

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. $y = 40$ when $x = 5$; find y with x -values: 3, 4, 5
2. $y = 30$ when $x = 120$; 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 .

3. $y = 5$ when $x = 9$; find y with x -values: 3, 4, 5
4. $y = 0.25$ when $x = 48$; 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.

5. $y = -96$ when $x = -3$ and $z = 4$; find y when $x = \frac{5}{2}$ & $z = -5$
6. $y = 10$ when $x = 5$ and $z = 6$; find z when $x = 9$ & $y = 27$
7. $y = 30$ when $x = -2$ and $z = 3$; find x when $y = 80$ & $z = 4$

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 .

8. $z = 9$ when $x = 6$, $y = 3$, and $w = 8$; find z when $x = 5$, $y = 15$, & $w = -10$
9. $z = 8$ when $x = 2$, $y = 5$, and $w = -10$; find z when $x = 0.75$, $y = 6$, & $w = 2$
10. $z = -16$ when $x = -4$, $y = -2$, and $w = 6$; find z when $x = 3$, $y = \frac{1}{2}$, & $w = 9$

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

11. The variable y varies directly as the cube root of x and inversely as w . If $y = 12$ when $x = 27$ and $w = 6$, then find y when $x = 8$ and $w = 16$.
12. The variable x varies jointly as y squared and the fourth root of z , and inversely as w . If $w = 27$, then $y = 3$, $z = 16$, & $w = 2$. Find y when $x = 12$, $z = 81$, and $w = 27$.