Afronding
Significantie
Wetenschappelijke notatie
Machten van 10

Rond af

1 getal achter de komma

a) 1,45 = 1,5

b) 4,05 = 4,1

c) 2,54 = 2,5

d) 30,049 = 30,0

e) 49,449 = 49,4

f) 0,709 = 0,7

Rond af

2 getallen achter de komma

a) 1,454 = 1,45

b) 4,056 = 4,06

c) 2,554 = 2,55

d) 30,0049 = 30,00

e) 491,5049 = 491,50

f) 0,0709 = 0,07

Hoeveel significante cijfers?

a) 58657 → 5

b) 30,12 → 4

c) 22,00 → 4

d) 0,000004 → 1

e) 0,0532 → 3

f) 1,0700 → 5

Schrijf in wetenschappelijke notatie

a) 58657 = $5{,}8657.10^{4}$ = 5,8657E4 =

b) 30,12 = $3{,}012.10^{1}$

c) 220,0 = $2{,}200.10^{2}$

d) 0,20 = $2{,}0.10^{-1}$

e) 0,0702 = $7{,}02.10^{-2}$

f) 0,00004 = 4.10^{-5}

Bereken

a) $5,8 \times 65,7 = 3,8.10^{2}$

b) $30,12 \times 2,0 = 6,0.10^{1}$

c) $30,12 \times 2,01 = 6,05.10^{1}$

d) $0,04 \times 10000 = 4.10^{-2} \times 1.10^{4} = 4.10^{2}$

e) $10,0 / 2 = 5$

f) $0,0700 / 0,12 = 5,8.10^{-1}$

Bereken met juiste afronding

a) 510 + 1,2 = 511
b) 42,1 – 2,05 = 40,05 = 40,1
c) 150 + 0,15 = 150
d) 1,21 – 1,2 = 2,41 = 2,4
e) 4,39 + 1,1 = 5,49 = 5,5

Meer info

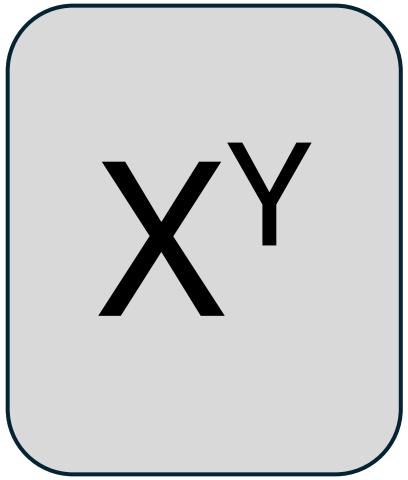
- https://www.sigfigscalculator.com/articles/significant-figures-rules.php
- https://natuurkundeuitgelegd.nl/quiz.php?quiz=significantie
- https://maken.wikiwijs.nl/p/questionnaire/standalone/1487127

Machten

Kwadraat en machten

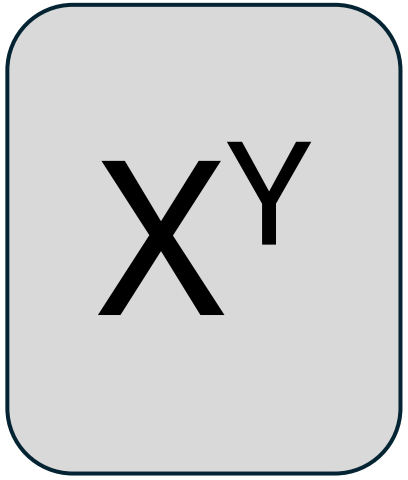
$3 \times 3 = 3^2 = 9$
$3 \times 3 \times 3 \times 3 = 3^4 = 81$

$\frac{1}{2} \times \frac{1}{2} = (\frac{1}{2})^2 = \frac{1}{4}$
$\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = (\frac{1}{2})^4 = 1/16$



Machten

Je hebt 1000 euro.
Ieder jaar geef je de helft uit.
Hoeveel euro blijft er over na:
1 jaar : 1000 x ½ = 500
2 jaar : 1000 x ½ x ½ = 250
3 jaar : 1000 x ½ x ½ x ½ = 125
10 jaar : 1000 x $(½)^{10}$ = 1000 x 1/1024 = 0,98



