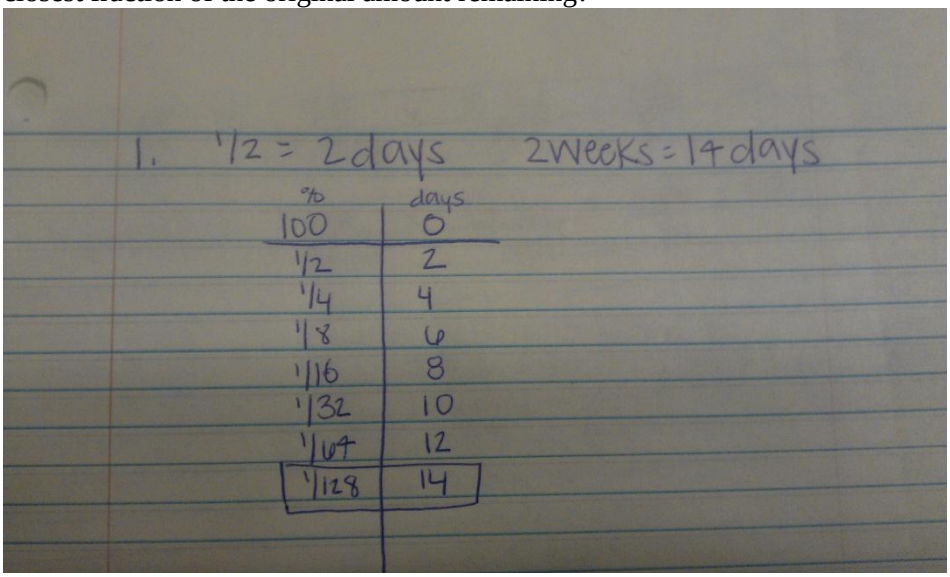
NAME:_____

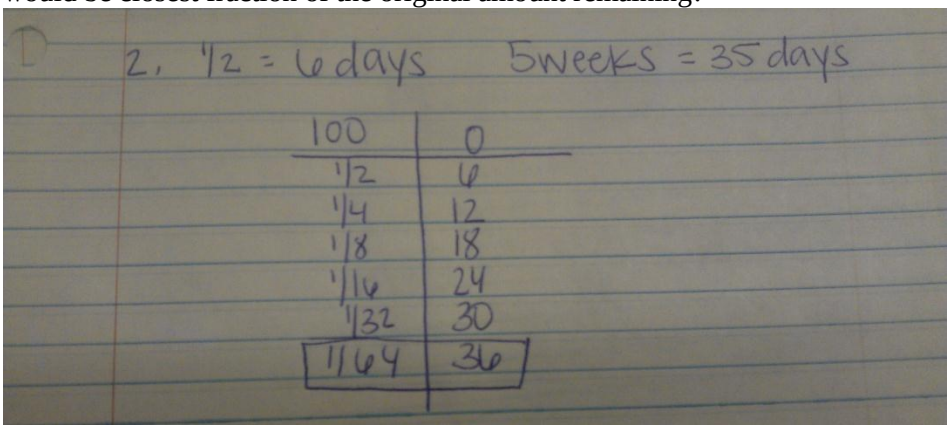
FINAL EXAM MATH REVIEW
REMEMBER ALWAYS SHOW YOUR WORK

HALF LIFE

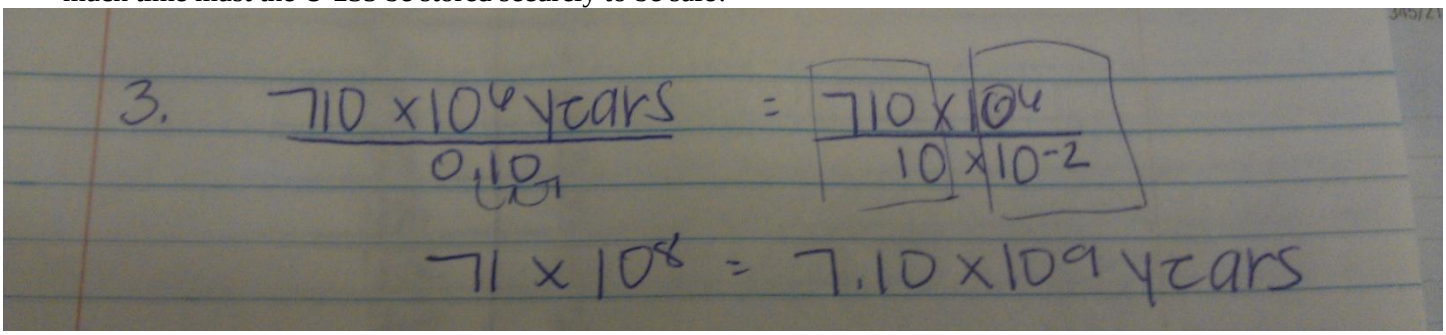
1. The half-life of boron is approximately 2 days. 2 weeks later, the amount of boron was measured. What would be the closest fraction of the original amount remaining?



