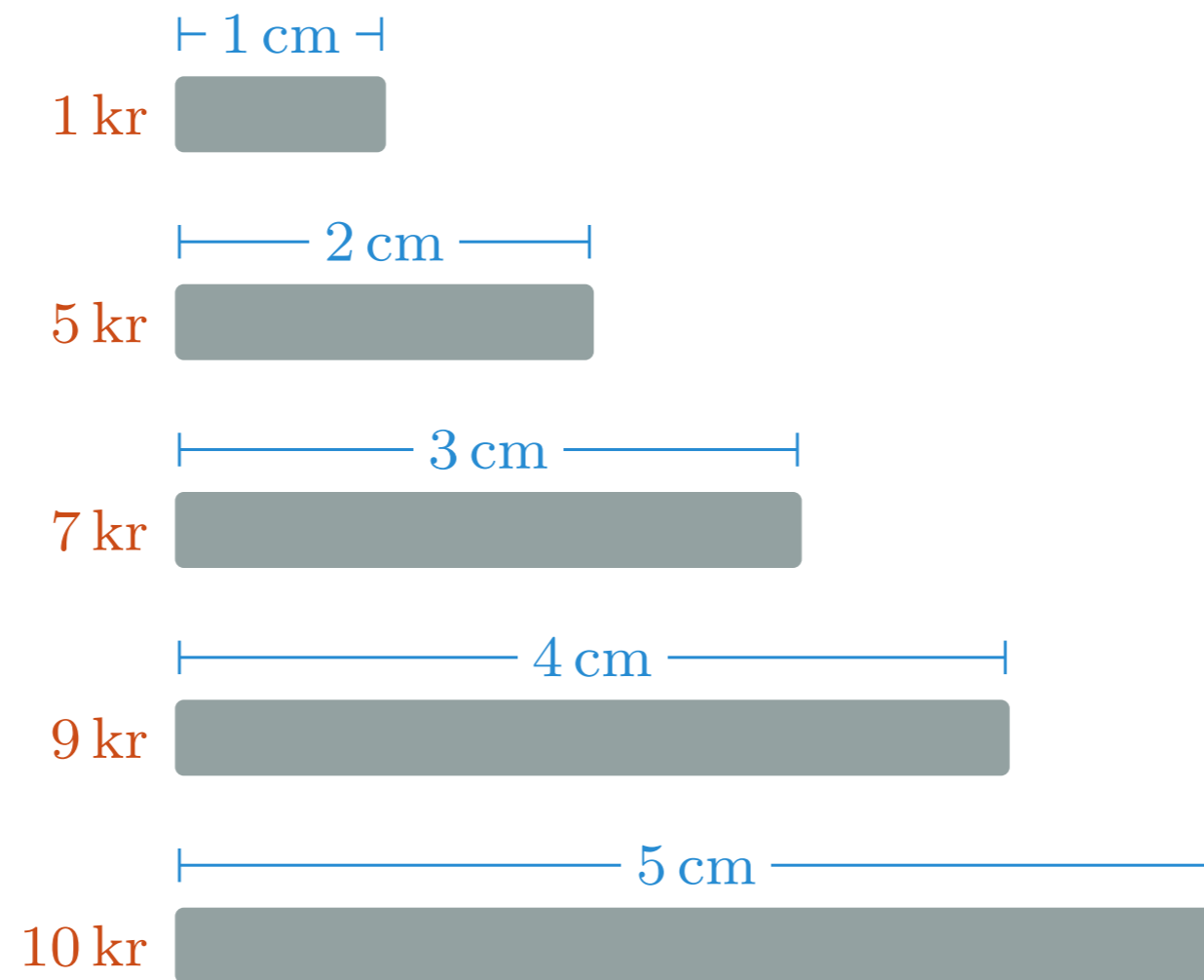
## The Greedy-Choice Property

Enkelt sagt: Det skader ikke å gjøre første valg grådig

# Grådlig stavkapping

