

Mystery Number Puzzle

2 December 2023

Jim Stevenson

$$\begin{aligned} \text{B} - \text{T} &= 1 \\ \text{B} \times \text{T} &= \text{S} \\ \frac{\text{B}}{\text{T}} &= \frac{1}{\text{S}} \end{aligned}$$

This is a slightly different mystery number puzzle from the December 2023 MathsJam Shout.¹ It provides a simpler puzzle as a respite from the more challenging problems.

Solution

For ease of typing, make some letter substitutions for the cartoons as shown in Figure 1. Then the three equations become

$$B - T = 1$$

$$B \times T = S$$

$$B / T = 1 / S$$

Then we have

$$B = T + 1$$

$$S = (T + 1) \times T$$

$$(T + 1) / T = 1 / (T + 1) \times T$$

Assuming $T \neq 0$, we have

$$(T + 1)^2 = 1 \Rightarrow T = 0, \text{ or } -2 \Rightarrow T = -2$$

Therefore, $B = -1$ and $S = 2$.

$$\begin{aligned} \mathbf{B} &= \text{B} \\ \mathbf{T} &= \text{T} \\ \mathbf{S} &= \text{S} \end{aligned}$$

Figure 1

© 2023 James Stevenson

¹ <https://mathsjam.com/shout/MJShout.pdf> (This link only provides the December version throughout the month.)