2. The half-life of uranium is about 6 days. Approximately 5 weeks later, the amount of uranium is measured. What would be closest fraction of the original amount remaining?

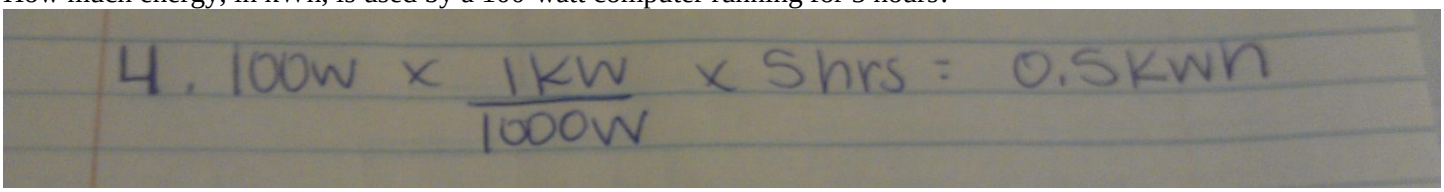


3. Uranium-235 has a half-life of 710 million years. If it is determined that a certain amount of stored U-235 will be considered safe only when its radioactivity has dropped to 0.10 percent of the original level, approximately how much time must the U-235 be stored securely to be safe?

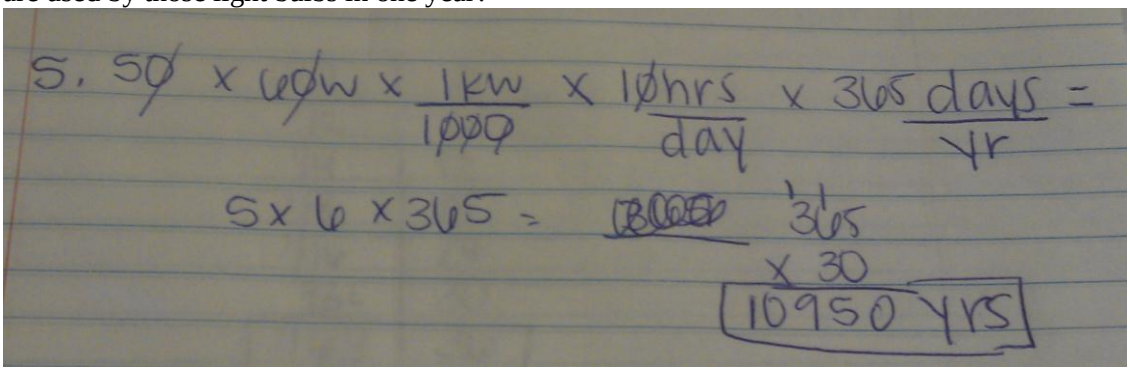


ENERGY

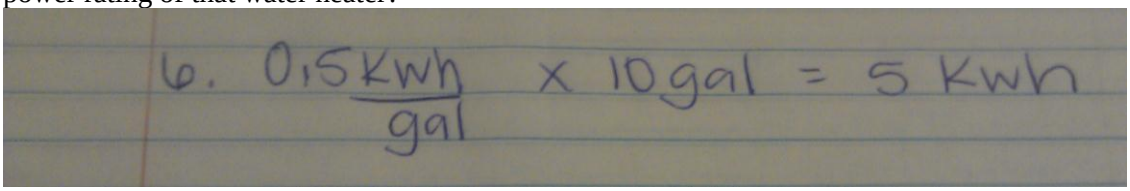
4. How much energy, in kWh, is used by a 100-watt computer running for 5 hours?



