Math 3 Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1-4 Practice



1.

1. Because this is a scenario where something is **continuously** growing exponentially, which formula from section 1-2 should we use?
2. What function gives the projected value of the painting at any time *t* years after its purchase?
3. How long should the museum expect it to take before the value of the painting doubles?



2.

1. Whenever we have a situation where something is exponentially decaying continuously (as is the case when medicine is being metabolized by the body), we can use the formula  but *r* will be negative. The *r* value needs to be the percentage written as a decimal of the substance that is being lost (or removed from the body). What will the r value be in the above scenario?
2. Find the function that gives the amount *A(d)* of 100 milligrams of the steroid remaining after d days.

*Note: You know that you are starting with 100 milligrams, use the r value from 2a, and we replace t with d in the formula given in 2a.*

1. An athlete puts some steroid cream on his body. How long will it take for the athlete’s body to metabolize the steroid to a level that is only 1% of the original amount?

3.

1. What function with the rule in the form of matches the population figures for 2000 to 2009? Round the r value to six decimal places.

*Hint: you must find r using the formula above and information that you have. Show your work*

1. When will the population reach 350 million?

4. Radioiodine is a radioactive isotope that has a half-life of approximately 8 days.

1. Find a formula in the form for the amount of radioiodine at any given time *t* (measured in days). Round the r value to six decimal places.

*Hint: Use any starting amount that you want and keep in mind that you will have exactly half of that amount after 8 days. Use the formula to find the r value for your formula. Once you know the r value you can write a formula that can be used to figure out how much radioiodine is left after t days.*

1. If you have 200 mg of radioiodine right now, Use the formula to determine how much radioiodine would you have in 8 days.

*Note: This is forcing you to make sure your formula that you found in 4a actually works. You may not have exactly half left due to rounding, but it should be close.*

1. If you have 1,000 mg (or 1 gram) of radioiodine right now, Use the formula to determine how many days it would take to have exactly 5 mg of radioiodine left.