

MA 138 Exam Two Review Problems

Note: This is NOT a practice exam. It is a collection of problems to help you review some of the material for the exam and to practice some kinds of problems. This collection is not necessarily exhaustive; you should expect some problems on the exam to look different from these problems.

In addition to redoing past homework problems and looking at past quizzes, consider trying the following problems:

Textbook page 433: 3, 5, 6 (by hand), 9, 16, 17, 19, 20 (answers are in the back of the book)

1. Express each of the following decimal numbers as fractions in simplest form.
 - a. 0.375
 - b. $0.\overline{375}$
 - c. $2.0\overline{85}$
2. The ratio of minority students to non-minority students in a given school is 2 to 5.
 - a. If the school has 420 non-minority students, how many minority students does it have?
 - b. If the school has a total population of 420 students, how many minority students does it have?
3. Write each number as a percent:
 - a. $\frac{1}{8}$
 - b. 0.647
 - c. 2.18
 - d. 0.006
4. If a five-pound turkey takes $2\frac{1}{4}$ hours to cook, how many hours to the nearest tenth should be required to cook a six-pound turkey?
5. Determine each answer to the nearest tenth:
 - a. 32 is what percent of 85?
 - b. What is 14.3% of 62?
 - c. 65 is 18% of what number?
6. A pair of earrings has an original price of \$65, but is on sale at 45% off. The state sales tax is 5%. Joe has been saving money for months to buy the earrings for his mom's birthday. Joe figured that 45% **off**, plus 5% tax **added** would work out to be a net of 40% off the price. So he was ready to pay \$39 for the earrings. To his surprise, he paid less than \$39!
 - a. Explain why.
 - b. How much money to the nearest cent did Joe actually pay?
 - c. Should Joe spend the leftover money on a large Orange Julius, or should he use it to buy his mom a nice card?
7. Which is a better buy, 1 gallon of milk for \$1.98 at the grocery store, or 12¢ for a half-pint of milk at school? (One gallon is 128 ounces, and one pint is 16 ounces.)

8. Studies into pay rates show that on average, women earn 75% of what men earn for comparable work. One option for equalizing pay that is sometimes suggested is to give women a 25% raise—that is, increase their current pay by 25%. Make up some specific examples to explore whether this option would really equalize the pay.
9. Eric’s goal for this year is to contribute $\frac{1}{10}$ of his earnings to charity and save $\frac{1}{10}$ for education expenses. Approximately $\frac{1}{3}$ of his total earnings go toward taxes. What percent of his salary is left for living expenses?
10. Consider this situation: “Twelve pages of space in the school newspaper are shared evenly by five student organizations. How many pages does each organization get?
 - a. Is this an example that illustrates the sharing conception or the measurement conception of division?
 - b. Find the answer. Interpret the answer in the context of the problem. How does the remainder come into play?
11. Mary Ann put 16.3 gallons of gas in her car, and paid a total of \$26.41. What was the price per gallon of the gas?
12. A sticker on a gas pump states: “The price shown includes 37.5¢ in taxes.” If the price shown is \$1.729, what percent of the price is tax?
13. One recipe for granola makes six servings and requires $\frac{2}{3}$ cup of sugar. A similar recipe makes eight servings and uses $\frac{3}{4}$ cup of sugar. Which recipe has more sugar per serving? Assume that the servings are the same size.
14. Laura has a *hit to at-bat* record described by the ratio: $\frac{\text{number of hits}}{\text{number of at-bats}}$ or $\frac{h}{b}$.
 If she gets a hit each of her next three times at bat,
 - a. What will her hit to at-bat record be? (Write it as an expression using h and b .)
 - b. Does her hit to at-bat ratio increase, stay the same, or decrease? Explain your reasoning. (*HINT*: Try some specific numbers and see what pattern you see. Then try to explain the reasons behind the pattern.)
15. In 2002, the Indiana sales tax changed from 5% to 6%. Proponents of the change held the view that a **1% increase** in tax had a small impact on individuals but greatly increased revenue. Critics of this increase decried the change by claiming it represented a **20% increase** in tax!
 - a. Calculate the amount of sales tax paid under the old and new rates for a \$1500 item.
 - b. Including tax, what is the total cost of the \$1500 item under the old and new tax rates? What is the difference in cost?
 - c. The percent increase is defined as the ratio: $\frac{\text{increase}}{\text{original amount}}$. With the change in tax rate, what is the percent increase in total cost for the \$1500 item? What is the percent increase in tax paid?
 - d. In what sense are the opponents of the increase correct in saying it is a 20% increase? In what sense is this statement misleading?