Machten van 10

$10^1 = 10$

$10 \times 10 = 10^2 = 100$

$10 \times 10 \times 10 = 10^3 = 1000$

$2{,}31 \times 10^2 = 231$

$10^2 \times 10^3 = 10^{(2+3)} = 10^5$

$10^3 : 10^3 = 1000/1000 = 10^{(3-3)} = 10^0 = 1$

dit geldt voor ieder getal: $x^0 = 1$

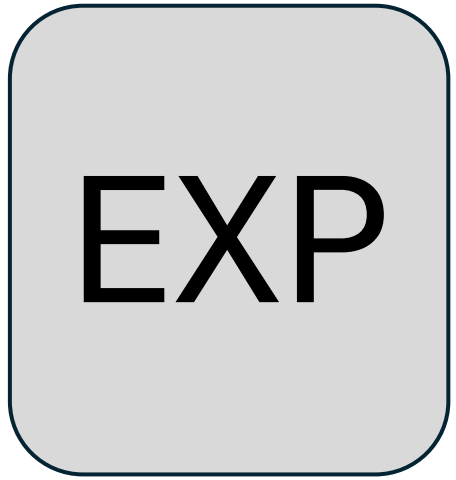
EXP

Machten van 10

$1/10 = 1/10^{1} = 10^{-1} = 0{,}1$
$1/100 = 1/10^{2} = 10^{-2} = 0{,}01$
$1/1000 = 1/10^{3} = 10^{-3} = 0{,}001$
$2{,}31 \times 10^{-2} = 0{,}0231$

$10^{-3} \times 10^{-2} = 10^{(-3+-2)} = 10^{-5}$
$10^{-3} \times 10^{-2} = 10^{(-3+-2)} = 10^{-5}$

$2{,}3.10^{-2} \times 4{,}0.10^{6} = 9{,}2.10^{4}$



Logaritme

- Geluid - decibel schaal
- Aardbeving – Richter schaal
- Afscherming straling – verzwakking van fotonen (Röntgen/gamma)

