NAME _____________________

ALGEBRA 2

QUIZ #14

Concepts & Procedures 1 = ___ ___ = Critical Thinking
Rational Expressions

Concepts & Procedures 2 = ___ ___ = Communicate Reasoning
Constructing Models = ___ ___ = Creativity
___ = Collaboration

Concepts & Procedures 1
1-3) Simplify & chose the appropriate domain for the list offered at the right.

1. \( \frac{6x+24}{6} \)
2. \( \frac{x^2+x-30}{3x-15} \)
3. \( \frac{x^2-36}{x^2-6x} \)

- All Real Numbers
- \( x \neq 5 \)
- \( x \neq 15 \)
- \( x \neq 0, x \neq 6 \)
- \( x \neq 0, x \neq 5 \)

4. Which expressions are equivalent?

A) \( \frac{6w+7p}{18} \)
B) \( \frac{11}{6} \left( \frac{2w+14p}{11} \right) \)
C) \( \frac{8w}{3} + \frac{14p}{6} - \frac{7w}{3} \)

Concepts & Procedures 2
5-7) Solve

5. \( \frac{x+2}{14} = \frac{x}{x+5} \)
6. \( \frac{h}{6} + \frac{h}{5} = 1 \)
7. \( 0 = \frac{g-7}{g-10} \)
Constructing Models
8. Julio paves a driveway in 7 hours. Zach does the same job in 9. How long would it take them complete pave driveway together?

9-11) It cost Blanca $1500 to start her backpack making business. It also cost her $10 to make each backpack. Write an equation that relates the Cost, C, to the number of Backpacks, b. Then graph your equation for a domain [0, 100] and offer three points that serve as solutions to your equation.

9. C(b) = _________________

10. _________________

11. | b | C(b) |
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Critical Thinking
12. For the diagram below, the smaller interior rectangle has a length that is 3 units longer than its height. The larger rectangle is four times taller than the smaller. Its length is 6 units longer than twice the height of the smaller, as shown. Show that the ratio of the larger area to the smaller will always be 8.

\[
\frac{\text{Larger Area}}{\text{Smaller Area}} = = 8
\]
Communicate Reasoning

13. Kayla noticed that for all work problems of the form, \( \frac{x}{a} + \frac{x}{b} = 1 \), the solution is always the quotient of the product of \( a \) & \( b \), and the sum of \( a \) & \( b \): \( x = \frac{ab}{a+b} \)

Explain why you agree or disagree with Kayla.

Creativity

14. Write the equation of a logarithmic function that has an asymptote of \( x = 3 \) and an \( x \)-intercept of \( (0, 4) \). Then graph your equation.

\( f(x) = \) __________________________