As you work on this practice exam, keep a running "don't forget" list of any information you need to look up or ask about.

Practice exam 1 – IN-CLASS VERSION

Relax. You have done problems like these before. Even if these problems look a bit different, just do what you can. If you're not sure of something, please ask! You may use your calculator. Please show all of your work and write down as many steps as you can. Don't spend too much time on any one problem. Do well. And remember, ask me if you're not sure about something.

Problems	1	2	3	4	Subtotal	+DQ	Total	Grade
Points							%	
Out of	30	35	15	20	100	(max 5)		

1. Arva and Ellie began hiking at an elevation of 1,500 feet and climbed at the steady rate of 600 vertical feet per hour.

   (a) Make a table showing their elevation after 1 hour, 2 hours, and 5 hours.

   (b) Name the variables, including units.

   (c) Explain the dependence using a sentence of the form "___ is a function of ___."

   (d) Is the function increasing or decreasing?

   (e) How long does it take them to reach 5,300 feet up? Try to figure out the answer in hours and minutes (H:MM format).

2. The table shows Henry's weight as a baby.

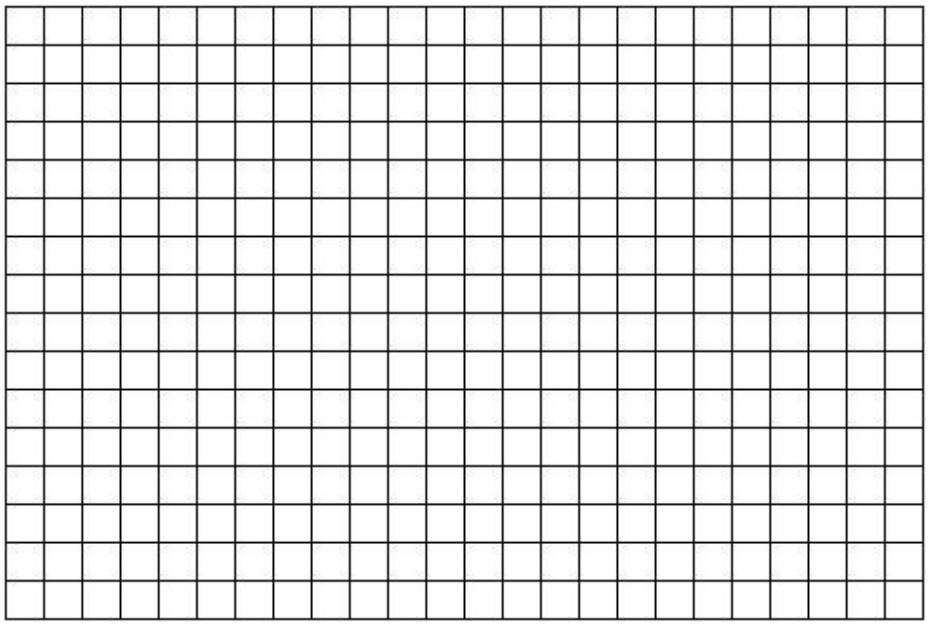
Age (weeks)	0	12	15
Weight (pounds)	8	14	16

(a) How much weight did Henry gain, on average, each week during his first 12 weeks?

(b) During which time interval was Henry gaining weight faster? *Explain.*

(c) Identify the variables, including units and dependence.

(d) Draw a graph illustrating the dependence. Choose a scale that shows up to 20 weeks and 20 pounds.



(e) What might you guess for Henry's weight at 20 weeks?

3. Pramesh's new car used 20.5 gallons of gas for a 715 mile trip.

   (a) How many miles per gallon (mpg) does his car get?

   (b) At that rate, how many gallons of gas would Pramesh use on his 3,200 mile cross-country trip?

   (c) If gas costs \$3.799/gallon, how much will gas for that trip cost?

4. Ndwiga is reading an article in the paper about atoms. From his physics textbook he discovered that the size of an atom is .142 nanometers. (That's 0.142 nanometers.)

   (a) Write the size of an atom in meters. Use 1 meter = 1,000,000,000 nanometers. Write your answer in usual decimal notation and in scientific notation.

   (b) Ndwiga would like to know how many atoms across this sheet of paper which is 8.5 inches wide. Use that 1 inch $\approx$ 2.54 cm and 1 meter = 100 cm. Express your final answer in billions of atoms.

Try taking this take-home version of the practice exam under testing conditions: no book, no notes, no classmate's help, no electronics (computer, cell phone, television). Give yourself one hour to work and wait until you have tried your best on all of the problems before checking any answers.

Practice exam 1 – TAKE HOME VERSION

Relax. You have done problems like these before. Even if these problems look a bit different, just do what you can. If you're not sure of something, please ask! You may use your calculator. Please show all of your work and write down as many steps as you can. Don't spend too much time on any one problem. Do well. And remember, ask me if you're not sure about something.

Problems	1	2	3	4	Subtotal	+DQ	Total	Grade
Points							%	
Out of	18	32	28	22	100	(max 5)		

1. The amount of money spent on nursing home care for seniors has continued to rise. The table shows the values for select years. Here S is the spending, measured in billions of dollars and Y is the year, measured in years since 1960.

