

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.

Section 6.1

Textbook p 433 # 3abc, 4 – answers are in the back of the text

1. Rewrite the following three numbers in order from smallest to largest. Give a brief explanation of how you decided the correct order.

0.45 $0.4\bar{5}$ $0.\bar{45}$ Correct order: _____

ANSWERS Section 6.1

1. 0.45 $0.\bar{45}$ $0.4\bar{5}$

Section 6.2

Textbook p 433 # 3, 5, 6, 17

1. Express each of the following decimal numbers as fractions in simplest form.

a. 0.375 b. $0.3\bar{75}$ c. $2.0\bar{85}$

ANSWERS Section 6.2

1. Express each of the following decimal numbers as fractions in simplest form.

a. $\frac{3}{8}$ b. $\frac{62}{165}$ c. $\frac{1877}{900}$

Section 6.3

Textbook p 433 # 9, 16, 19, 20

1. The ratio of freshmen to upperclassmen in a given school is 2 to 5.

- If the school has 420 upperclassmen, how many freshmen does it have?
- If the school has a total population of 420 students, how many freshmen does it have?

2. Write each number as a percent:

- $\frac{1}{8}$
- 0.647
- 2.18
- 0.006

3. 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?
4. Determine each answer to the nearest tenth:
- 32 is what percent of 85?
 - What is 14.3% of 62?
 - 65 is 18% of what number?
5. 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!
- Explain why.
 - How much money to the nearest cent did Joe actually pay?
 - Should Joe spend the leftover money on a large Orange Julius, or should he use it to buy his mom a nice card?
6. 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.)
7. 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.
8. 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?
9. 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?"
- Is this an example that illustrates the sharing conception or the measurement conception of division?
 - Find the answer. Interpret the answer in the context of the problem. How does the remainder come into play?
10. 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?
11. 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?

12. 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.

13. Laura has a current *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, and taking into account her current record,

- What will her new hit to at-bat record be? (Write it as an expression using h and 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.)

14. 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!

- Calculate the amount of sales tax paid under the old and new rates for a \$1500 item.
- Including tax, what is the total cost of the \$1500 item under the old and new tax rates? What is the difference in cost?
- 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?
- In what sense are the opponents of the increase correct in saying it is a 20% increase? In what sense is this statement misleading?

15. The seventh-grade class voted to decide where to have their year-end picnic. Each student voted exactly once. The results were as follows: Mountain Park, 62 votes; State Beach, 96 votes; City Zoo, 82 votes. Draw a pie graph to illustrate this distribution.

16. The following table shows the grade distribution for the final examination in a math class.

Grade	Frequency
A	4
B	10
C	37
D	8
F	1

- Draw a bar graph for the data.
- List the central angle for each grade category that would be used in drawing a pie graph of the distribution.

ANSWERS Section 6.3

1. The ratio of freshmen to upperclassmen in a given school is 2 to 5.

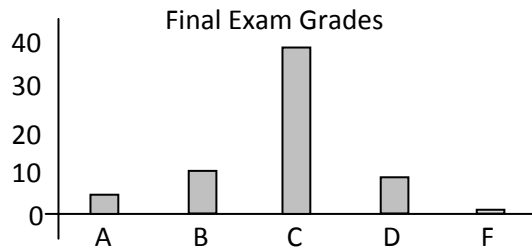
- a. If the school has 420 upperclassmen, how many freshmen does it have?
168 freshmen
- b. If the school has a total population of 420 students, how many freshmen does it have?
120 freshmen
2. Write each number as a percent:
- 12.5%
 - 64.7%
 - 218%
 - 0.6%
3. 2.7 hours
4. Determine each answer to the nearest tenth:
- 37.6%
 - 8.9
 - 361.1
5. a. The price is reduced by 45%, then tax is applied to the reduced price. Joe is assuming that the tax is on the original price, but it's not.
 b. He paid \$37.54.
 c. Joe should keep his mouth shut and enjoy the Orange Julius!
6. 12¢ for a half-pint of milk is a better deal.
7. Suppose men earn \$100. Then women earn \$75. With a 25% raise, women would actually earn \$93.75 (work it out!). You're giving a raise of 25% on top of only 75% of the men's pay. With the raise, women earn 93.75% of what men earn—it's closer to equality, but not there yet!
8. Eric has 46.7% of his pay for expenses.
9. Consider this situation: "Twelve pages of space in the school newspaper are to be shared evenly by five student organizations. How many pages of space does each organization get?"
- Sharing.
 - 2.4 pages each. (Which is the same as $2\frac{2}{5}$)
10. \$1.62 per gallon
11. 21.7% of the price is tax.
12. The first recipe has more sugar per serving.
13. 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,
- $\frac{h+3}{b+3}$
 - Unless her original ratio is 1:1 ($h=b$), the ratio increases. Can you see why?

14. In 2002, the Indiana sales tax changed from 5% to 6%. On a \$1500 item:

- a. Old tax: \$75 New tax: \$90
- b. Old total: \$1575 New total: \$1590 Difference: \$15
- c. The percent increase in total cost for the \$1500 item is 0.952%. Note that “original amount” in this ratio is \$1575. The percent increase in tax paid is 20%.
- d/ The increase in tax paid is 20%. Going from 5 to 6 is an increase in one out of five, which is 20%. However, the total amount paid for items does not increase by 20%, it actually increases by a little less than 1%.

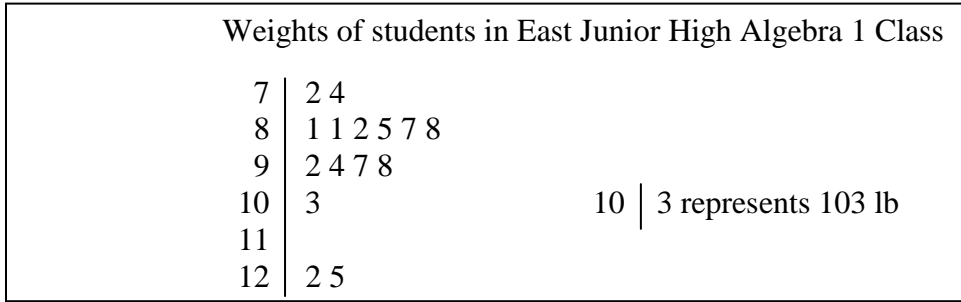
15. The pie graph should have the following central angles: 93° for Mountain Park; 144° for State Beach; and 123° for City Zoo. On the exam, I will NOT ask you to draw a pie graph, though I may ask for the central angles.

16. a.



- b. A: 24° B: 60° C: 222° D: 48° F: 6°

1. The following stem-and-leaf plot gives the weight in pounds of the students in the Algebra 1 class at East Junior High:



- a. How many students are represented?
 - b. Write the weights of the students?
 - c. What is the median weight of the students?
2. Draw a histogram based on the stem-and-leaf plot in the previous problem.

ANSWERS Section 7.1

2. a. 15 b. 72, 74, 81, 81, 82, 85, 87, 88, 92, 94, 97, 98, 103, 122, 125 c. 88 lb

3. Weights of students in East Jr. High Algebra 1 Class

