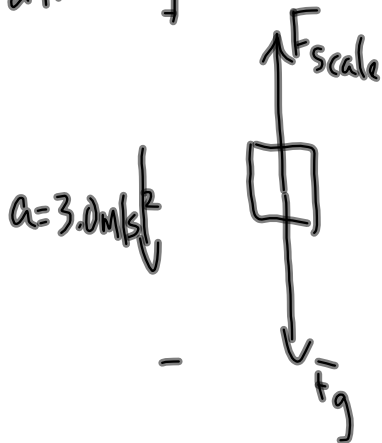


Review

24.

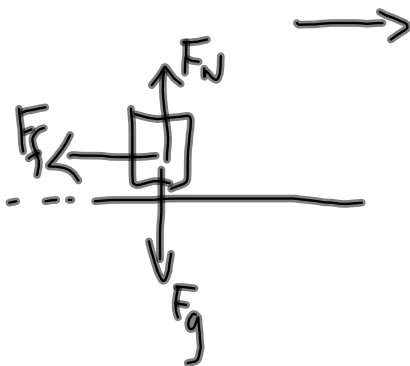


$$\vec{F}_{net} = m\vec{a}$$

$$F_{scale} - F_g = ma$$

$$F_{scale} - mg = ma$$

30.



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

$$-F_f = ma$$

$$-\mu F_N = ma$$

$$-\mu \rho g = \rho a$$

$$a = -\mu g$$

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

Handwritten annotations: Red arrows from (1,28) to (2,56) labeled x2; Green arrows from (2,56) to (3,84) labeled x3; Blue arrows from (3,84) to (7,196) labeled x7.

Since the factors match:

$d \propto t$ (proportionality statement)

$d = kt$ (general equation)

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

$k = \frac{112\text{m}}{4\text{s}}$ } solve for k.

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

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

$(y = mx + b) \leftarrow$ 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

Handwritten annotations: Red arrows from (5,0.2) to (10,0.1) labeled x2; Green arrows from (10,0.1) to (20,0.05) labeled x2; Blue arrows from (20,0.05) to (50,0.02) labeled x5; Blue arrows from (50,0.02) to (75,0.013) labeled x1.5.

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

Sample Problems

1

y	x
250	3
750	9
2500	30
5000	60

Handwritten annotations: Red arrows from (3,250) to (9,750) labeled x3; Green arrows from (9,750) to (30,2500) labeled x10; Blue arrows from (30,2500) to (60,5000) labeled x2.

$y \propto x$

2

A	B
20	14
80	28
160	42
2000	140

Handwritten annotations: Red arrows from (20,14) to (80,28) labeled x4; Green arrows from (80,28) to (160,42) labeled x2; Blue arrows from (160,42) to (2000,140) labeled x10.

$A \propto B^2$

A plot of A vs B would be a power curve
A plot of A vs B² 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

Handwritten annotations: Red arrows from (1,100) to (2,225) labeled x2; Green arrows from (2,225) to (5,36) labeled x5; Blue arrows from (5,36) to (18,14) labeled x3.6; Blue arrows from (18,14) to (30,1) labeled 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.