Y	0	10	25	40	52
S	1.0	3.3	33.7	96.6	170.3

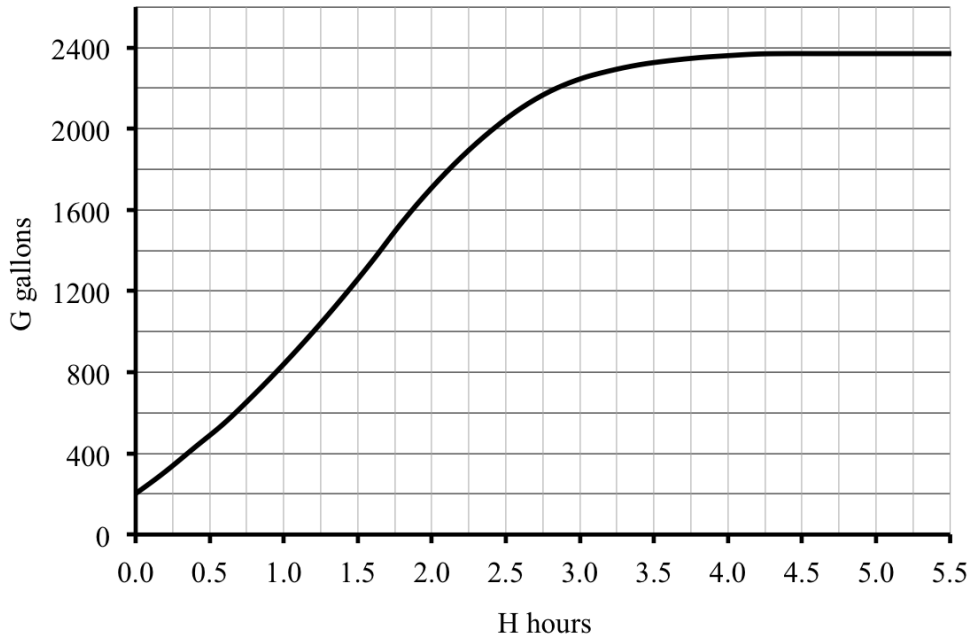
(a) According to the table, what was the spending in 1970?

(b) According to the table, what was the spending in 1985?

(c) Calculate the rate of change of spending over the period 1970 to 1985. Don't forget to state the units.

(d) In approximately what year did spending first pass \$50 billion?

2. Trish is filling a swimming pool with water. The graph below shows how many gallons of water (G) are in the pool after H hours. Use the graph to answer the following questions.



(a) How much water was in the swimming pool already when Trish began?

(b) How much water was in the swimming pool after 3 hours?

(c) After how many hours were there 1,000 gallons of water in the swimming pool?

(d) Was Trish filling the pool faster at 2 hours or at 2.5 hours? Explain how you see that on the graph.

(e) After (about) how many hours did Trish stop filling the swimming pool? Explain how you see that on the graph.

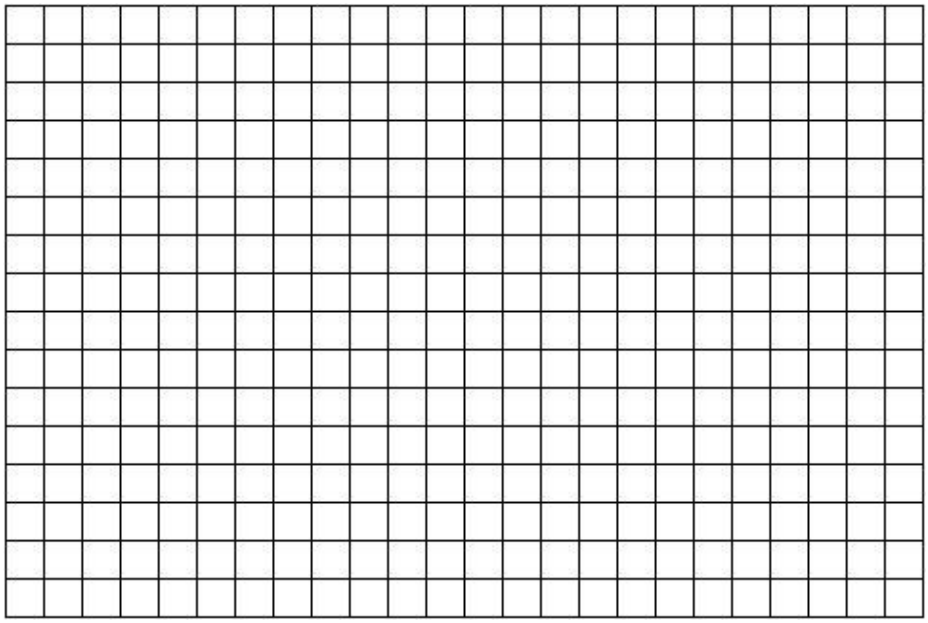
3. In 1990 the Lefèvre's property tax was \$450 but it doubled every year thereafter.

   (a) Name the variables, including units.

   (b) Which is the independent variable and which is the dependent variable?

   (c) Make a table showing the property tax each year from 1990 to 1994.

   (d) Draw a graph illustrating the dependence.



4. The distance from the Earth to the Moon is approximately 384,000,000 meters.

   (a) Express this distance in scientific notation.

   (b) Express this distance in kilometers (km), using 1 km = 1,000 meters.

   (c) Express this distance in miles, using the conversion 1 mile $\approx$ 1.609 km.

   (d) If you could drive to the moon at 55 mph, how long would it take to get there? Express your answer in terms of months, using 1 month $\approx$ 30 days.