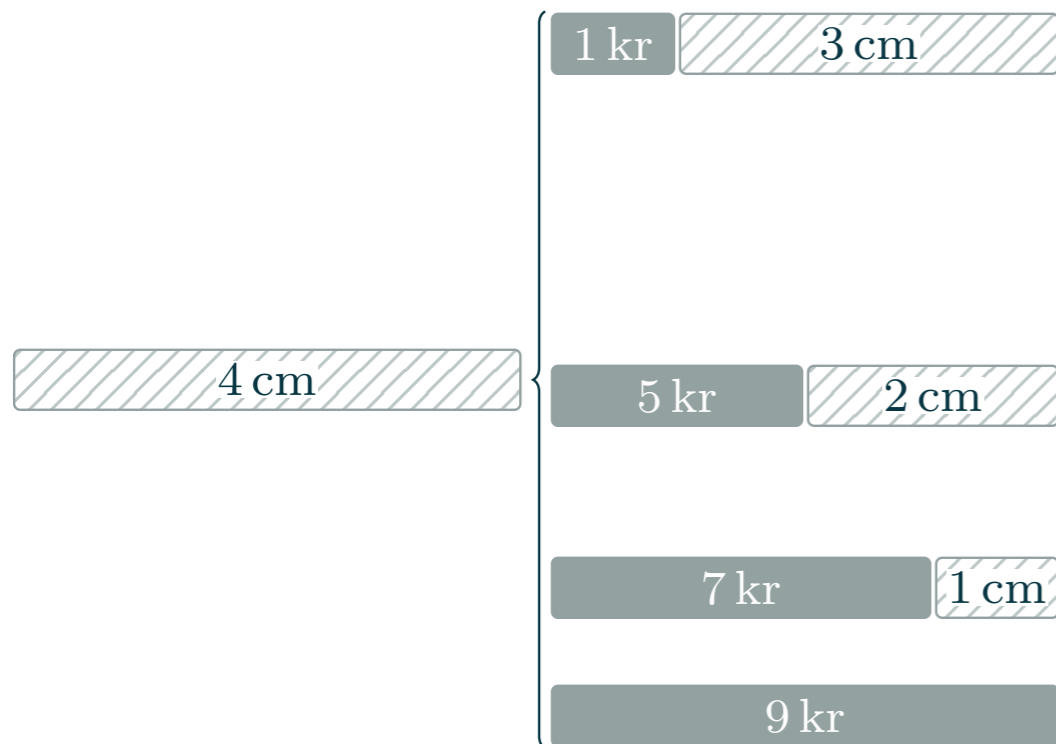


**Først: DP**

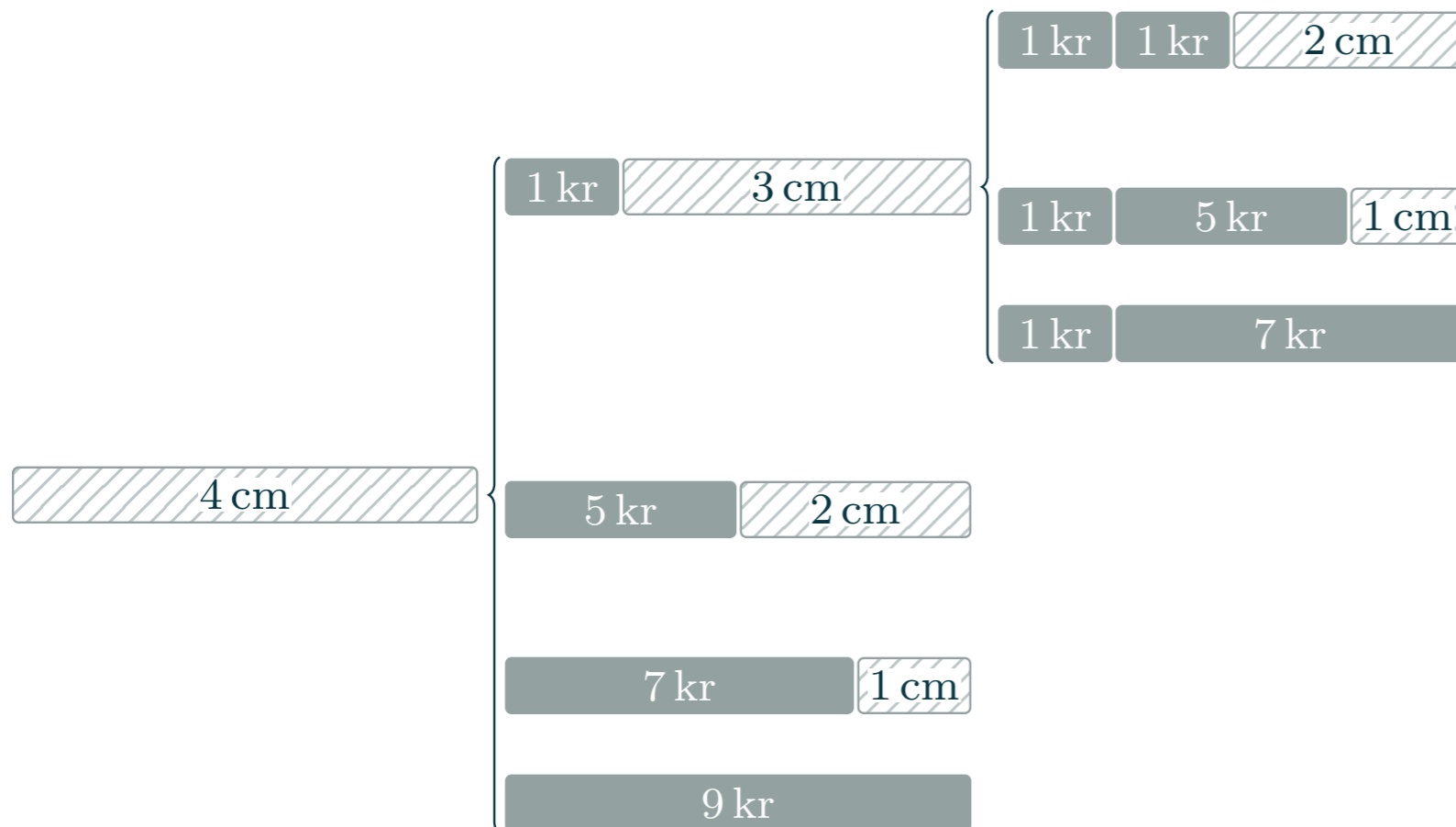




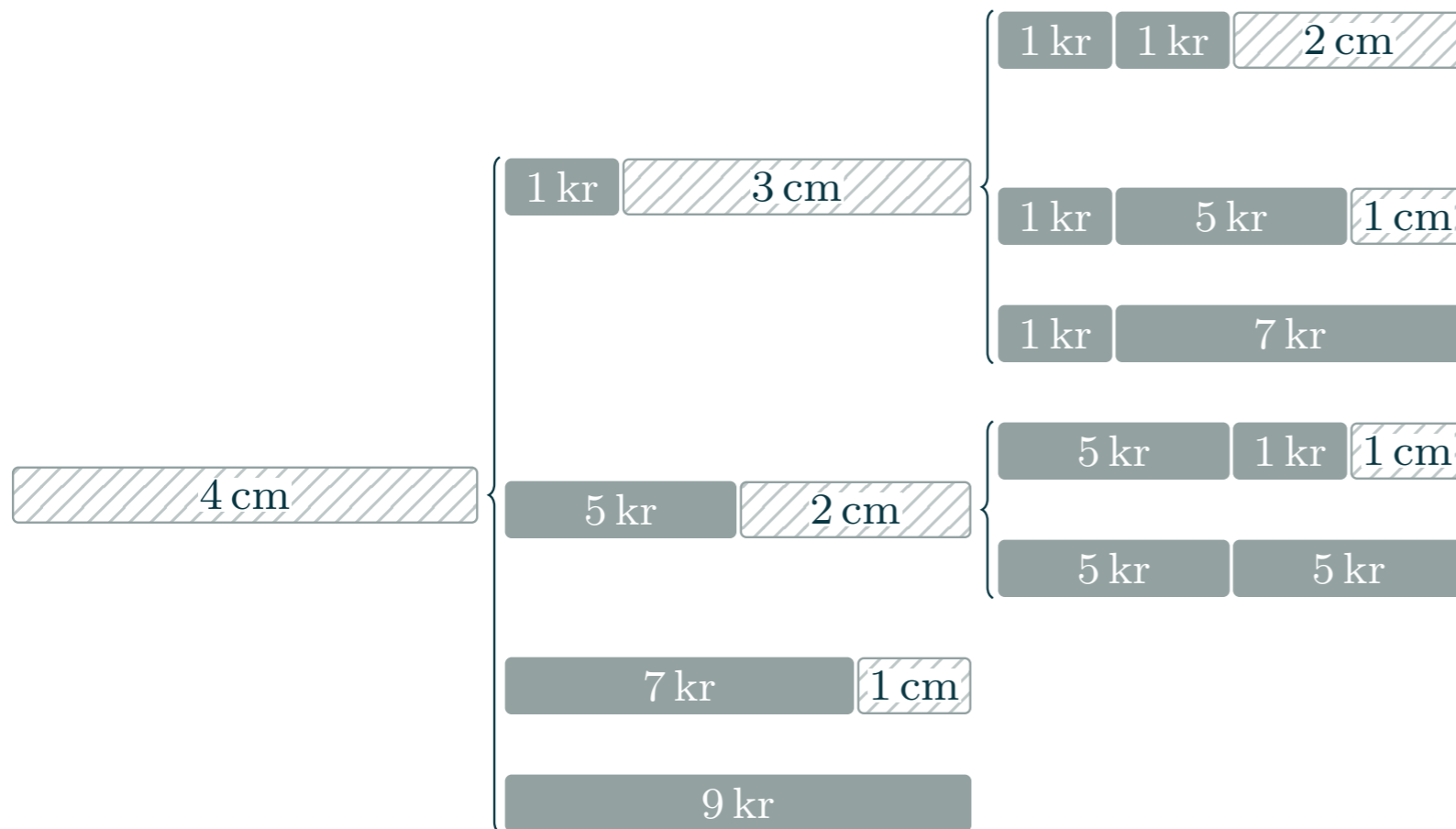
Vi har 4 cm vi ikke har kappet