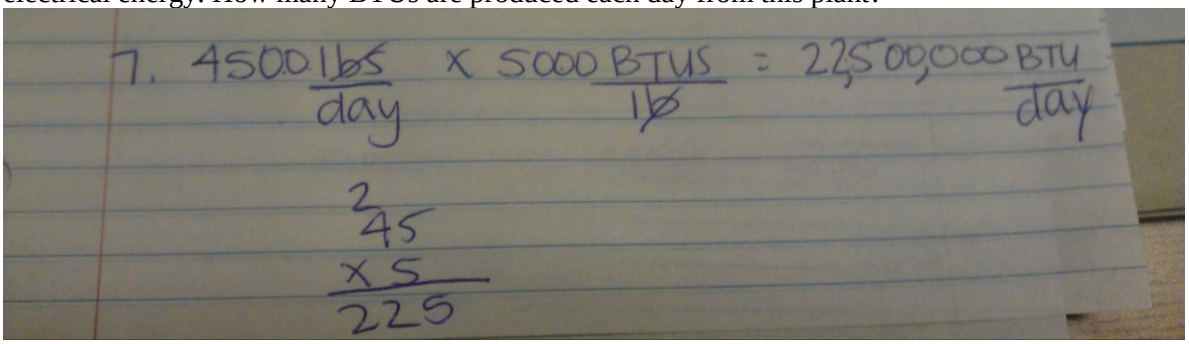
5. A home uses 50, 60 watt light bulbs for 10 hours a day. Approximately how many kilowatt-hours of electrical energy are used by those light bulbs in one year?



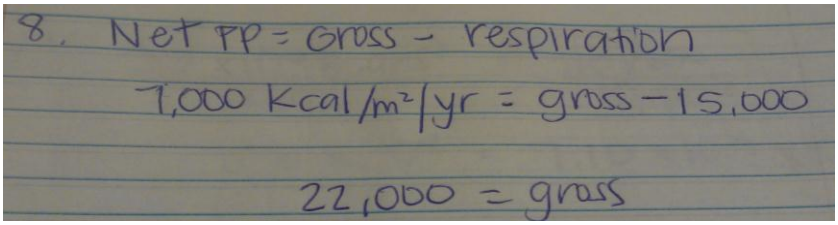
6. A hot water heater requires .5 kWh/gallon of water it heats. If a typical shower uses 10 gallons of water, what is the power rating of that water heater?



7. A typical coal-burning power plant uses 4,500 lbs of coal per day. Each pound of coal produces 5,000 BTUs of electrical energy. How many BTUs are produced each day from this plant?



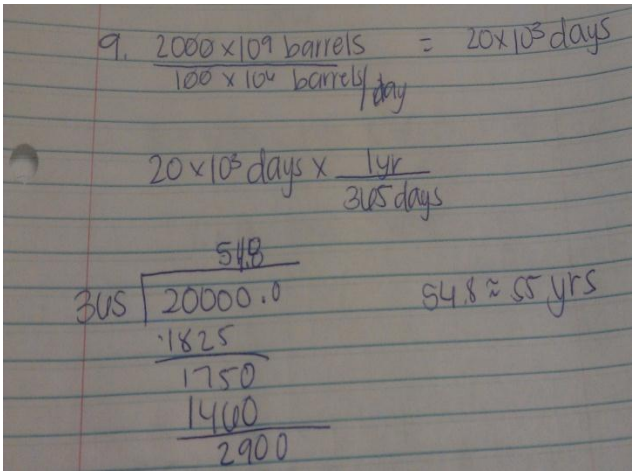
8. The net primary productivity of a particular rain forest ecosystem is found to be 7,000 kcal/m^2/yr. If respiration by the producers is 15,000 kcal/m^2/yr., what is the gross primary productive for this ecosystem?



