DIRECTIONS: Solve. For #1-4, also find k (the constant of variation).

1. If y varies directly as x, and $y = 6$ when $x = 15$, find y when $x = 25$.

$y = 10 \quad (k = {}^{2}/_{5} \text{ or } .4)$

2. If r is directly proportional to t, and $r = 40$ when $t = 15$, find t when $r = 64$.

$t = 24 \quad (k = {}^{8}/_{3} \text{ or } 2.\overline{6})$

3. If p is directly proportional to q, and $p = 9$ when $q = 7.5$, find q when $p = 24$.

$q = 20 \quad (k = {}^{6}/_{5} \text{ or } 1.2)$

4. If a varies directly as b, and $a = 75$ when $b = 40$, find a when $b = 12$.

$a = 22.5 \quad (k = {}^{15}/_{8} \text{ or } 1.875)$

5. If m varies directly as n^2, and $m = 12$ when $n = 2$, find m when $n = 5$.

$m = 75$

6. If y is directly proportional to $\sqrt{x}$, and $y = 25$ when $x = 3$, find x when $y = 100$.

$x = 48$

7. If p is directly proportional to $r - 2$, and $p = 20$ when $r = 6$, find p when $r = 12$.

$p = 50$

8. If w varies directly as $2x - 1$, and $w = 9$ when $x = 2$, find x when $w = 15$.

$x = 3$

9. The water pressure, y, on a diver is directly proportional to the diver's depth, x, in meters, beneath the surface. If the pressure is 29.4 kilopascals when a diver is 3 meters beneath the surface, find the depth if the pressure is 147 kilopascals.

15 meters

10. If the sales tax on a \$60 purchase is \$3.90, what would it be on a \$280 purchase?

\$18.20

11. A real estate agent made a commission of \$5400 on a house that sold at \$120,000. At this rate, what commission will the agent make on a house that sells for \$145,000?

\$6525

12. On a certain map, a field 280 feet long is represented by an 8 inch by 5 inch rectangle. How wide is the field?

175 feet