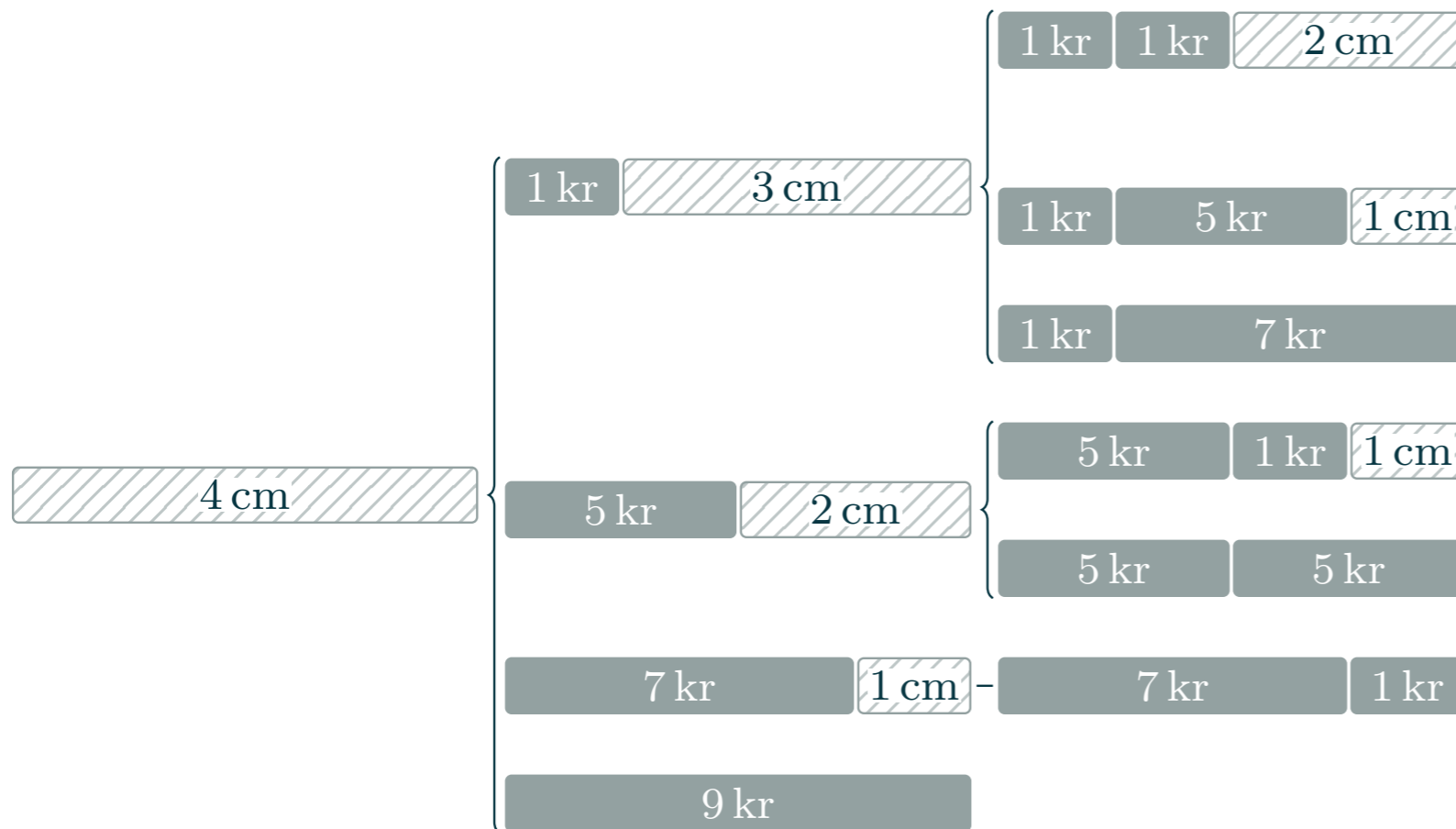
Vi prøver alle muligheter



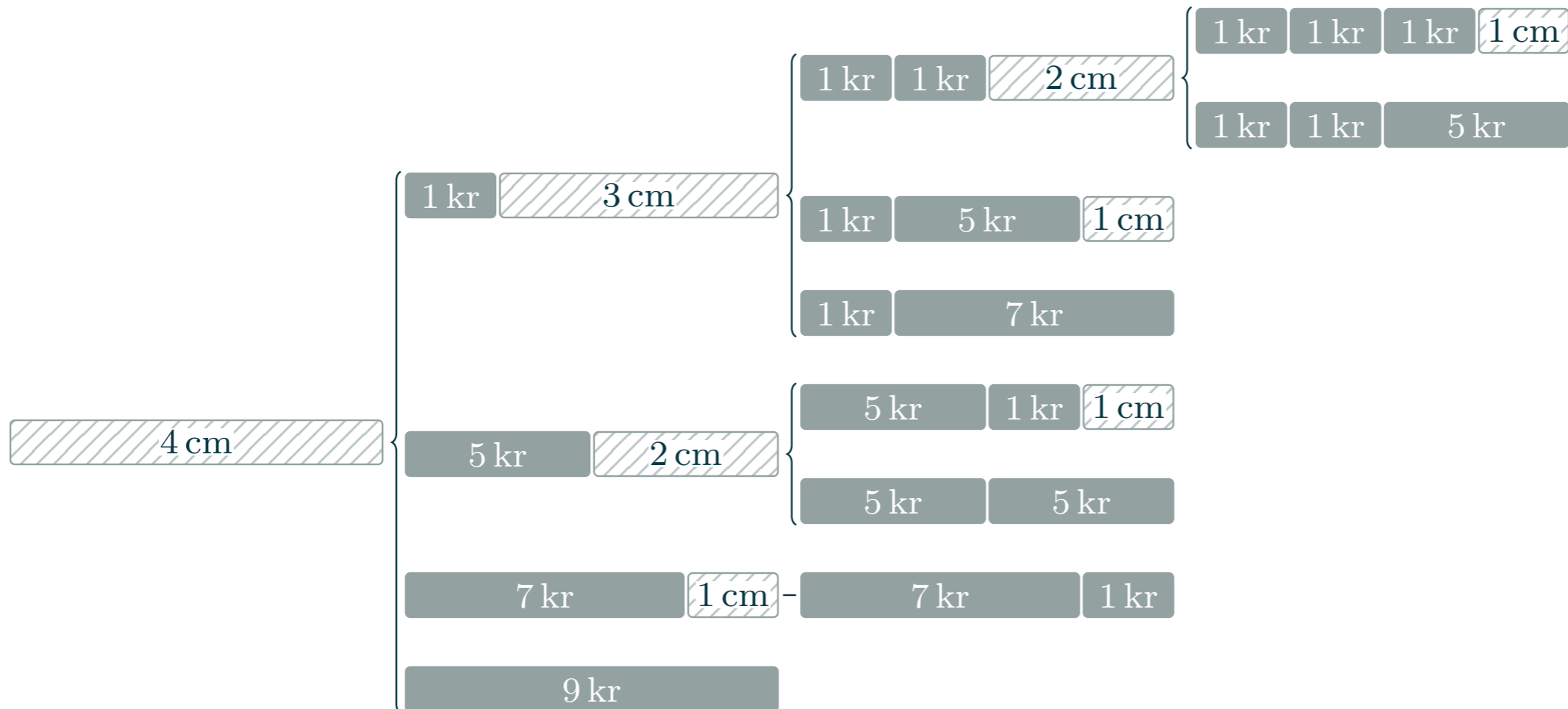
Kutter vi av 1 cm sitter vi igjen med 3



Etc.

