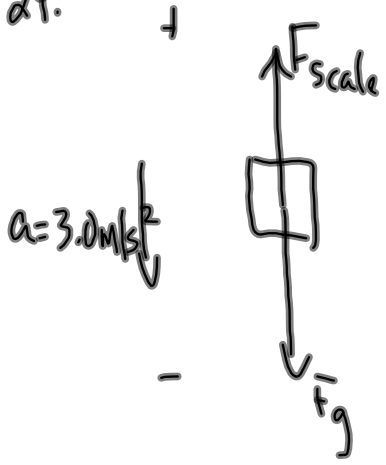
Review

$\vec{F}_{net} = m\vec{a}$

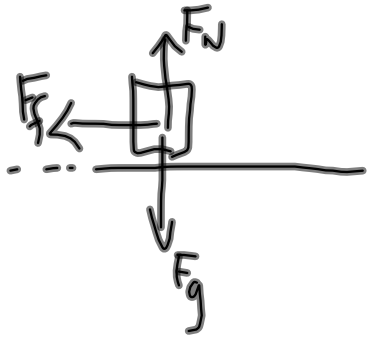
24.



$F_{scale} - F_g = ma$

$F_{scale} - mg = ma$

30.



$\vec{F}_{net} = m\vec{a}$

$-F_f = ma$

$-\mu F_N = ma$

$-\mu mg = ma$

$a = -\mu g$

FOP

§1-7 Using Proportioning Techniques in Physics

t(s)	1	2	3	4	5	6	7
d(m)	28	56	84	112	140	168	196

x2, x3, x4 (t); x2, x3, x7 (d)

Since the factors match:

$d \propto t$ (proportionality statement)

$d = kt$ (general equation)

$k = \frac{d}{t}$

$k = \frac{112\,m}{4\,s}$

$k = 28\,\frac{m}{s}$

} solve for k.

$d = (28\,\frac{m}{s})t$ (specific equation)

$(y = mx + b)$ ← has a linear form

f(Hz)	5	10	20	50	75	100
T(s)	0.2	0.1	0.05	0.02	0.013	0.01

x2, x5, x15 (f); $x\frac{1}{2}$, $x\frac{1}{5}$, $x\frac{1}{15}$ (T)

$T \propto \frac{1}{f}$

Sample Problems

1.

y	x
250	3
750	9
2500	30
5000	60

x3, x3; x10, x10; x2, x2

$y \propto x$

2.

A	B
20	14
80	28
180	42
2000	140

x4, x2; y9, x3; x100, x10

$A \propto B^2$

A plot of A vs B would be a power curve

A plot of A vs B^2 would be linear with slope of k and y-intercept of zero.

3.

F	r
100	1
225	2
36	5
14	18
1	30

$x\frac{1}{4}$, x2; $x\frac{1}{25}$, x5; $x\frac{1}{900}$, x30

$F \propto \frac{1}{r^2}$

TO DO: PP|23 (FOP)

p38|26+27 (FOP)

① Write the proportionality
② write the general eq.
③ find k. (use only 1 data pair)
④ write the specific eq.