

VARIATION Worksheet #1

- If y varies inversely as x and $y=4$ when $x=2$, find y when $x=6$.
 $y = \frac{k}{x}$ $4 = \frac{k}{2}$ $k=8$ $y = \frac{8}{6}$ $y = 1.33$ or $\frac{4}{3}$
- If x varies inversely as the square of y and $x=4$ when $y=2$, find x when $y=3$.
 $x = \frac{k}{y^2}$ $4 = \frac{k}{2^2}$ $k=16$ $x = \frac{16}{3^2} = \frac{16}{9} = 1.8$
- If y varies directly as x and $y=6$ when $x=4$, find y when $x=8$.
 $y = kx$ $6 = k(4)$ $k=1.5$ $y = 1.5(8)$ $y=12$
- If y varies directly as x and $y=12$ when $x=-6$, find x when $y=22$.
 $y = kx$ $12 = k(-6)$ $k = -2$ $22 = -2x$ $x = -11$
- If z varies jointly as x and y , and $z=12$ when $x=3$ and $y=4$, find z when $x=5$ and $y=6$.
 $z = xyk$ $12 = (3)(4)k$ $k = 1$ $z = (5)(6)(1)$ $z = 30$
- If z varies jointly as x and y , and $z=15$ when $x=5$ and $y=2$, find z when $x=7$ and $y=4$.
 $z = kxy$ $15 = k(5)(2)$ $k = 1.5$ $z = 1.5(7)(4)$ $z = 42$
- If y varies directly as x and inversely as z , and $y=49$ when $x=14$ and $z=4$, find z when $x=16$ and $y=7$.
 $y = \frac{kx}{z}$ $49 = \frac{k(14)}{4}$ $k = 14$ $7 = \frac{(14)z}{16}$ $z = 32$
- If a varies directly as b and inversely as the square of c , and $a=46$ when $b=12$ and $c=6$, find a when $a=23$ and $c=6$.
 $a = \frac{kb}{c^2}$ $46 = \frac{k(12)}{6^2}$ $k = 138$ $23 = \frac{138b}{6^2}$ $b = 6$
- If y varies directly as x and inversely as the square of z , and $x=48$ when $y=8$ and $z=3$, find x when $y=12$ and $z=2$.
 $y = \frac{kx}{z^2}$ $8 = \frac{k(48)}{3^2}$ $k = 1.5$ $12 = \frac{1.5x}{2^2}$ $48 = 1.5x$ $32 = x$
- If d varies jointly as r and t , and $d=110$ when $r=55$ and $t=2$, find r when $d=40$ and $t=3$.
 $d = rtk$ $110 = 55(2)k$ $k = 1$ $40 = r(3)(1)$ $13.3 = r$

VARIATION WORKSHEET #2

- If r varies directly as s , and $r=2$ when $s=10$, find r when $s=30$.
- If y varies directly as x , and $y=24$ when $x=8$, find y when $x=50$.
- If p is directly proportional to t and $p=2$ when $t=10$, find p when $t=-1$.
- If y varies inversely as x and $y=27$ when $x=3$, find y when $x=9$.
- If y varies inversely as x and $y=15$ when $x=-2$, find y when $x=-5$.
- If y varies inversely as x and $y=9$ when $x=4$, find y when $x=6$.
- If y varies jointly as x and z and $y=12$ when $x=4$ and $z=3$, find y when $x=9$ and $z=8$.
- If y varies jointly as x and z and $y=72$ when $x=3$ and $z=8$, find y when $x=-2$ and $z=-3$.
- If y varies jointly as x and z and $y=24$ when $x=2$ and $z=3$, find y when $x=4$ and $z=7$.
- A fish with a mass of $3kg$ causes a fishing pole to bend $9cm$. If the amount of bending varies directly as the mass, how much will the pole bend for a $2kg$ fish?
- The mass of a copper bar varies directly as its length. If a bar long $40cm$ long has a mass of approximately $420g$, find the mass of a bar $136cm$ long.
- The interest earned on an investment varies directly with the interest rate. If a 9% rate yields $\$279$, what interest rate yields $\$341$?
- The illumination i from a light varies inversely as the square of its distance d from an object. $i = 8ft$ candles when $d = 3ft$, find i when $d = 4ft$.
- The pressure P of a gas at a constant temperature varies inversely as the volume V . If $V = 450in^3$ when $P = 30lb/in^2$, find P when $V = 750in^3$.
- The frequency of a radio wave is inversely proportional to its wave length. If a radio wave, $30m$ long has a frequency of $1200kilocycles$ per second, what is the length of a wave with a frequency of $900kilocycles$?
- The area A of a triangle varies jointly as the length of its base b and the length of its corresponding altitude h . If $A = 15cm$ when $b = 10cm$ and $h = 3cm$, find A when $b = 25cm$ and $h = 6cm$.
- The distance D traveled at a uniform rate varies jointly as the rate r and the time t . If $D = 120$ when $r = 60$ and $t = 2$, find D when $r = 80$ and $t = 3$.
- The area A of a parallelogram varies jointly as the length of a base b and the length of a corresponding altitude h . If $A = 16$ when $b = 2$ and $h = 8$, find A when $b = 8$ and $h = 16$.