**Algebra 2 CP Worksheet Section 9.1 Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**SHOW ALL WORK AND ANSWERS ON SEPARATE PAPER.**

**For #’s 1 – 2,** $y$ **varies directly as** $x$**. Write the appropriate direct variation equation. Then find** $y$ **for the given values of** $x$**.**

1. $y=14 $when $x=2$; find $y$ with $x$ -values: 3, 4, 5
2. $y=50 $when $x=100$; find $y$ with $x$ -values: 3, 4, 5

**For #’s 3 – 4,** $y$ **varies inversely as** $x$**. Write the appropriate inverse variation equation. Then find** $y$ **for the given values of** $x$**.**

1. $y=10 $when $x=6$; find $y$ with $x$ -values: 3, 4, 5
2. $y=0.5 $when $x=8$; find $y$ with $x$ -values: 3, 4, 5

**For #’s 5 – 7,** $y$ **varies jointly as** $x$ **and** $z$**. Write the appropriate joint variation equation. Then find the missing variable using the given information.**

1. $y=-108 $when $x=-4$ and $z=3$; find $y$ when $x=6$ & $z=-2$
2. $y=6 $when $x=3$ and $z=4$; find $z$ when $x=200$ & $y=25$
3. $y=20 $when $x=10$ and $z=\frac{1}{2}$; find $x$ when $y=24$ & $z=2$

**For #’s 8 – 10,** $z$ **varies jointly as** $x$ **and** $y$ **and inversely as** $w$**. Write the appropriate combined variation equation. Then find** $z$ **for the given values of** $x$**,** $y$**, and** $w$**.**

1. $z=10 $when $x=5$, $y=-2$, and $w=3$; find $z$ when $x=8$, $y=6$, & $w=-12$
2. $z=15 $when $x=10$, $y=6$, and $w=20$; find $z$ when $x=3.5$, $y=24$, & $w=27$
3. $z=36 $when $x=9$, $y=10$, and $w=15$; find $z$ when $x=20$, $y=7$, & $w=20$

**For #’s 11 – 12, write a general equation for each problem. Find the constant of variation. Then solve.**

1. The variable $y$ varies directly as the square root of $x$ and inversely as $z$. If $y=10$ when $x=9$ and $z=12$, then find $y$ when $x=16$ and $z=10$.
2. The variable $x$ varies jointly as $y$ cubed and the square root of $z$, and inversely as $w$. If $=-8$ , then $y=2$, $z=9$, & $w=6$. Find $z$ when $x=-30$, $y=3$, and $w=9$.