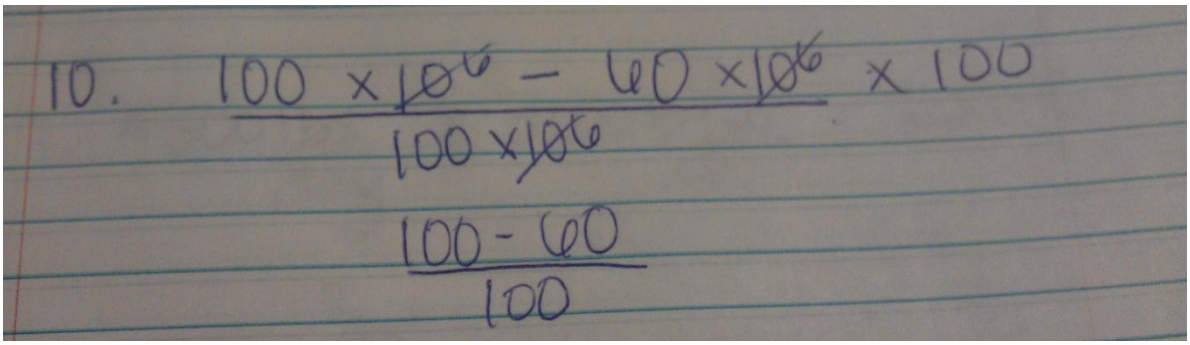
RATES AND PERCENTS

YEAR	CONSUMPTION (million barrels per day)
1980	60
1981	61
1982	63
1983	65
1984	66
1985	67
1986	67
1987	67
1988	70
1989	72
1990	75
1991	100

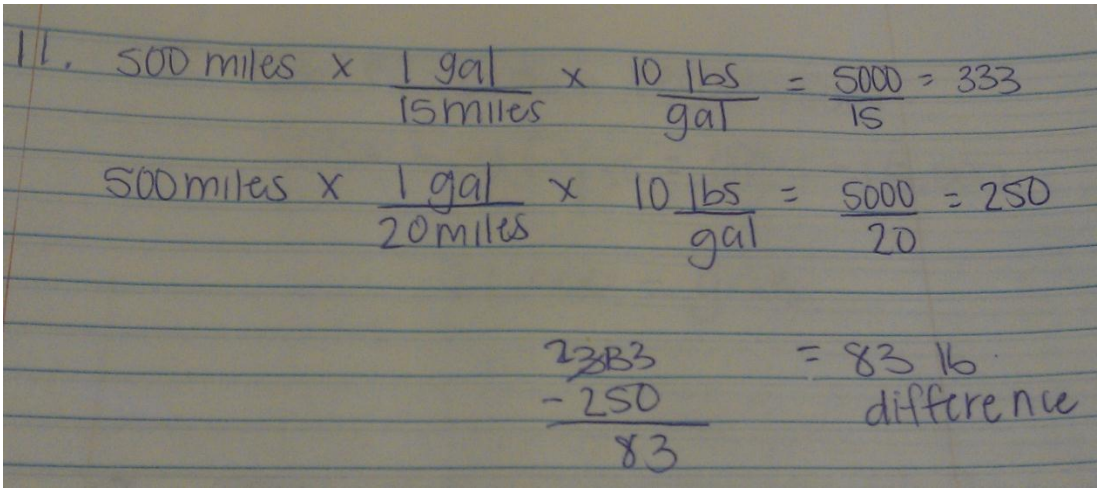
9. If the US has an oil reserve of 2,000 billion barrels and it continues to use oil at the 1991 rate, ABOUT how many YEARS will the oil last?



10. What was the approximate percent increase in consumption from 1980 to 1991?



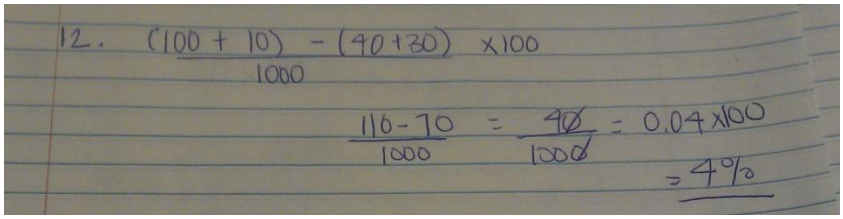
11. The combustion of one gallon of automobile fuel produces about 10 pounds of carbon (in CO_2). Two autos are making a trip of 500 miles. The first auto gets 15 miles per gallon and the second gets 20 miles per gallon. Approximately how much <u>less</u> carbon (in CO_2) will be produced by the second auto on this trip?



PERCENT GROWTH RATE

$$\frac{\text{(Crude birth rate + immigration rate) – (Crude death rate + emigration rate)}}{\text{Total population}} \times 100 = \%\ \text{Growth rate}$$

12. If a population of 1000 experiences 100 births, 40 deaths, 10 immigrants, and 30 emigrants, what is the population growth rate?



13. If a population of 10,000 experiences 10 births, 15 deaths, 5 immigrants, and 35 emigrants, what is the population growth rate? .