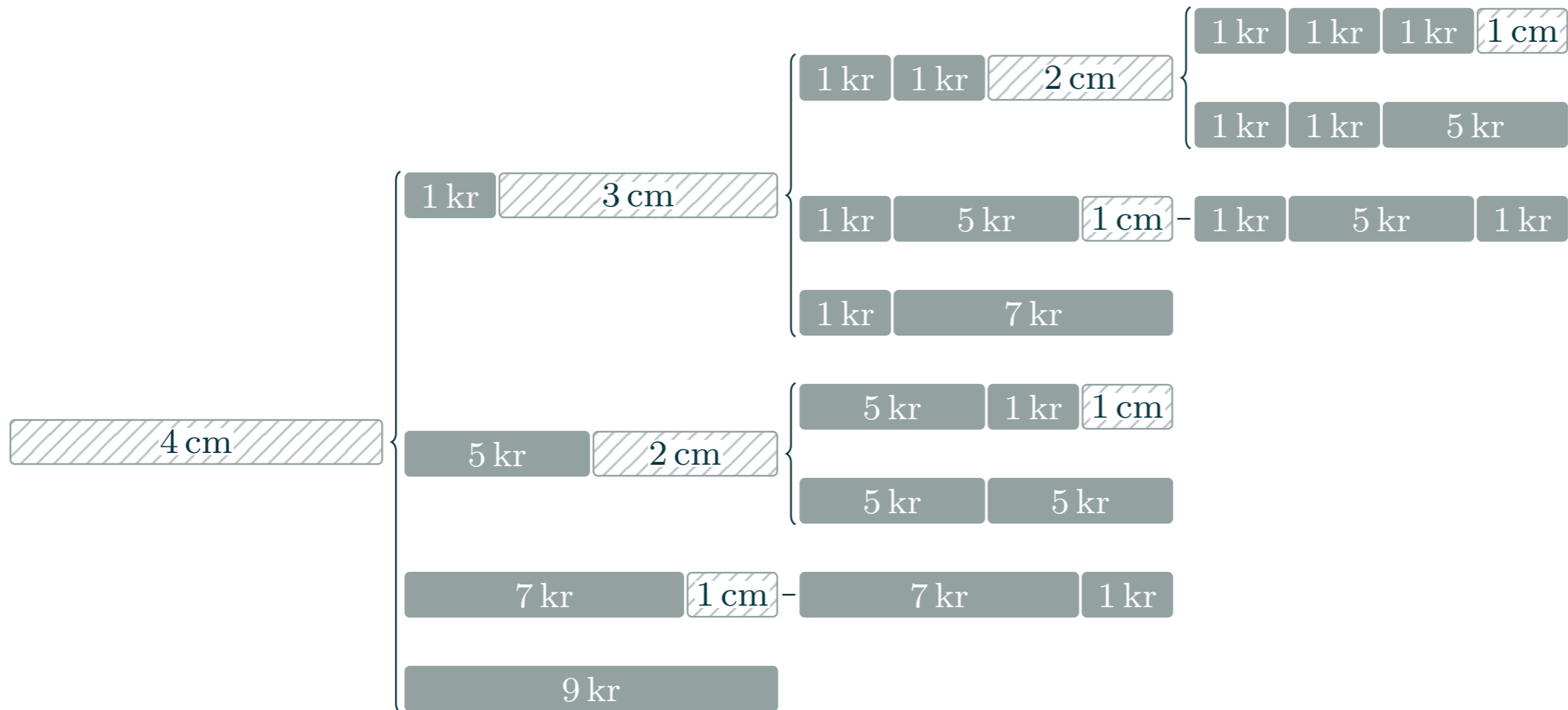


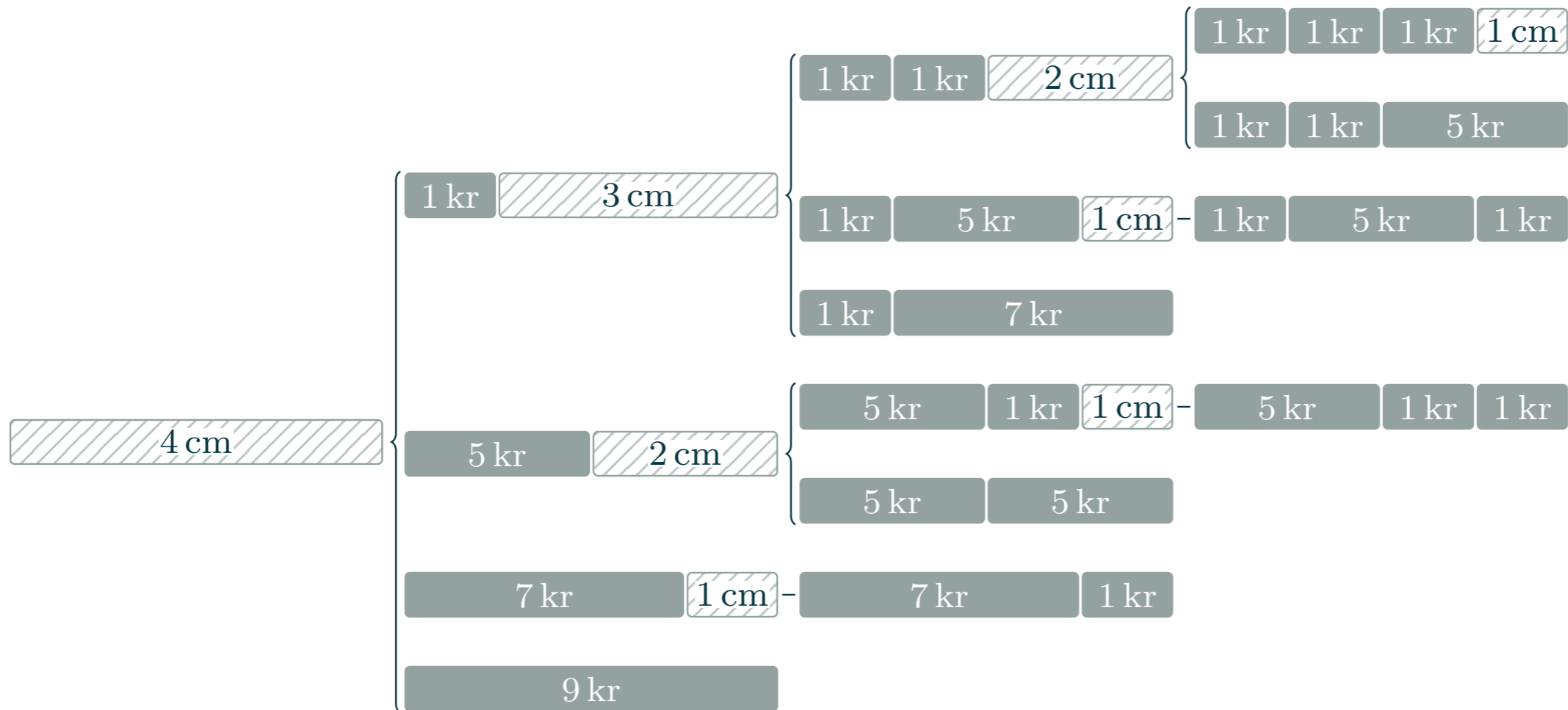
Etc.

