

8) ① $x = \text{first \#}$ $y = \text{second \#}$

3 times larger #
equal to
4 times smaller
#

② $3x = 4y$

$$x + y = 21$$

$$x = 21 - y$$

②

$$3(21 - y) = 4y$$

$$63 - 3y = 4y$$

$$63 = 4y + 3y$$

$$\frac{63}{7} = \frac{7y}{7}$$

$$9 = y$$

$$x + y = 21$$

$$x + 9 = 21$$

$$x = 12$$

9) ① $x = \text{cost of a record}$
 $y = \text{cost of a CD}$

$$\textcircled{2} \begin{cases} 3(2x + 3y = 31) \\ 2(3x + 2y = 29) \end{cases}$$

$$\begin{array}{r} 6x + 9y = 93 \\ - 6x + 4y = 58 \\ \hline \cancel{0x} + 5y = 35 \\ \quad \quad \quad \frac{5y}{5} = \frac{35}{5} \\ \quad \quad \quad \boxed{y = 7} \end{array}$$

$$\begin{array}{l} 2x + 3y = 31 \\ 2x + 3(7) = 31 \\ 2x + 21 = 31 \\ 2x = 10 \end{array} \quad \begin{array}{l} \frac{2x}{2} = \frac{10}{2} \\ \boxed{x = 5} \end{array}$$

11) ① $x = \#$ of TV's that weigh 50kg
 $y = \#$ of TV's that weigh 30kg

$$\textcircled{2} \quad 50x + 30y = 880$$

\downarrow
 $20-y$

$$50(20-y) + 30y = 880$$

$$1000 - 50y + 30y = 880$$

$$1000 - 20y = 880$$

$$-20y = 880 - 1000$$

$$\frac{-20y}{-20} = \frac{-120}{-20}$$

$$x + y = 20$$

$$x = 20 - y$$

$$y = 6$$

$$x = 20 - y$$

$$x = 20 - 6$$

$$x = 14$$

1. The number of girls at Citadel is 60 more than the number of boys. If there are 1350 students altogether, how many girls are there?

① $x = \# \text{ of girls}$
 $y = \# \text{ of boys}$

② $x = \underline{y + 60}$ $\underline{x} + y = 1350$

③ $y + 60 + y = 1350$

$2y + 60 = 1350$

$2y = 1350 - 60$

$\frac{2y}{2} = \frac{1290}{2}$

$y = 645$

④ $x = y + 60$
 $x = 645 + 60$

$x = 705$

⑤ sentence.

2. The sum of the digits of a certain two-digit number is 11. Reversing its digits decreases the number by 27. Find the number. \rightarrow two digit #

① $x = \text{first digit}$
 $y = \text{second digit}$

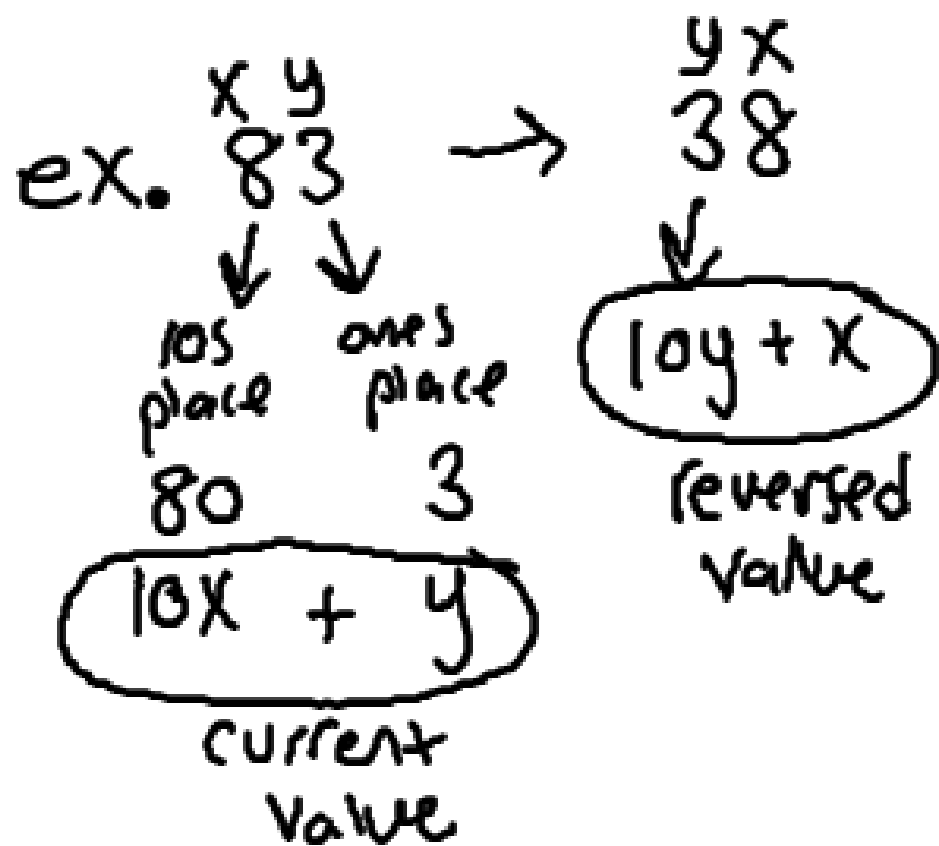
② $x + y = 11$

* $10x + y - 27 = 10y + x$
 current value $- 27 = \text{reversed value.}$

③ $x = 11 - y$

$10(11 - y) + y - 27 = 10y + (11 - y)$

$110 - 10y + y - 27 = 10y + 11 - y$



$$110 - 10y + y - 27 = 10y + 11 - y$$

$$110 - 9y - 27 = 9y + 11$$

$$83 - 9y = 9y + 11$$

$$83 = 9y + 9y + 11$$

$$83 = 18y + 11$$

$$83 - 11 = 18y$$

$$\frac{72}{18} = \frac{18y}{18}$$

$$4 = y$$



$$x + y = 11$$

$$x + 4 = 11$$

$$x = 11 - 4$$

$$x = 7$$

$$\# = 74$$

3. On your 16 birthday you receive \$1000 to invest for college. You "diversify" by splitting it in two parts and investing in two different stocks, hoping for the best. By your 17th birthday you have earned \$110 on it, and the other paid 12%. How much was originally placed in each account?

→ one paid 8%

① $x = \text{amount invested in account one}$
 $y = \text{amount invested in account two}$

② $x + y = 1000$
 $x = 1000 - y$

③ $x = 1000 - 750$
 $x = 250$

④ sentence.

$$0.08x + 0.12y = 110$$

$$0.08(1000 - y) + 0.12y = 110$$

$$80 - 0.08y + 0.12y = 110$$

$$80 + 0.04y = 110$$

$$0.04y = 110 - 80$$

$$\frac{0.04y}{0.04} = \frac{30}{0.04}$$

$$y = 750$$

3 times as much pop as juice

↓
more pop.

$x = \# \text{ cans pop}$

$y = \# \text{ cans juice}$

~~$3x = y$~~

~~fill 1 in for x
solve for y~~

~~$3(1) = y$~~

~~$3 = y \quad x = 1$~~

$x = 3y$

$x = 3(1)$

$x = 3$

$y = 1$



twice as many dimes as quarters

$x = \#$ of dimes
 $y = \#$ of quarters

↓
more
dimes

~~$2x = y$
 $2(1) = y$
 $2 = y$ $x = 1$~~

$x = 2y$

$x = 2(1)$

$x = 2$ ✓

$y = 1$