1) The variable $t$ varies jointly with $r$ and $s$. The value of $t$ is 750 when $r = 5$ and $s = 10$.

   a) Write an equation that relates $t$, $r$ and $s$. 

   b) Find the value of $t$ when $r = 4$ and $s = 8$. 

2) The variable $u$ varies directly with $v$. The value of $u$ is 27 when $v = 3$.

   a) Write an equation that relates $u$ and $v$. 

   b) Find the value of $v$ when $u = 54$. 

3) The variable $y$ varies directly with $x$ and inversely with $z$. The value of $y$ is 768 when $x = 4$ and $z = 1$.

   a) Write an equation that relates $x$, $y$ and $z$. 

   b) Find the value of $y$ when $x = 2$ and $z = 8$. 

4) The variable $p$ varies jointly with $q$ and $r$. The value of $p$ is 38.4 when $q = 1.2$ and $r = 0.8$.

   a) Write an equation that relates $p$, $q$ and $r$. 

   b) Find the value of $q$ when $p = 52$ and $r = 0.4$. 

5) The variable $m$ varies directly with $n$ and inversely with $h$. The value of $m$ is 32 when $n = 52$ and $h = 13$.

   a) Write an equation that relates $n$, $h$ and $m$. 

   b) Find the value of $m$ when $n = 36$ and $h = 12$. 

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The variable \( t \) varies jointly with \( r \) and \( s \). The value of \( t \) is 750 when \( r = 5 \) and \( s = 10 \).

a) Write an equation that relates \( t \), \( r \) and \( s \).

\[ t = 15rs \]

b) Find the value of \( t \) when \( r = 4 \) and \( s = 8 \).

\[ t = 480 \]

The variable \( u \) varies directly with \( v \). The value of \( u \) is 27 when \( v = 3 \).

a) Write an equation that relates \( u \) and \( v \).

\[ u = 9v \]

b) Find the value of \( v \) when \( u = 54 \).

\[ v = 6 \]

The variable \( y \) varies directly with \( x \) and inversely with \( z \). The value of \( y \) is 768 when \( x = 4 \) and \( z = 1 \).

a) Write an equation that relates \( x \), \( y \) and \( z \).

\[ y = \frac{12x^3}{z} \]

b) Find the value of \( y \) when \( x = 2 \) and \( z = 8 \).

\[ y = 12 \]

The variable \( p \) varies jointly with \( q \) and \( r \). The value of \( p \) is 38.4 when \( q = 1.2 \) and \( r = 0.8 \).

a) Write an equation that relates \( p \), \( q \) and \( r \).

\[ p = 40qr \]

b) Find the value of \( q \) when \( p = 52 \) and \( r = 0.4 \).

\[ q = 3.25 \]

The variable \( m \) varies directly with \( n \) and inversely with \( h \). The value of \( m \) is 32 when \( n = 52 \) and \( h = 13 \).

a) Write an equation that relates \( n \), \( h \) and \( m \).

\[ m = \frac{8n}{h} \]

b) Find the value of \( m \) when \( n = 36 \) and \( h = 12 \).

\[ m = 24 \]