E Summer Proportion General

1. The variable v varies with the square of t. When $t = 2$, $v = 20$.

   (a) Find a formula for v in terms of t. $\boxed{v = 5t^2}$

   (b) Find v when $t = \frac{1}{2}$. $\boxed{\frac{5}{4}}$

   (c) Find t when $v = 500$. $\boxed{10}$

2. The variable E varies inversely with the square root of l. When $l = 9$, $E = 4$.

   (a) Find a formula for E in terms of l. $\boxed{E = \frac{12}{\sqrt{l}}}$

   (b) Find E when $l = \frac{4}{9}$. $\boxed{18}$

   (c) Find l when $E = 5$. $\boxed{\frac{144}{25}}$

3. The variable P varies with the cube root of f. When $f = 27$, $P = 7$.

   (a) Find a formula for P in terms of f. $\boxed{P = \frac{7}{3}\sqrt[3]{f}}$

   (b) Find P when $f = \frac{8}{27}$. $\boxed{\frac{14}{9}}$

   (c) Find f when $P = 14$. $\boxed{216}$

4. The variable F varies directly m. When $m = 5$, $F = 9$.

   (a) Find a formula for F in terms of m. $\boxed{F = \frac{9}{5}m}$

   (b) Find F when $m = 6$. $\boxed{\frac{54}{5}}$

   (c) Find m when $F = 17$. $\boxed{\frac{85}{9}}$

5. The variable T varies inversely with the cube root of h. When $h = 125$, $T = 100$.

   (a) Find a formula for T in terms of h. $\boxed{T = \frac{500}{\sqrt[3]{h}}}$

   (b) Find a formula for h in terms of T. $\boxed{h = \frac{125\,000\,000}{T^3}}$

   (c) Find T when $h = 8$. $\boxed{250}$

   (d) Find h when $T = 5$. $\boxed{1\,000\,000}$

6. The variable Φ varies with the cube of λ. Copy and complete the following table (hint: you may need to find the relationship first).

λ	2	3		10
Φ	56		875	

$\boxed{5,\ 189,\ 7000}$

7. The variable Ψ varies inversely with the square root of τ. Copy and complete the following table (hint: you may need to find the relationship first).

τ	16	25		
Ψ	50		$\frac{100}{3}$	20

$\boxed{36,\ 100,\ 40}$