BOARD NOTES

24 FEBRUARY 2020

2A.5 (B) formulate exponential and logarithmic equations that model real-world situations, including exponential relationships written in recursive notation;

2A.5 (D) solve exponential equations of the form $y = ab^x$ where a is a nonzero real number and b is greater than zero and not equal to one and single logarithmic equations having real solutions;

2A.5 (E) determine the reasonableness of a solution to a logarithmic equation.

We will be able to solve logarithmic equations by condensing the expression.

WHAT WE NEED:

- TI-84
- Laws of Exponents
- Definition of Exponential
- Definition of Logarithmic

I WILL BE ABLE TO COMPLETE MY HOMEWORK GIVEN THE

- Equation

Laws of Exponentials

$$a^m a^n = a^{m+n}$$

$$\frac{a^m}{a^n} = a^{m-n}$$

$$a^{-m} = \frac{1}{a^m}$$

If $a^m = a^n$ then $m = n$

Laws of Logarithms

$\mathrm{y} = \log_b x$ if and only if $b^y = x$

$y = \log x$ if and only if $10^y = x$

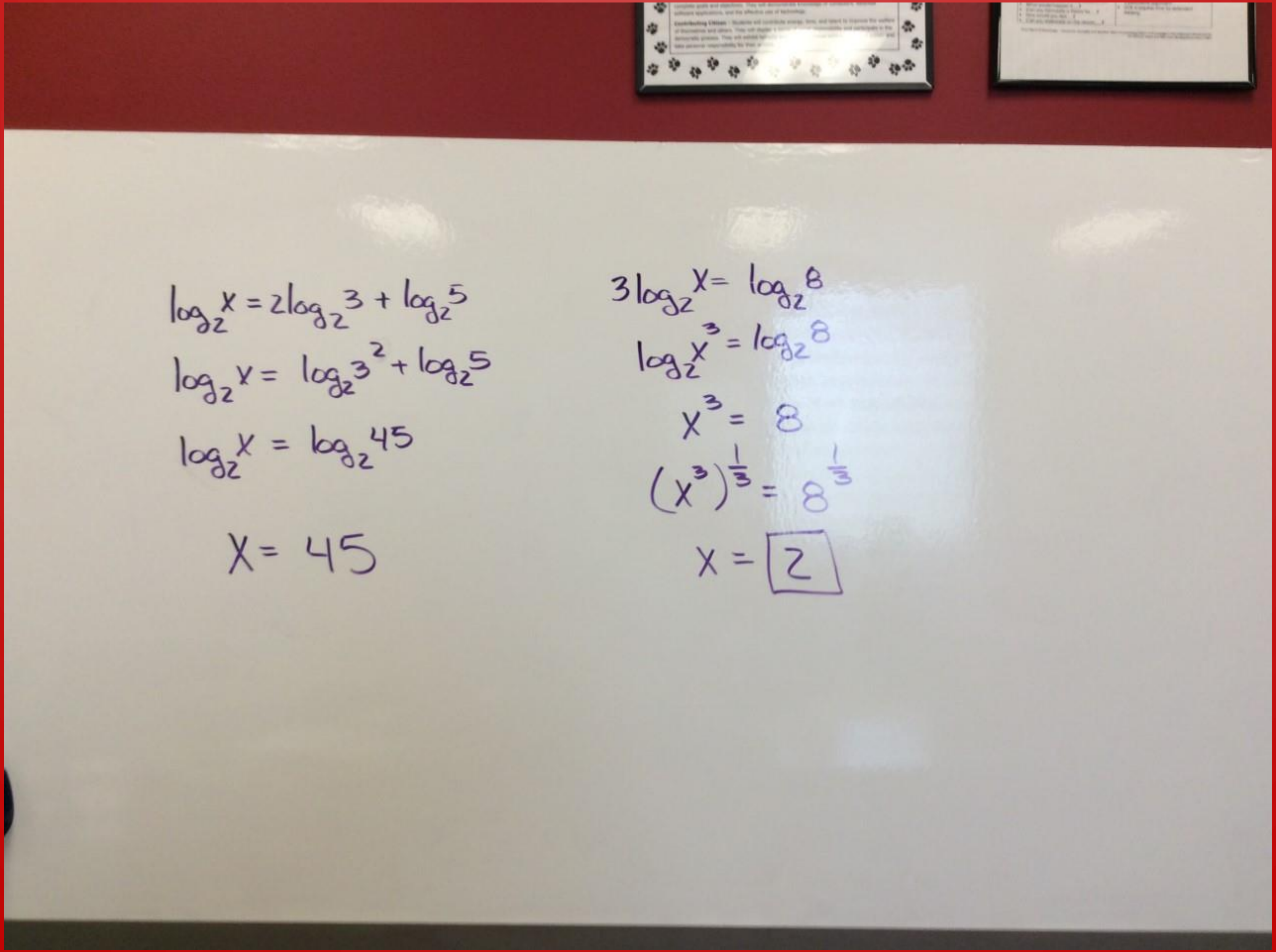
$y = \ln x$ if and only if $e^y = x$

$$\log_b MN = \log_b M + \log_b N$$

$$\log_b \frac{M}{N} = \log_b M - \log_b N$$

$$\log_b M^k = k \log_b M$$

If $\log_b M = \log_b N$ then $M = N$



$\log_2 x = 2\log_2 3 + \log_2 5$
$\log_2 x = \log_2 3^2 + \log_2 5$
$\log_2 x = \log_2 45$
$x = 45$
$3\log_2 x = \log_2 8$
$\log_2 x^3 = \log_2 8$
$x^3 = 8$
$(x^3)^{\frac{1}{3}} = 8^{\frac{1}{3}}$
$x = \boxed{2}$