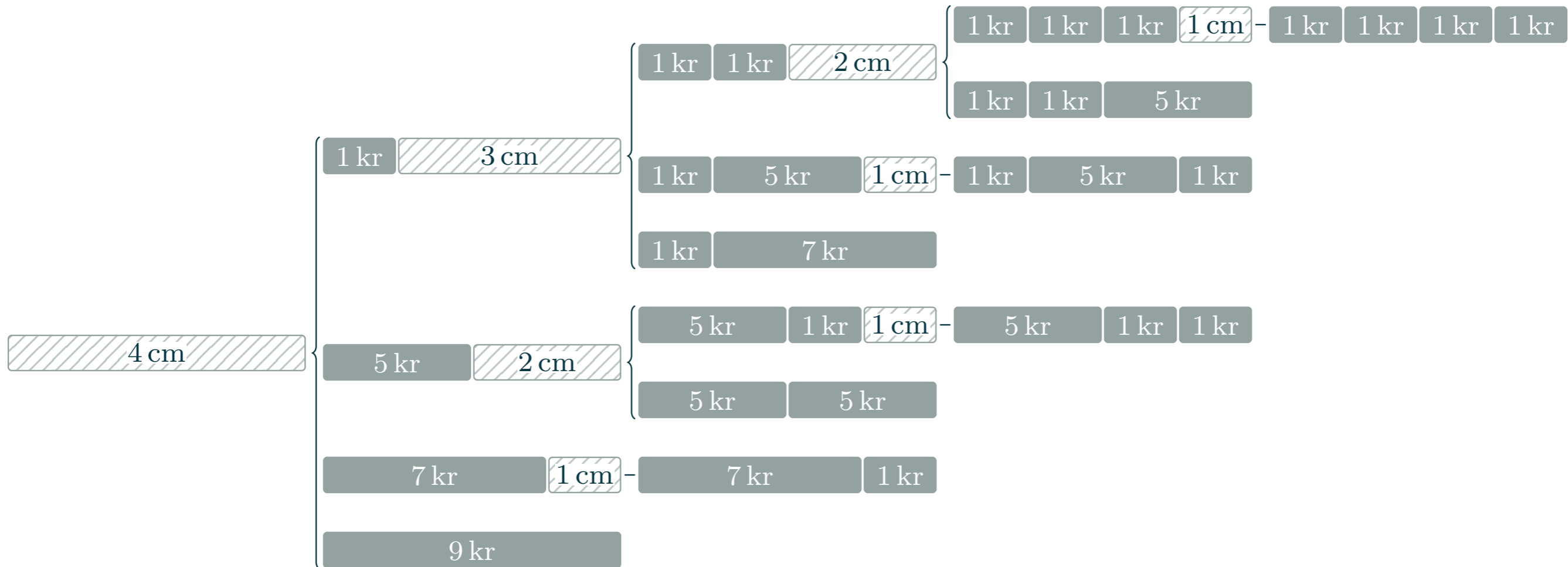


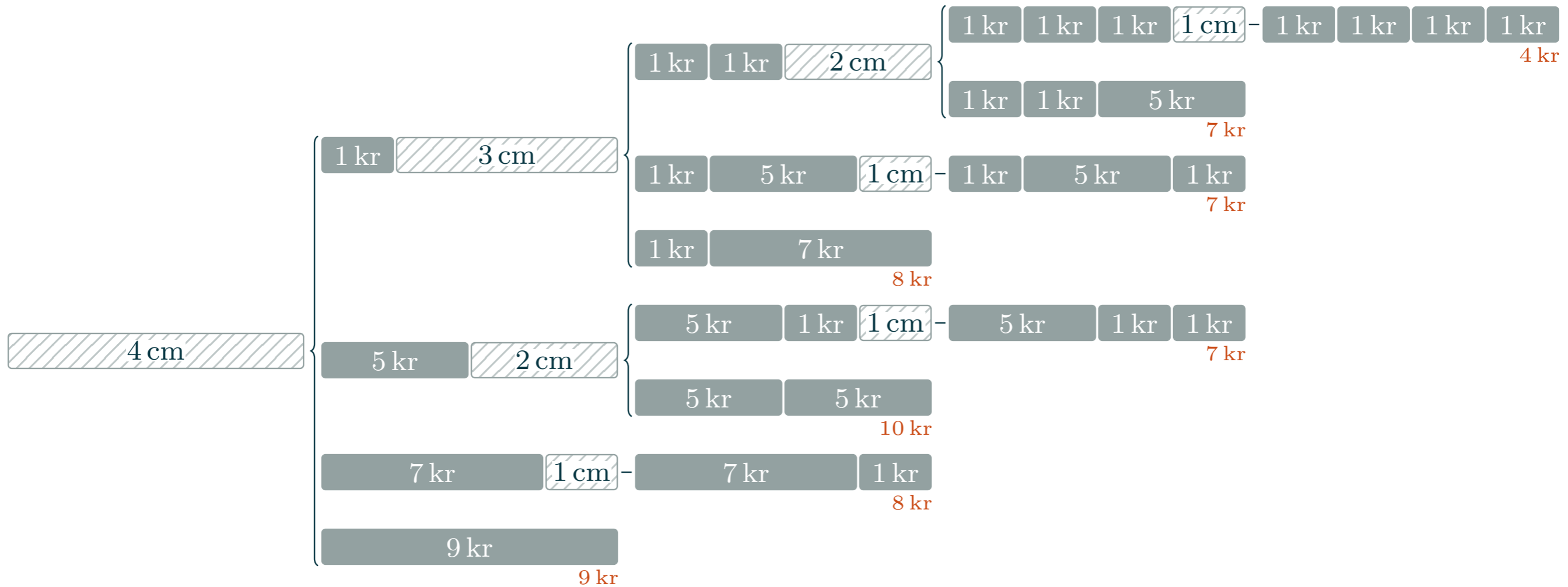
Vi fortsetter å løse resten rekursivt



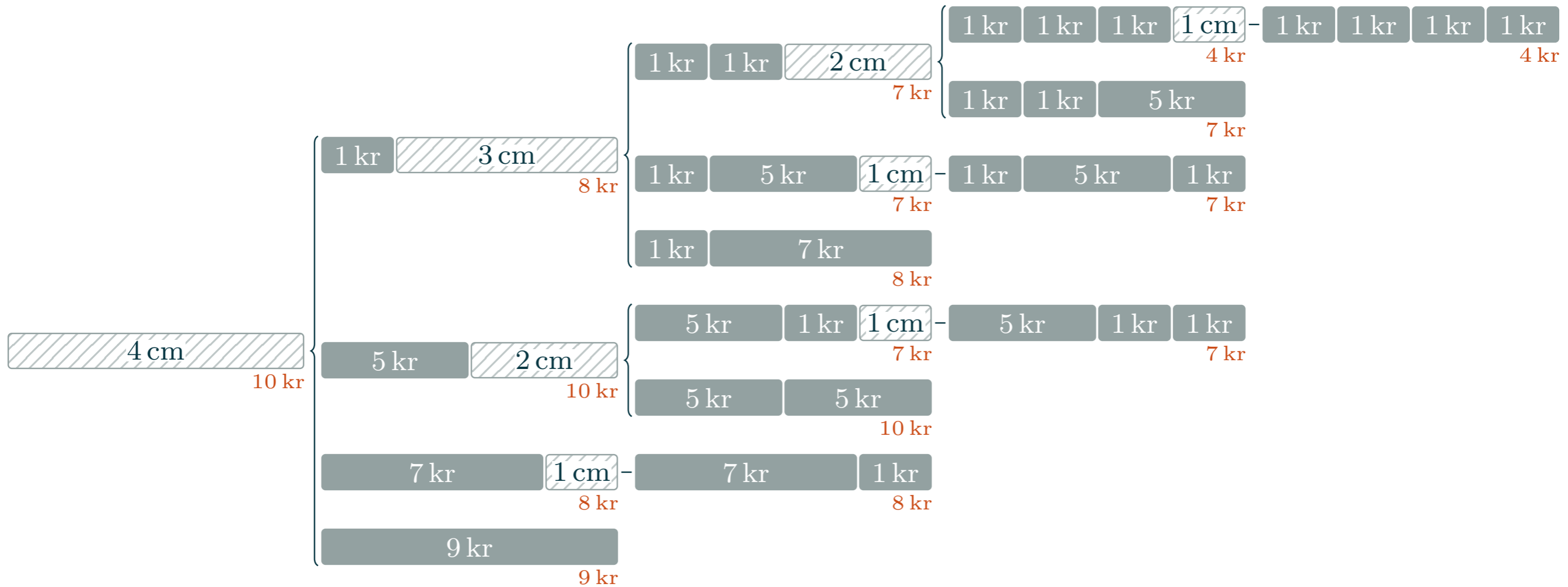




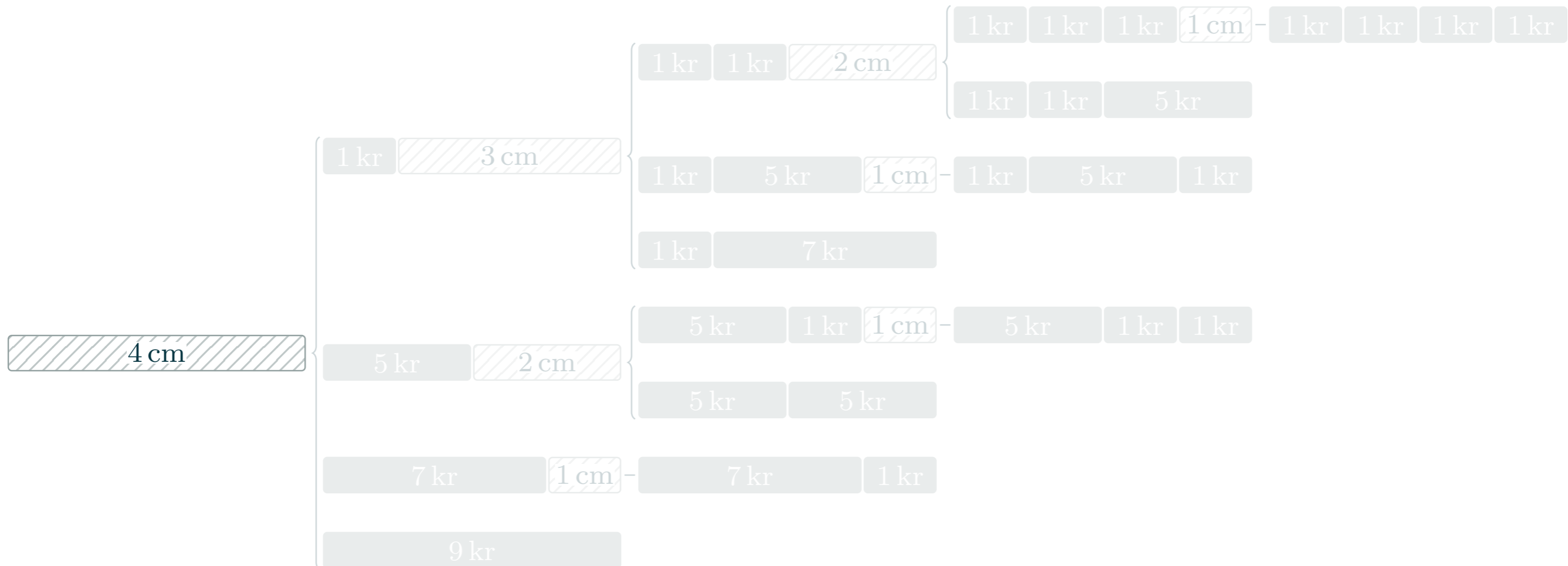




