Breakout Box Set-up

Story (project on the board)

Hand out clues.

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| --- | --- | --- |
| Box | Contents | Lock |
| Hasp |  | DirectionalLeft, down, up, right |
| Hasp |  | 4-digit Lock$$2 1 6 4$$ |
| Hasp |  | 4-letter Lock (or 5-letter with space)M T O E |
| Largest | Stickers |  |

**4-digit Lock**

Pink paper: $x=-4$ and $x=6$; Add $-4+6=2$

Orange paper: $x=10, -5 (extraneous)$ and $x=9$; Subtract $10-9=1$

Yellow paper: $x=2$ and $x=3$; Multiply $2\*3=6$

Green paper: $x=8, -4 (extraneous)$ and $x=2$; Divide $8÷2=4$

Purple paper: $no solution$; This is a red herring (decoy).

**4-letter Lock (or 5-letter Lock with blank space at end)**

Pink paper: $6. f^{-1}\left(x\right)=3^{x-3}+2, 7. f^{-1}\left(x\right)=log\_{3}\left(x-3\right)+2$; Add $6+7=13$ (M)

Orange paper: $50. f^{-1}\left(x\right)=4^{x-5}, 30. f^{-1}\left(x\right)=log\_{4}(x-5)$; Subtract $50-30=20 $(T)

Yellow paper: $3. f^{-1}\left(x\right)=5^{x}+6, 5. f^{-1}\left(x\right)=log\_{5}x+6$; Multiply $3\*5=15$ (O)

Green paper: $75. f^{-1}\left(x\right)=7^{x}, 15. f^{-1}\left(x\right)=log\_{7}x$; Divide $75÷15=5$ (E)