

PRACTICE PROBLEMS & PRACTICE PROBLEM IDEAS (THIS IS NOT MEANT TO BE AN EXHAUSTIVE LIST OF ALL THE TYPES OF PROBLEMS THAT MAY SHOW UP ON THE FINAL – JUST A SAMPLE.) Selected answers are on the last page.

1. Sketch complete fraction bars to show three fractions that are equivalent to $\frac{1}{2}$. Repeat for $\frac{2}{3}$, $\frac{3}{4}$. Carefully label your pictures.
2. Sketch complete fraction bars to show inequalities; pick several sets of fractions to compare.
3. Show division of a whole number by a fraction with a model. Label your work to clearly show the solution. Identify the division setting you are using.
4. Solve the Problem Opener from 5.2 and the extension:
Solve a similar problem for three people where each person eats $\frac{1}{4}$ of the remaining apples and the final number of apples is 27.
5. Solve the Problem Opener from 5.3 and the extension:
Solve the original problem if instead of $\frac{1}{2}$ the mother receives: a $\frac{1}{3}$, b. $\frac{1}{4}$, c. $\frac{1}{5}$.
6. Sketch fractions bars to illustrate sums, differences, products and quotients of fractions.
7. For the following fractions that CAN be written as **terminating decimals**; write each fraction as a decimal. Show your work. Use the procedure we learned in class. Do not skip any steps. For the following fractions that CAN NOT be written as a **terminating decimal**; explain why this is the case. $\frac{1}{250}$, $\frac{1}{12}$, $\frac{1}{50}$, $\frac{1}{32}$, $\frac{3}{300}$
8. Write the following as a fraction or explain why you cannot. Show your work. Use the procedure we learned in class. Do not skip any steps. 0.1313..., 0.351313...
Make up other examples to practice with.
9. Sketch Decimal Squares to illustrate sums, differences, products and quotients of decimals. Include mixed decimals such as 1.2×1.5
10. The ratio of local students to out-of-state students in a given school is 4 to 3. If the school has 490 students, how many are out-of-state students? Show your work.
11. Explain how to use a base 10 (Decimal Square) model to determine each of the three types of problems exemplified by: 35 is what percent of 140? What is 17% of 625? 195 is 130%, what is 100%?
12. Find missing lengths on right triangles given a and b but not c and given a and c but not b.

13. Look in your book and find data sets to use to practice sketching each of the following: Bar graph; pie graph; line graph; line plot; histogram; stem and leaf plot; box and whiskers plot and scatterplot (with trend line).
14. Use the graphs in the previous problem to analyze and make predictions about the data.
15. Look in your book and find data sets to use to practice computing mean, median, mode, standard deviation and z-scores. Sketch Box and Whisker plots.
16. Create data sets for which the best predictor is mean, repeat for median and for mode. Explain.
17. Create data sets for which the distribution is skewed left, repeat for skewed right and symmetric. Explain.
18. Look in your book and find normally distributed data sets to use to practice computing percents within certain standard deviations, percentiles, etc.
19. Suppose that the names of the days of the week are placed in a box and one name is drawn at random. What is the probability of drawing a day that starts with T? A M? A S? How about a T or an S? How about starts with T or less than 7 letters?
20. A jar has 1000 jelly beans, and you know that $P(\text{Blue}) = \frac{3}{5}$ and $P(\text{Red}) = \frac{3}{8}$. What is the probability that a jelly bean drawn at random is neither blue nor red? $P(\text{Blue})$? $P(\text{Red})$? $P(\text{not Blue})$?
21. A box contains 3 red balls, 5 black balls, and 4 white balls. Suppose that **ONE** ball is drawn at random. Find each of the following: Probability that a black ball is drawn, $P(B)$, how about $P(R)$, $P(W)$, $P(\text{not } W)$, $P(R \text{ or } B)$. Compute the odds in favor of each of the previous.
22. A box contains 3 red balls, 5 black balls, and 4 white balls. Suppose that **TWO** balls are drawn at random (without replacement). Find each of the following: Probability that a black ball and then a white ball is drawn, $P(\text{one black and one white})$, how about $P(\text{at least one red})$, $P(\text{yellow})$, $P(2 \text{ black})$?
23. If you toss 2 regular eight-sided dice, one white die and one red die and the pips on the dice are added: List all of the outcomes in the Sample Space and compute the probability of obtaining each of the possible sums and then compute probabilities such as $P(\text{sum at most } 8)$ and $P(\text{sum at least } 7)$.
24. Assume that a family wants to have 4 children; list all of the outcomes in the sample space and then compute the probabilities of each possible outcome (4

girls, 4 boys etc.). Then compute probabilities such as $P(\text{at most 2 girls})$ and $P(\text{at least 2 girls})$. Write corresponding odds statements and compute the odds.

25. I have 8 sweaters and I want to bring 4 of them on my trip. How many different ways are there to do this?

26. I have 8 sweaters that I want to give to 6 of my friends. How many different ways are there to do this?

27. There are 6 toppings and I want to pick 3 for my pizza. How many different ways are there to do this?