1. $\boxed{\text{E}}$. Consider the coins as a single set. The value is $1 + 5 + 10 + 25 + 50 = 91$. Then the number of sets is $273 \div 91 = 3$. Each set has 5 coins so the total is $3 \times 5 = \boxed{15}$.

2. $\boxed{\text{C}}$. The first boy paid $\frac{1}{3}60 = \$20$. The second boy paid $\frac{1}{4}60 = \$15$. The third boy paid $\frac{1}{5}60 = \$12$. The fourth boy paid $60 - 20 - 15 - 12 = \boxed{\$13}$.

3. $\boxed{\text{C}}$. We can set a system of equations

$$3x = 4y$$
$$x - y = 8$$

Solve for $x = \boxed{32}$.

4. $\boxed{\text{D}}$. The man made a total of $8 + 15 + 9 = 32$ one-way commutes. Thus, $x = \frac{32}{2} = \boxed{16}$ working days.

5. $\boxed{\text{D}}$. We can set a system of equations

$$a = b + c + 16 \tag{1}$$
$$a^2 = (b + c)^2 + 1632 \tag{2}$$

Now, we have 3 variables, but only two equations, which means at least 2 variables in the equation are not independent from each other. We also note that the equation (2) can be turned into a difference of squares such that

$$a^2 - (b + c)^2 = (a + b + c)(a - b - c) = 1632.$$

Now, if we move the variables of equation (1) to the left side, we have $a - b - c = 16$. Thus, $a + b + c = \frac{1632}{16} = \boxed{102}$.

**Problem Solving Strategy**: When you find in a situation of not enough equations to solve variables, it usually means some hidden relationships among the variables given. Then, looking for algebriac manipulations to discover such hidden relationships.

6. $\boxed{\text{B}}$. Let $a$ be Ann's age and $b$ be Barbara's age now. When Barbara was half of Ann's age, it was $b - \frac{a}{2}$ years ago. Then, Ann will be $a - (b - \frac{a}{2}) = \frac{3}{2}a - b$ years old. When Barbara was Ann's age then, which is $\frac{3}{2}a - b$, it is $b - (\frac{3}{2}a - b) = 2b - \frac{3}{2}a$ years ago. Then, Ann's age is $a - (2b - \frac{3}{2}a) = \frac{5}{2}a - 2b$ years old. Now, we have the equation:

$$a + b = 44$$
$$b = \frac{5}{2}a - 2b$$

Solve for $a$, we have $a = \boxed{24}$.

7. $\boxed{\text{A}}$. When two cars travels the same amount of time, their average speed is an arithmetic mean. Thus, $y = \frac{u+v}{2}$. When the to cars travels the same amount of distance, their avarage speed is a harmonic mean. Thus, $x = \dfrac{2}{\frac{1}{v} + \frac{1}{v}}$. Thus, we have $\boxed{x \leq y}$ where equality holds if $u = v$.

8. (AHSME 73-34) A plane flew straight against a wind between two towns in 84 minutes and returned with that wind in 9 minutes less than it would take in still air. The number of minutes for the returned trip was.

   (A) 54 or 18 (B) 60 or 15 (C) 63 or 12 (D) 72 or 36 (E) 75 or 20 C

9. (AHSME 73-33) When one ounce of water is added to a mixture of acid and water, the new mixture is 20% acid. When one ounce of acid is added to the new mixture, the result is $33\frac{1}{3}\%$ acid. The percentage of acid in the original mixture

   (A) 22% (B) 24% (C) 25% (D) 30% (E) $33\frac{1}{2}$ C