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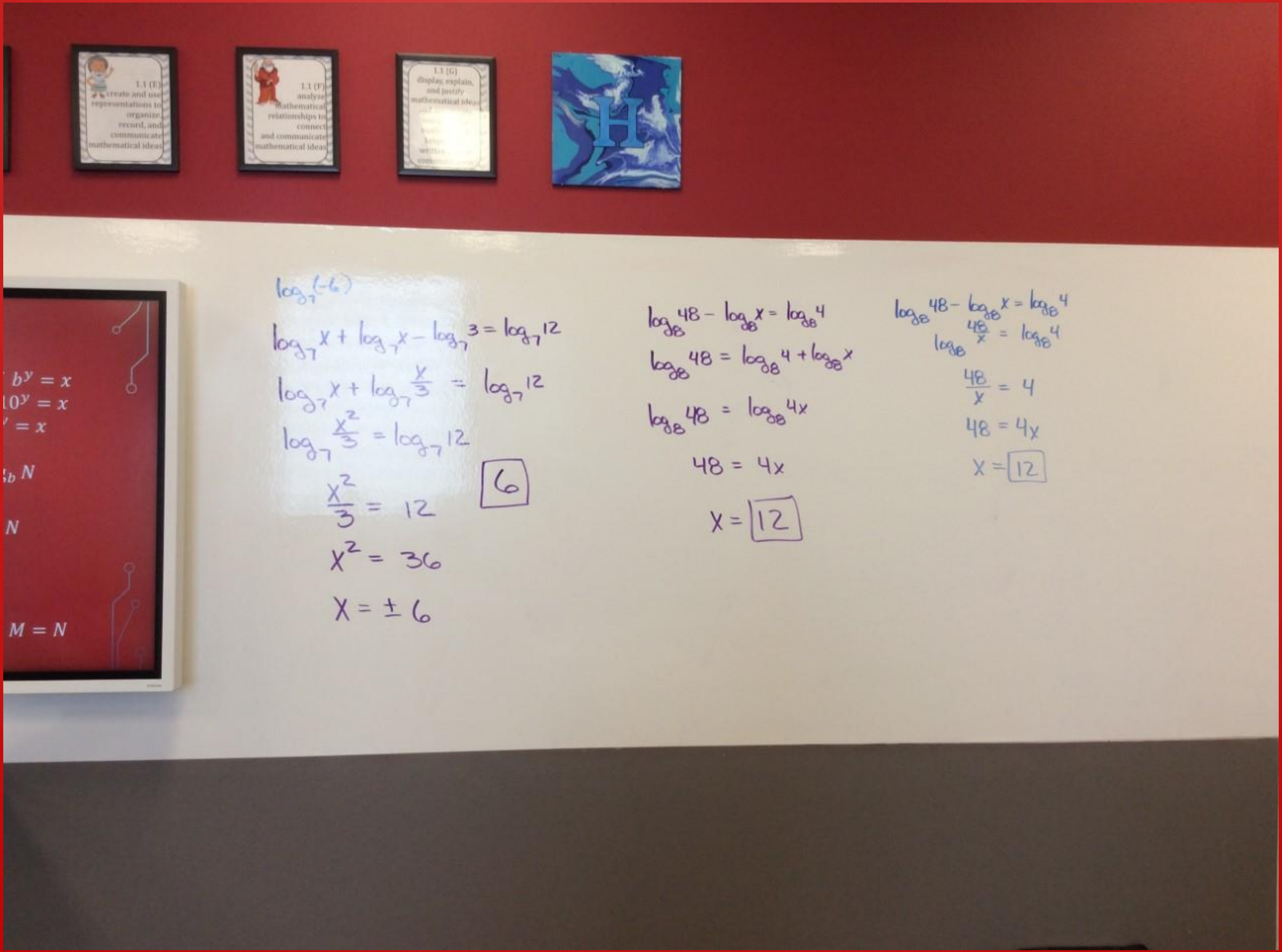

308

days till Xmas

$$\log_7(3x+5) = \log_7(8x-12)$$

$$3x+5 = 8x-12$$

$$5x = 17$$

$$x = \boxed{\frac{17}{5}}$$

$$\log_2(2x-1) - \log_2(x+5) = \frac{1}{2}\log_2 36 - 2\log_2 2$$

$$\log_2\left(\frac{2x-1}{x+5}\right) = \log_2 36^{\frac{1}{2}} - \log_2 \underbrace{2^2}_{4}$$

$$= \log_2\left(\frac{\cancel{6}^{\,3}}{\cancel{4}_{\,2}}\right)$$

$$\frac{2x-1}{x+5} = \frac{3}{2}$$

$$3x+15 = 4x-2$$

$$x = \boxed{17}$$

$\ldots_2 36 - 2\log_2 2$

$\ldots_2 36^{\frac{1}{2}} - \log_2 2^2$

$\ldots 6 \quad 3 \qquad 4$

$\ldots_2 \left(\frac{\cancel{6}}{\cancel{4}}\right)$

2

$\ldots 2$

$\log_7 (8(-2)+20) \qquad \log_7 (-2+6)$

$\log_7 4 \qquad \log_7 4$

$\log_7 (8x+20) = \log_7 (x+6)$

$8x + 20 = x + 6$

$7x = -14$

$x = \boxed{-2}$