Name: _____ **Hour:** _____ **Date:** _____ **8.1-8.3 Practice Quiz**

Practice Quiz - Inverse Variation and Graphs of Rational Functions

____ 1. It takes a train 8 hours to travel from Capital City to Johnson City when it travels at a speed of 65 mi/h. How long would it take the train to go the same distance when it travels 40 mi/h?

a. 13 h
c. $\frac{13}{8}$ h
b. 11 h
d. $\frac{8}{13}$ h

____ 2. The price per person of renting a bus varies inversely with the number of people renting the bus. It costs $15 per person if 44 people rent the bus. About how much will it cost per person if 71 people rent the bus?

a. $9.30 b. $24.20 c. $208.27 d. $6.21

____ 3. The wattage rating W (in watts) of an appliance varies jointly with the square of the current I (in amperes) and the resistance R (in ohms). If the wattage is 6 watts when the current is 0.2 ampere and the resistance is 150 ohms, find the wattage when the current is 0.3 ampere and the resistance is 300 ohms.

a. 180 watts
c. 27,000 watts
b. 90 watts
d. 27 watts

4. The variables x and y vary inversely. Use the given values to write an equation relating x and y.

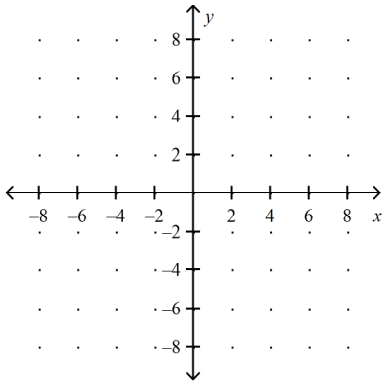
$x = 7, y = -4$

5. Use the given values to write an equation relating x, y, and z given that z varies jointly with x and y.

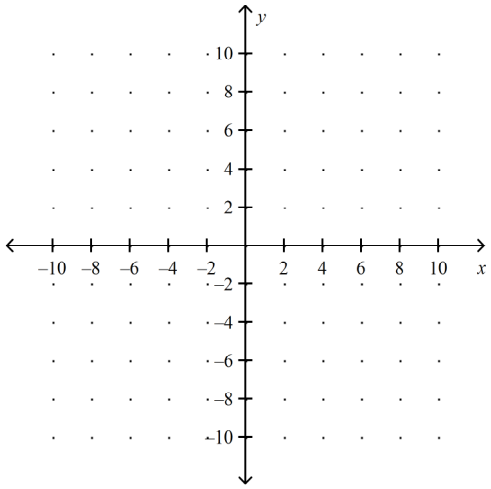
$x = 3, y = 2, z = 2.4$

6. The intensity I (in foot-candles) of light received from a source varies inversely with the square of the distance d from the source. If the light intensity is 5 foot-candles from 16 feet, find the light intensity from 19 feet. Round your answer to the nearest hundredth, if necessary.

7. Sketch the graph of the function. Include any vertical or horizontal asymptotes. $y = \frac{5}{x+2}$



8. Sketch the graph of the function. Include any vertical or horizontal asymptotes. $f(x) = \dfrac{3x+2}{x+2}$



9. You are selling T-shirts for a fundraiser. The cost of making the designs and buying blank T-shirts is $425. In addition to these one time charges, the cost of printing each T-shirt is $1.75. Let x represent the number of T-shirts that are printed. Write a model that represents the average cost per T-shirt. Then graph the model. Be sure to number and label your axes.

10. If they exist, identify the x-intercept(s) and the vertical and horizontal asymptote(s) of the graph of the function. Then sketch the graph.

a. f(x) = $\dfrac{2x}{x^2-1}$

x-int:_____

VA:_____

HA:_____

b. f(x) = $\dfrac{x^2+11x+18}{2x+1}$

x-int:_____

VA:_____

HA:_____

c. f(x) = $\dfrac{x^2-5x-36}{3x}$

x-int:_____

VA:_____

HA:_____