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 \( x = 25 \).
   \[ y = 10 \quad (k = \frac{2}{5} \text{ or } 0.4) \]

2. If \( r \) is directly proportional to \( t \), and \( r = 40 \) when \( t = 15 \), find \( t \) when \( r = 64 \).
   \[ t = 24 \quad (k = \frac{8}{3} \text{ or } 2.666\ldots) \]

3. If \( p \) is directly proportional to \( q \), and \( p = 9 \) when \( q = 7.5 \), find \( q \) when \( p = 24 \).
   \[ q = 20 \quad (k = \frac{6}{5} \text{ or } 1.2) \]

4. If \( a \) varies directly as \( b \), and \( a = 75 \) when \( b = 40 \), find \( a \) when \( b = 12 \).
   \[ a = 22.5 \quad (k = \frac{15}{8} \text{ or } 1.875) \]

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 \( x = 9 \), 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.
   \[ 15 \text{ meters} \]

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?
   \[ 175 \text{ feet} \]

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