Hvert grunntilfelle er bare en sum av priser



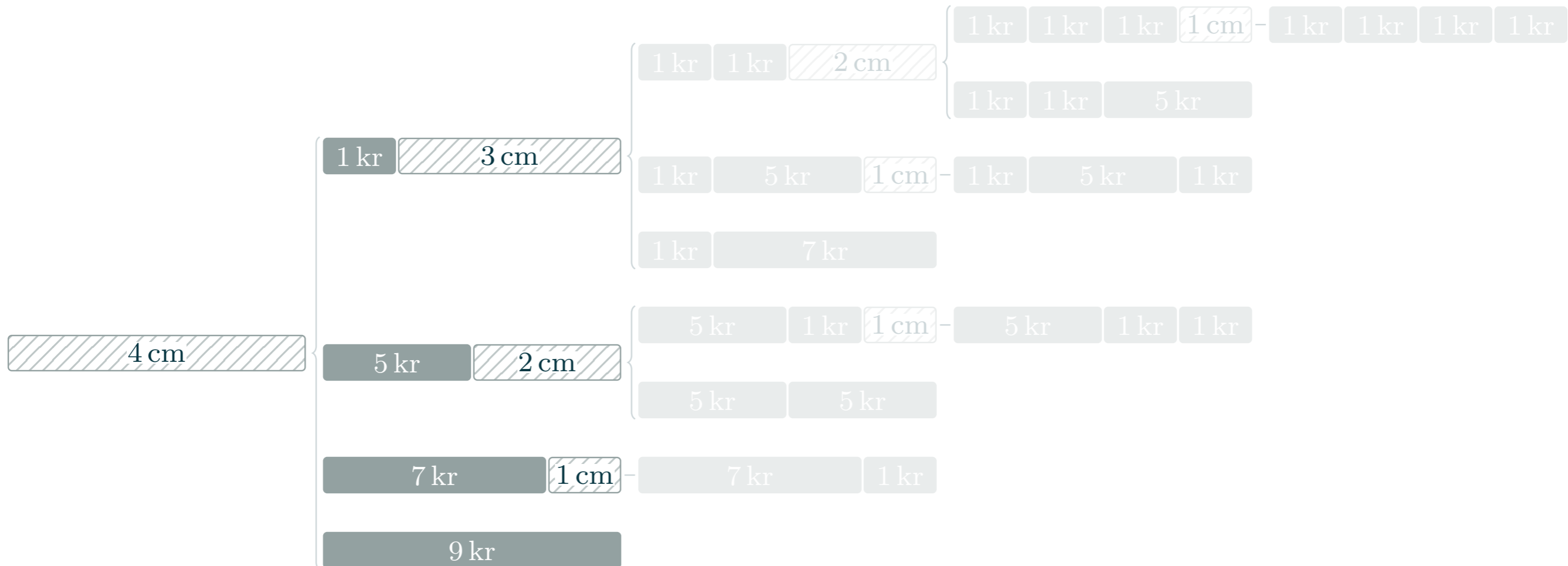
Ellers velger vi beste delløsning



Men hva om vi ikke vil undersøke alle alternativene?

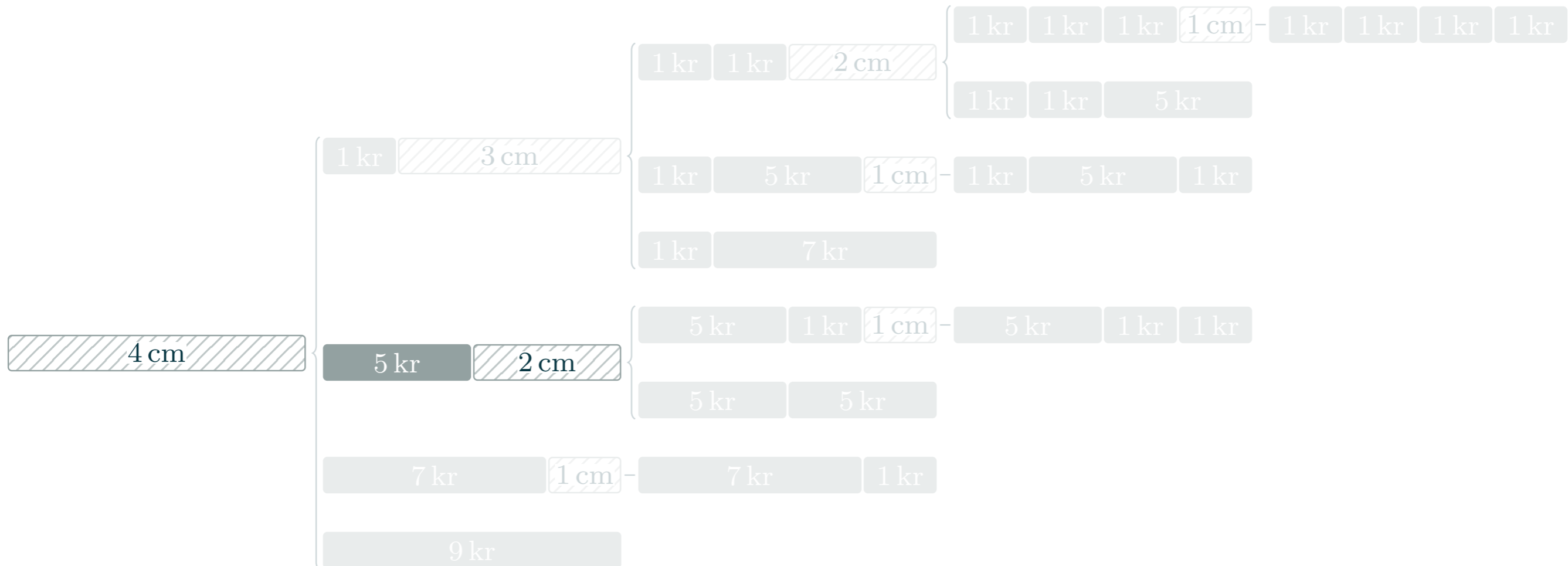
# Grådig utgave

(Vanligvis gal!)