- Het ‘omgekeerde’ van 10^x

Logaritme

$10^4 = 10.000$

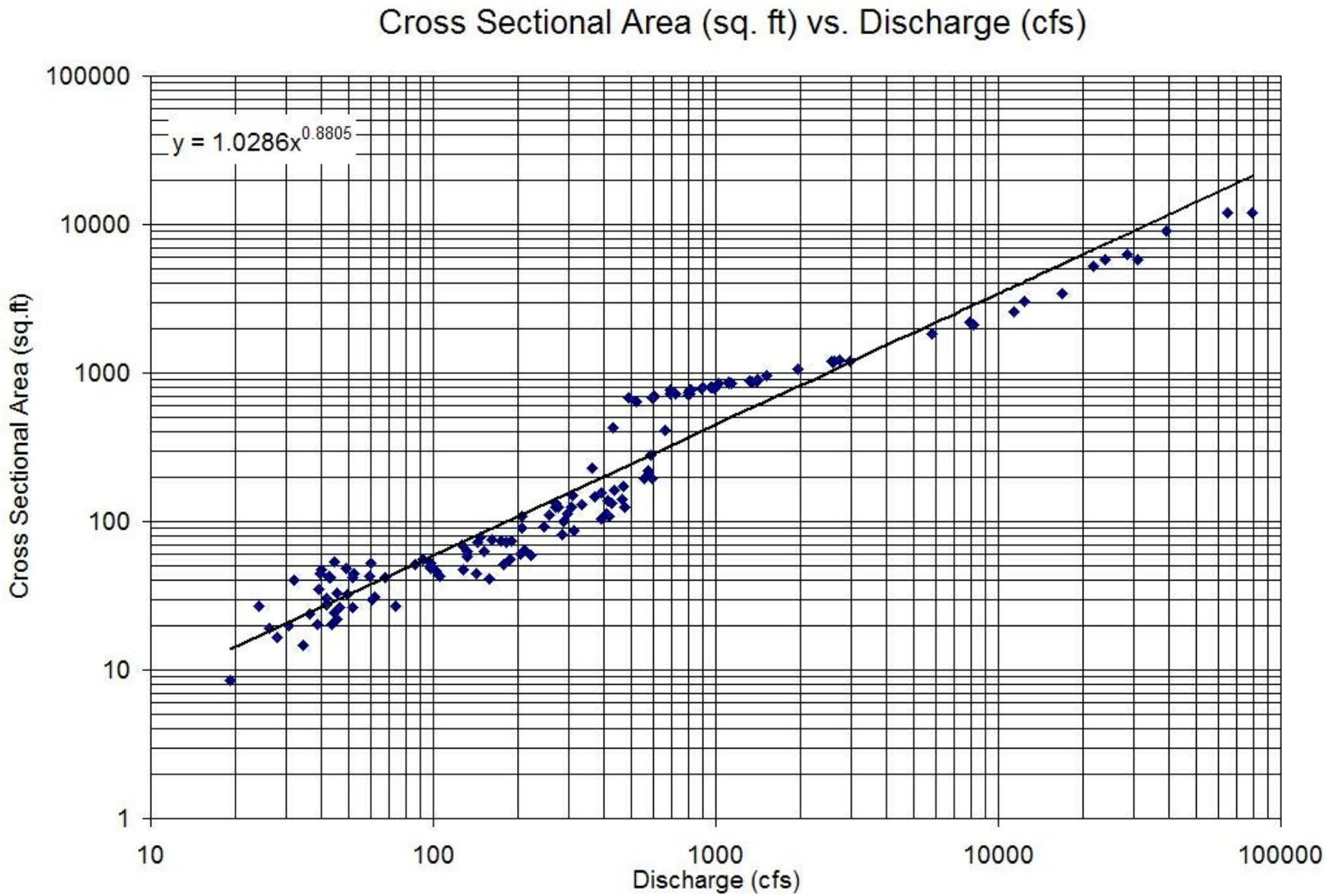
$^{10}\log(10.000) = 4$

$10^4 \times 10^3 = 10^7$

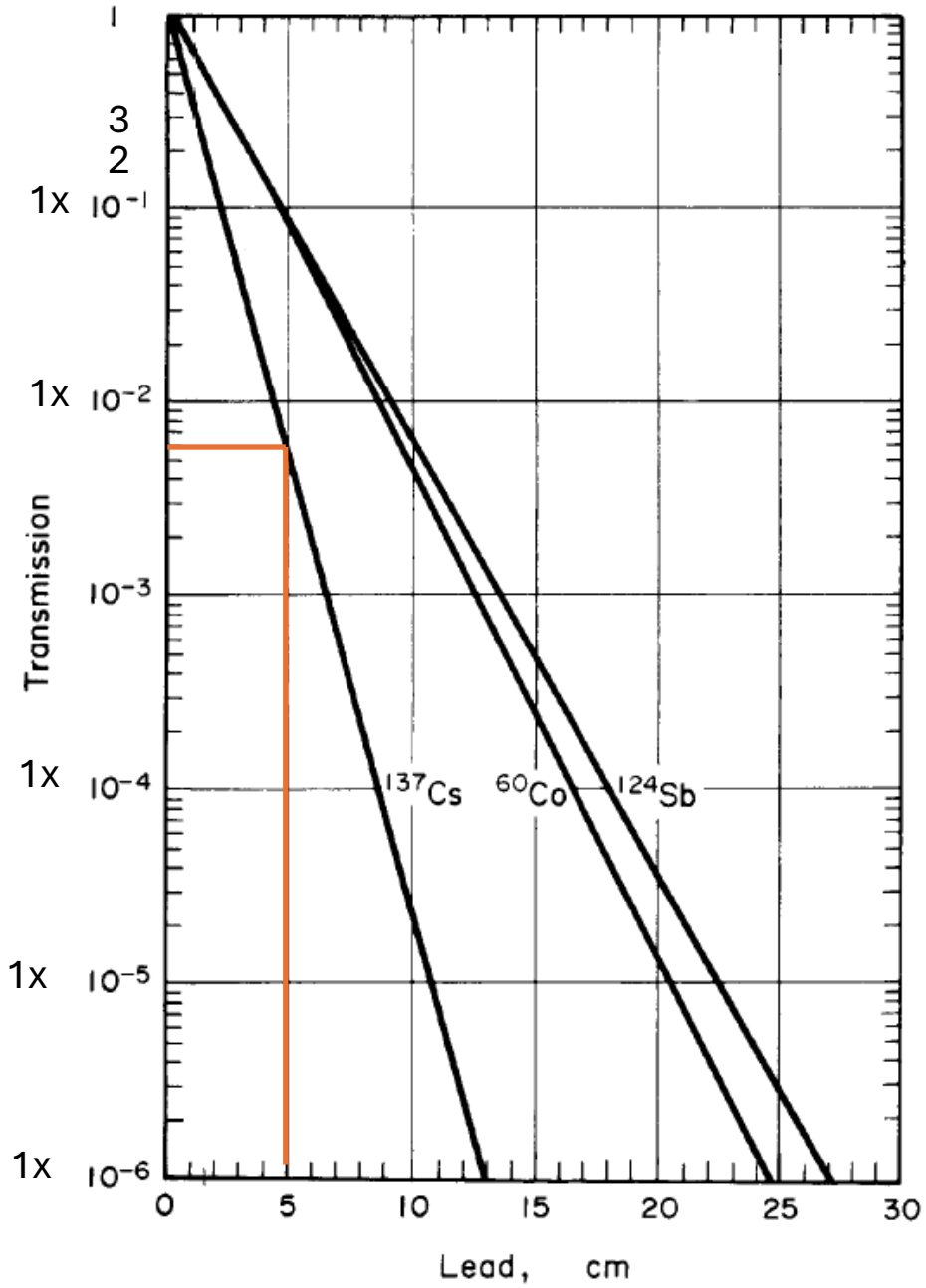
$10\log(10^4) + 10\log(10^3) = 7$

LOG

10LOG

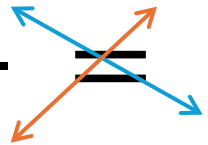

Cross Sectional Area (sq. ft) vs. Discharge (cfs)
y = 1.0286x^0.8805
Cross Sectional Area (sq.ft)
100000
10000
1000
100
10
1
10
100
1000
10000
100000
Discharge (cfs)

Transmissie - T



Omschrijven formules

$$\frac{10}{2} = \frac{20}{4}$$



$$10 \times 4 = 20 \times 2$$

$$\frac{10 \times 4}{2} = \frac{20}{1}$$

$$6 \times 5 = 10 \times 3$$

$$\frac{6 \times 5}{3} = \frac{10}{1}$$

$$6 = \frac{10 \times 3}{5}$$

Omschrijven formules

20 appels kosten €10
1 appel kost €1

$$20a = 10$$

$$a = \frac{10}{20} = 0{,}5$$

$$\frac{20a}{1} = \frac{10}{1}$$

$$\frac{a}{1} = \frac{10}{20 \times 1} = 0{,}5$$

Omschrijven formules

$$H = \frac{h \cdot A \cdot t \cdot T}{r^2}$$

$$\frac{H}{1} = \frac{h \cdot A \cdot t \cdot T}{r^2}$$

$$\frac{H}{1 \cdot h \cdot t \cdot T} = \frac{A}{r^2}$$

$$\frac{H \cdot r^2}{1 \cdot h \cdot t \cdot T} = \frac{A}{1} \longrightarrow A = \frac{H \cdot r^2}{h \cdot t \cdot T}$$

Bereken activiteit A [Bq] als:
Omgevingsequivalent dosis H = 2 mSv
Bronconstante h = 0,36 mSv.m^2/uur.MBq
Tijdsduur t = 2 uur
Transmissie T = 0,5
Afstand r = 1,5 meter