

Proportioning Techniques in Physics

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

Diagram showing multipliers between columns: 1 to 2 (x2), 1 to 3 (x3), 1 to 4 (x4), 1 to 5 (x5), 1 to 6 (x6), 2 to 3 (x1.5), 2 to 4 (x2), 2 to 5 (x2.5), 2 to 6 (x3), 3 to 4 (x1.33), 3 to 5 (x1.67), 3 to 6 (x2), 4 to 5 (x1.25), 4 to 6 (x1.5), 5 to 6 (x1.2).

Since the multipliers are equal:

$d \propto t$ (proportionality)

$d = kt$ (general equation)

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

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

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

} find k
(proportionality constant)

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

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

Diagram showing multipliers between columns: 5 to 10 (x2), 5 to 20 (x4), 5 to 50 (x10), 10 to 20 (x2), 10 to 50 (x5), 20 to 50 (x2.5), 20 to 100 (x5), 50 to 100 (x2), 0.2 to 0.1 (x 1/2), 0.2 to 0.05 (x 1/4), 0.2 to 0.02 (x 1/10), 0.1 to 0.05 (x 1/2), 0.1 to 0.02 (x 1/5), 0.05 to 0.02 (x 1/2.5), 0.05 to 0.01 (x 1/5), 0.02 to 0.01 (x 1/2).

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

S Problems:

1.	y	x
	250	3
$\times 3$	750	9
$\times 10$	2500	30
$\times 2$	5000	60

$y \propto x$ $x \propto y$

2.	A	B
	20	14
$\times 4$	80	28
$\times 9$	180	42
$\times 100$	2000	140

$A \propto B^2$

* need to square the multipliers for B in order for them to be equal to the multipliers on A.



3.	F	r
	900	1
$\times \frac{1}{4}$	225	2
$\times \frac{1}{25}$	36	5
$\times \frac{1}{225}$	14	18
	1	30

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

TO DO

1. FOP | Practice on p 23
2. FOP | p 38 | 26 + 27

- write pprop
- write general eq.
- find k
- write specific eq.