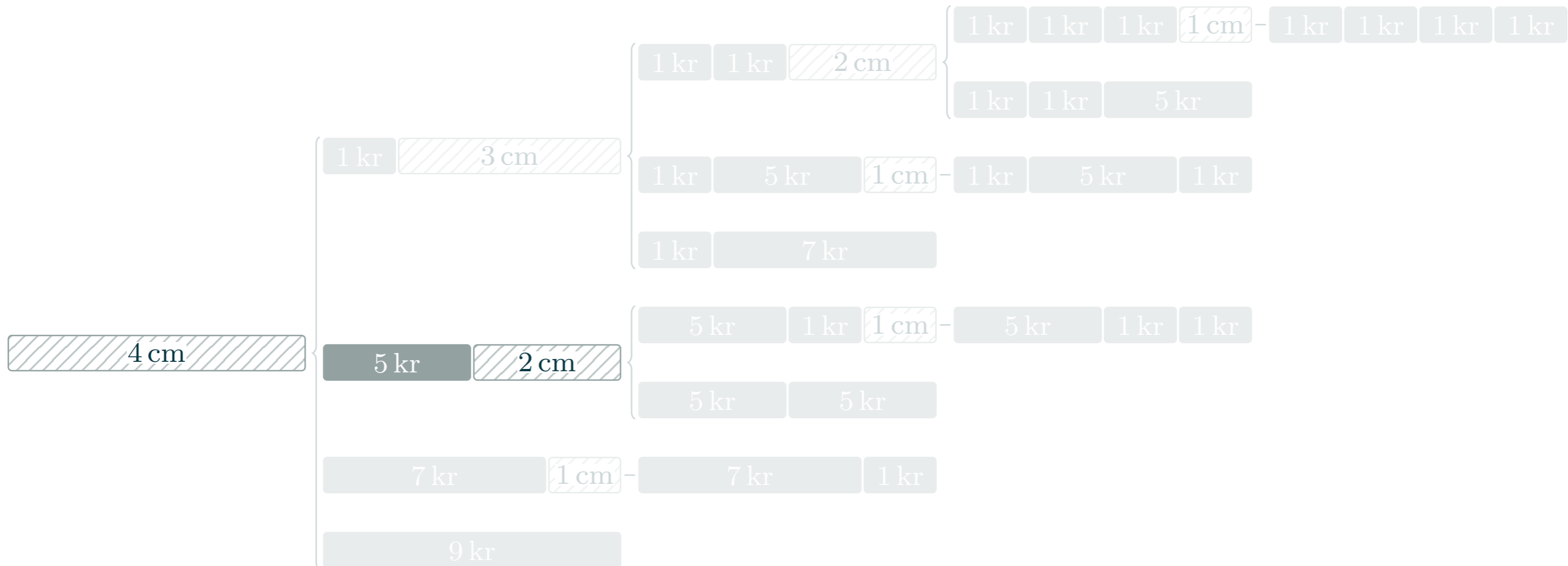


Vi vurderer delproblemene som vanlig...

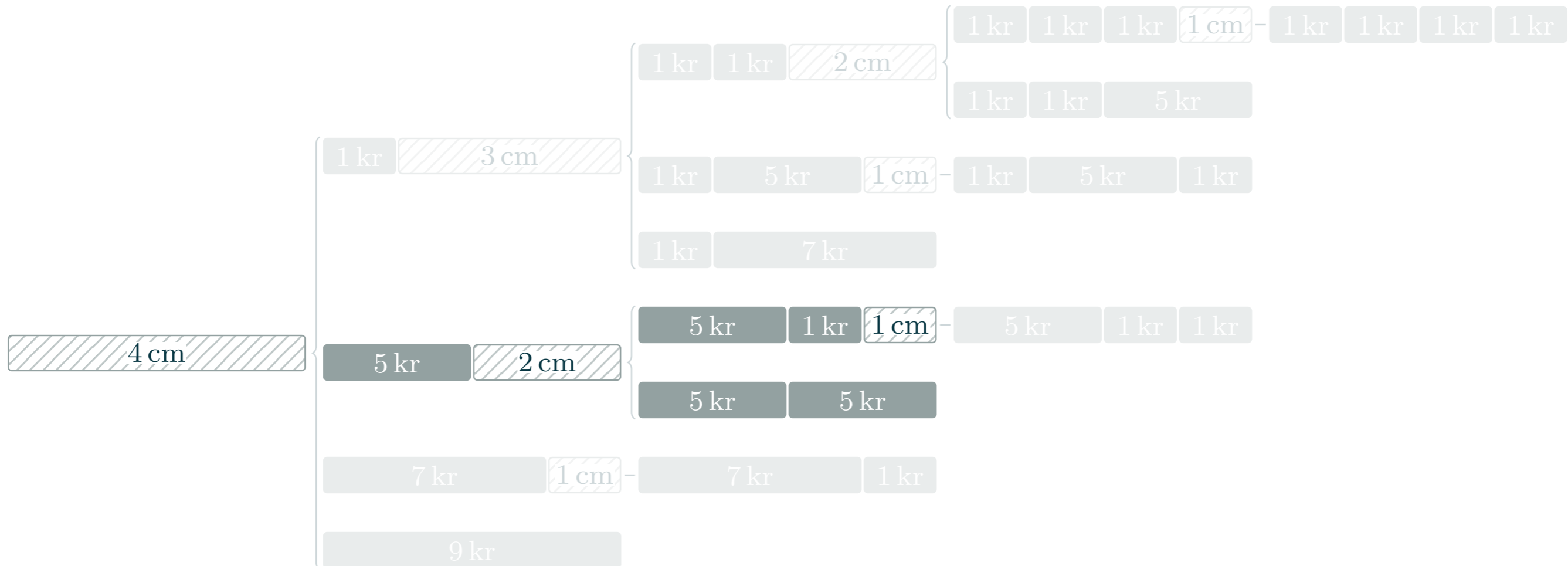




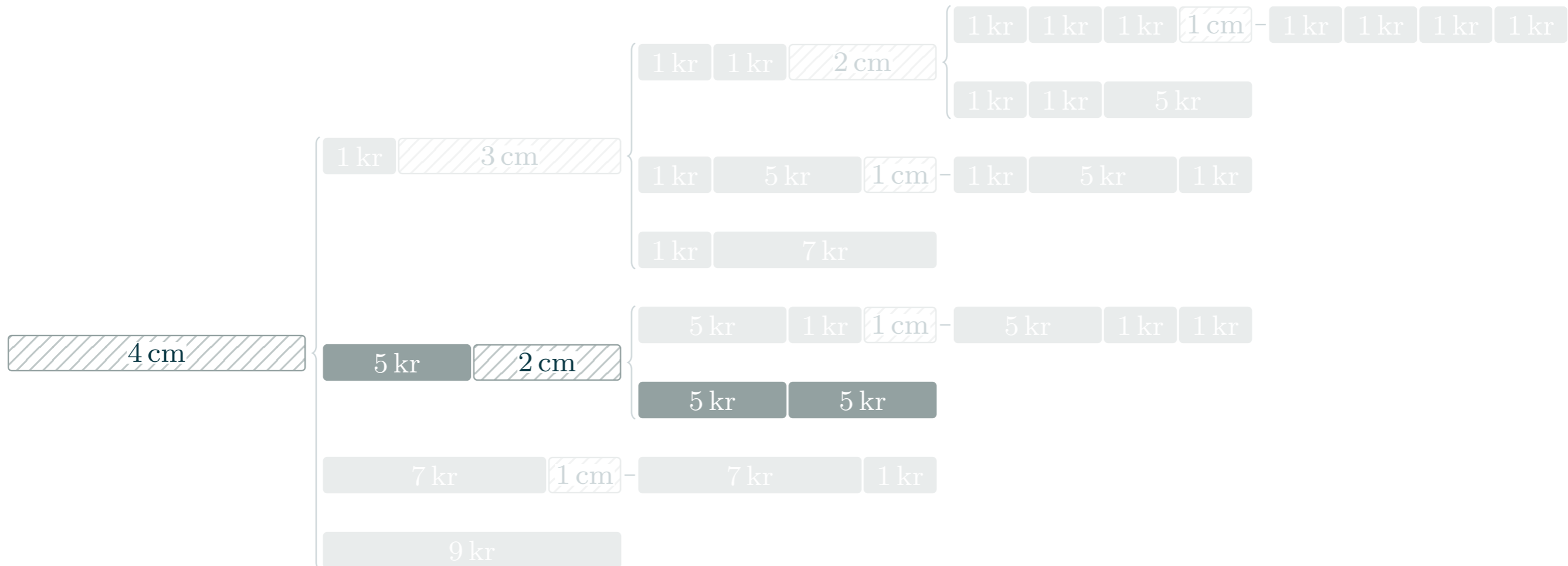
...men binder oss til det mest lovende!



