

Solutions to Penny's Marble Problem

A	<p>① $24 \times 4 = 96$. We did this to get rid of the $\frac{1}{4}$ she gave away.</p> <p>② $96 \times 3 = 288$. We did this to get rid of the $\frac{1}{3}$ she gave away. We thought the answer was 288</p> <p>③ $288 - (\frac{1}{3} \times 288) : (\frac{1}{4} \times 4) = 288 - 144 = 144$. This was our way of checking our answer. We realized it was wrong. Then we also realized that she gave away half the marbles of what we thought she had.</p> <p>④ $24 \times 2 = 48$ because she gave away half her marbles away and we reversed the problem</p>
B	$X = \text{Total}$ $\frac{1}{3}x + \frac{1}{4}(\frac{2}{3})x + 24 = x$ $\frac{1 \times 4}{3 \times 4}x + \frac{2}{12}x + 24 = x$ $\frac{4}{12}x + \frac{2}{12}x + 24 = x$ $\frac{6}{12}x + 24 = x$ $\frac{1}{2}x + 24 = x$ $-\frac{1}{2}x \quad \quad -\frac{1}{2}x$ $24 = \frac{1}{2}x$ $2 \cdot 24 = 2 \cdot \frac{1}{2}x$ $48 = x$

C

① $3 \overline{) 144} \begin{array}{r} 48 \\ 12 \\ \hline 32 \end{array}$ ② $4 \overline{) 144} \begin{array}{r} 36 \\ 16 \\ \hline 32 \end{array}$ ③ $4 \overline{) 32} \begin{array}{r} 8 \\ 32 \\ \hline 24 \end{array}$

D

equation $\left(\frac{24 \times 4}{3} \right) \times 3$

Work $24 \div 3 = 8 \times 4 = 32$

$32 \div 2 = 16 \times 3 = 48$

48

E

Josh, Jaye, John

$24 \div \frac{1}{3} = 32$ why 1 multiplied by $\frac{1}{3}$ is because $32 \cdot \frac{1}{4} = 8$

$24 + 8 = 32$ And 8 is $\frac{1}{3}$ of 24

$32 \cdot \frac{1}{2} = 16$ why 1 multiplied by $\frac{1}{2}$ is because $\frac{1}{3} \cdot 48 = 16 + 16 = 32$

And 32 is $\frac{2}{3}$ of 48

checking answers: $48 \div \frac{2}{3} = 32 \div \frac{1}{4} = 24$

48 is the right answer

48

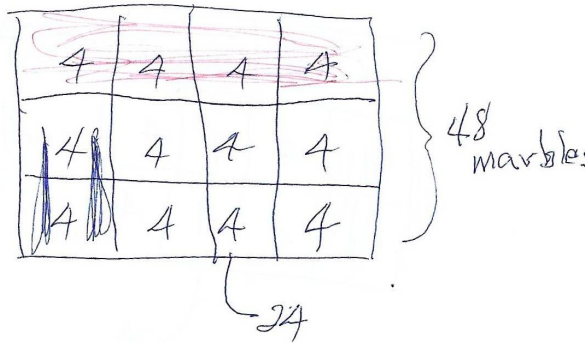
F

? of marbles

$$-\frac{1}{3} = \frac{2}{3}M = \frac{8}{12}M$$
$$-\frac{1}{4} = \frac{3}{4} \times \frac{8}{12} = \frac{1}{2} \text{ or } \frac{6}{12}$$
$$24 \times 2 = 48 = M$$
$$\frac{6}{12}M \times 2 = 11$$

G

gave away $\frac{1}{3}$
gave away $\frac{1}{4}$



H

$\frac{60}{1} \times \frac{2}{3} = \frac{120}{3} = \frac{40}{1} \times \frac{3}{4} = \frac{120}{4} = 30$	In	
$\frac{57}{1} \times \frac{2}{3} = \frac{114}{3} = \frac{38}{1} \times \frac{3}{4} = \frac{114}{4} = 28\frac{2}{4} = 28\frac{1}{2}$	60	
$\frac{54}{1} \times \frac{2}{3} = \frac{108}{3} = \frac{36}{1} \times \frac{3}{4} = \frac{108}{4} = 27$	57	2
	54	2
	51	2
	48	

Random stuff we found:
1. The output is half the ~~input~~ input / 2. The answer was multiple of 3 and 4 / 3. The numerator of, ~~input~~ input $\times \frac{2}{3} \times \frac{3}{4}$, was the same

12. Tues Dec 12