1. If $y$ varies inversely as $x$, and $y = 3$ when $x = 6$, find $x$ when $y = 18$.
   
   $x = 1$

2. If $z$ is inversely proportional to $r$, and $z = 32$ when $r = 1.5$, find $r$ when $z = 8$.
   
   $r = 6$

3. If $w$ is inversely proportional to the square of $v$, and $w = 3$ when $v = 6$, find $w$ when $v = 3$.
   
   $w = 12$

4. If $p$ varies inversely as the square root of $q$, and $p = 12$ when $q = 36$, find $p$ when $q = 16$.
   
   $p = 18$

5. If $z$ is jointly proportional to $x$ and $y$, and $z = 18$ when $x = 0.4$ and $y = 3$, find $z$ when $x = 1.2$ and $y = 2$.
   
   $z = 36$

6. If $w$ is jointly proportional to $u$ and $v$, and $w = 24$ when $u = 0.8$ and $v = 5$, for what value of $u$ will $w = 18$ when $v = 2$?
   
   $u = 1.5$

7. If $a$ varies directly as $b$ and inversely as $c$, and $a = 10$ when $b = 5$ and $c = 3$, for what value of $c$ will $a = 3$ when $b = 4$?
   
   $c = 8$

8. Suppose that $r$ varies directly as $p$ and inversely as $q^2$, and that $r = 27$ when $p = 3$ and $q = 2$. Find $r$ when $p = 2$ and $q = 3$.
   
   $r = 8$

9. Suppose that $z$ varies jointly as $u$ and $v$ and inversely as $w$, and that $z = 0.8$ when $u = 8$, $v = 6$, and $w = 5$. Find $z$ when $u = 3$, $v = 10$, and $w = 5$.
   
   $z = 0.5$

10. Suppose that $w$ varies directly as $z^2$ and inversely as $xy$, and that $w = 10$ when $x = 15$, $y = 2$, and $z = 5$. Find $z$ when $w = 2$, $x = 8$, and $y = 27$.
    
    $z = 6$