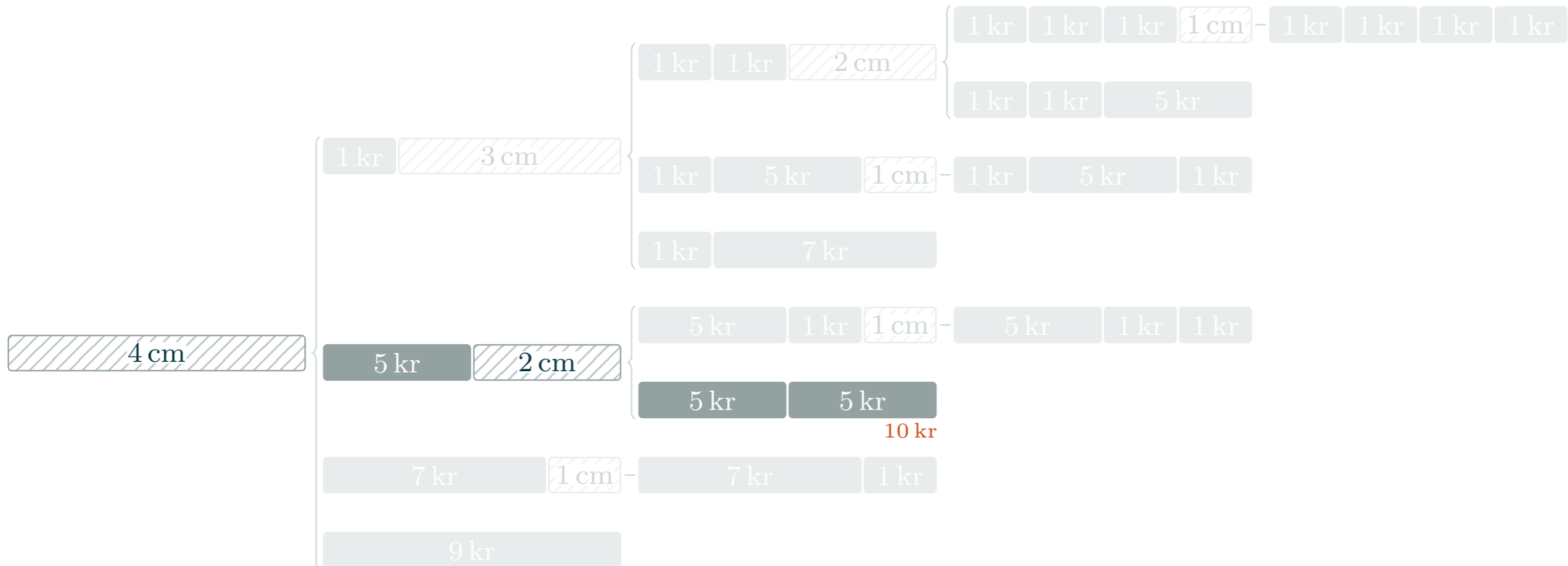
Vi velger grådig (kortsiktig) kuttet som gir høyest cm-pris



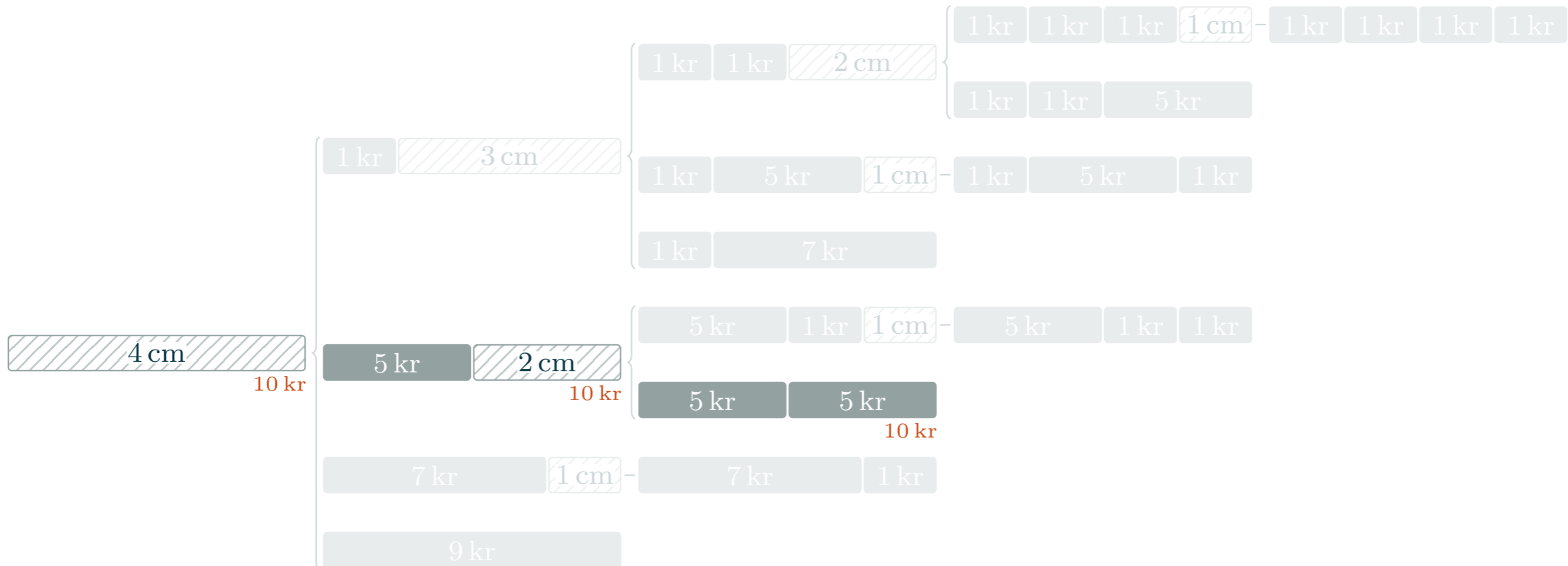
Vi går bare videre med dette delproblemet



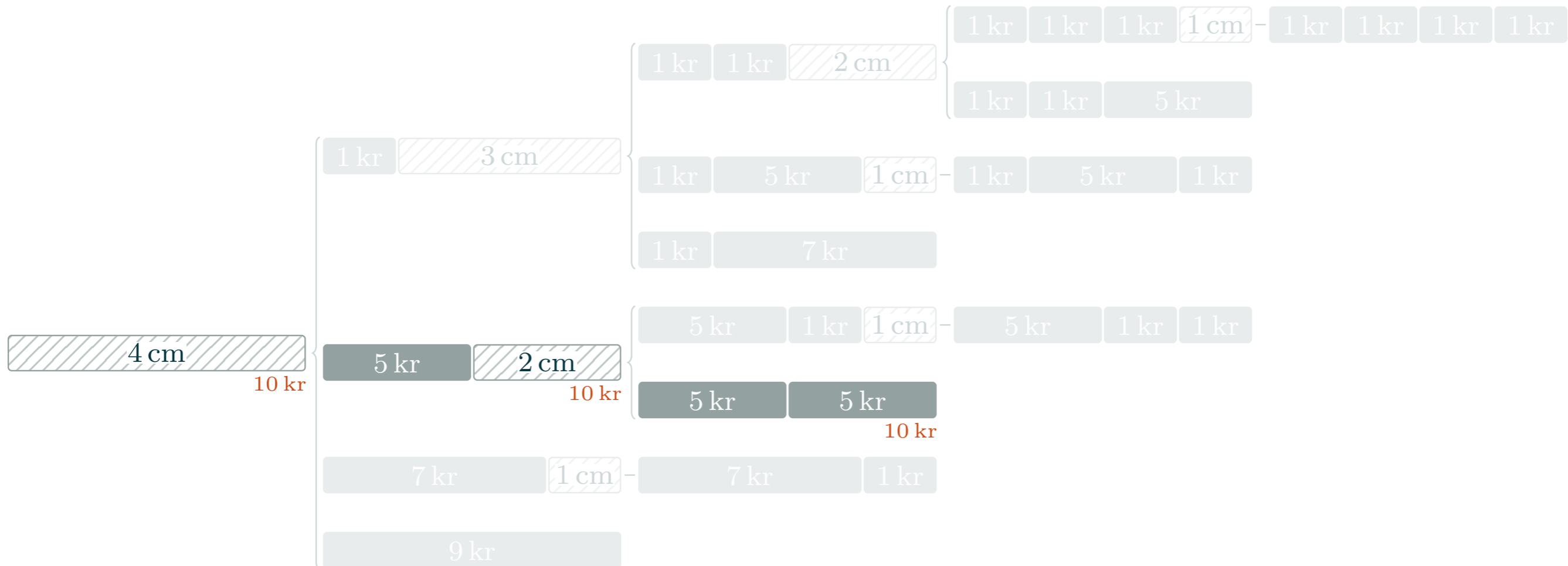
Og velger grådig igjen



Og så er vi ferdige



Og så er vi ferdige



Det ble rett denne gang, men vanligvis vil grådighet feile!