

Math 137 Exam 2 Review  
Chapters 8-11

NAMES:

Show your work. Be sure to include appropriate units.

1. (3) My faucet runs at a rate of 5 gallons a minute. How many gallons a second is that?

2. (10) Maggie takes three of her friends on a car trip. They travel 535 miles. Their gas averaged \$2.05 per gallon. Their car has a gas mileage of about 35 miles per gallon. They drove for a total of 8 hours. Find the following.

a.) Number of gallons used

b.) Total cost of gas

c.) Passenger-miles

d.) Total cost per passenger-mile

e.) Average speed in miles per hour

3. (3) Consider the trip that Maggie and her friends took in the last question. In general, it is estimated to cost about 23 cents per mile to drive a car due to wear-and-tear (not including the gas). If she and her three friends want to share this cost for the trip, how much should each friend pay Maggie (not including that friend's portion for gas)?

4. (4) Kay wants to buy a new gas fireplace insert to replace her use of wood. She would normally burn two cords of wood in the winter. Wood costs \$250 per cord. She would like to know how much she can save by burning gas instead. Gas costs \$0.91 per 100,000 BTU. The fireplace insert would burn 33,000 BTU per hour. Kay figures she would need to turn on the fireplace for 5 hours per day for 120 days. The cost of installing the gas insert is \$120. How much will she save if she makes the switch? Show your work and include units along the way.

5. (12) Convert from metric to English or vice versa as indicated. The only metric-to-English conversions you are allowed to use are 1 meter equals 3.281 feet and 1 gallon equals 3.79 liters. Of course, you may use any English-to-English conversions such as 1 mile equals 5,280 feet and any metric-to-metric conversions such as 1,000 meters equals 1 kilometer.

a.) 35 m to feet

b.) 170 feet to meters

c.) 150 mi to kilometers

d.) 4 ft to centimeters

e.) 5 gallons to liters

f.) 16 L to quarts

6. (4) Your speedometer is broken. You notice it takes you 48 seconds to travel between one mile marker and the next on the highway. What is your speed in miles per hour? If the speed limit is 65, are you speeding?

7. (3) Find the sum of the numbers below.

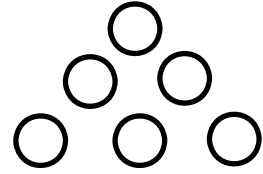
$$1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 + \dots + 24 + 25$$

8. (3) Use estimation to find a quick answer to the question.

The city of Amberville has 33,542 citizens and it needs to build winter weather shelters. It wants to use a similar city to estimate the number of cots it needs. Their sister city has 52,678 citizens and has gotten by with 2,000 cots in its emergency shelters. How many cots should the city of Amberville provide? Show your work and explain your answer.

9. (4) Use physical manipulatives to solve this problem

Here is a magic triangle. The sum of the digits forming each side of the triangle is 11. Use the digits 1, 2, 3, 4, 5, and 6 (once each) and find the proper locations for each.



10. (3) I am thinking of a number. I multiplied my number by 3, subtracted 8, doubled the result, and added 14. Then I added on 50% of what I had and subtracted 11. Then I divided by 5. After all that, I was left with 8. What number did I start with?

11. (4) My two sisters pooled their savings and decided to go on a shopping spree. They started at Macy's and each bought a pair of jeans and a shirt, spending \$50 each. Next they went to a shoe store and one bought a pair of shoes for \$66 while the other spent \$47 on a pair. The older sister then spent \$27 on makeup. They were hungry and so spent  $\frac{1}{4}$  of what they had left on lunch. They then stopped by the music store and bought 2 CDs for \$14 each. They spent half of what they had left on a gift for mom. On the way home, they spent \$20 on gas. When they got home, they split up the remainder of the money and they each had \$6. How much did they spend?