1. Use the array of dots to illustrate the equality \( \frac{2}{6} = \frac{1}{3} \).

\[ \bullet \bullet \bullet \bullet \bullet \quad \bullet \bullet \bullet \bullet \bullet \]

2. Determine an inequality for the following pairs of fractions. Also find a fraction in between the fractions in the pair.
   \[ \frac{3}{7} \quad \frac{5}{9} \quad \frac{3}{8} \quad \frac{1}{3} \]

3. A furlong equals 1/8 mile, and it is used for measuring distance on horse racetracks. If a horse runs 1 mile in 1 minute and 30 seconds, how long will it take the horse to run 6 furlongs at the same rate?

4. Use Fraction bars to find
   a. \( \frac{2}{3} \div \frac{1}{3} \)
   b. \( \frac{1}{3} \times \frac{3}{7} \)
   c. \( \frac{9}{12} \div \frac{1}{3} \)
   d. \( \frac{5}{6} - \frac{1}{4} \)

5. Perform the indicated operations without using Fraction Bars.
   a. \( 5\frac{1}{3} - 1\frac{1}{2} \)
   b. \( 2\frac{1}{3} \times 4\frac{2}{5} \)
   c. \( \frac{9}{12} \div \frac{1}{3} \)

6. Determine whether the given set is closed under the given operation. If not, give a counterexample.
   a. The set of fractions between -10 and 10 for subtraction.
   b. The set of positive fractions for division.
   c. The set of irrational numbers under division (subtraction)
   d. The set of rational numbers under multiplication.

7. Two antenna cables differ in length by 164 inches. The shorter cable is 1/3 of the length of the other. Samir needs 350 inches of antenna cable. If he splices the two cables together, will he have enough cable?

8. Find the decimal for \( \frac{7481}{10} \) and write the name of the decimal.

9. Use Decimal Squares to answer the following questions:
   a. \( 3 \times 0.65 \)
   b. \( 1.3 \times 1.4 \)
   c. \( .75 \div .15 \)
   d. \( .60 \div 5 \)

10. Write each of the following decimals as a fraction:
    a. 2.546
    b. 2.546
    c. 2.546
11. Jason has $6.50, and sliced ham is $2.79 for 1.2 pounds. How many pounds of ham to the nearest tenth can he buy for $6.50?

12. Which of the following packages is a better buy? Betty Crocker Complete small size, 40 oz at $2.35, OR large size, 56 oz at $3.14

13. A TV, which was originally $240, is discounted 35% at Fry’s Electronics. What is the new cost of the TV? Use both Decimal Squares (or Base Ten Pieces) and Paper-and-Pencil to get the answer.

14. Do to rising oil costs, a barrel of oil increased by 30% to $39.00 barrel. What was the cost before the increase? Use both Decimal Squares (or Base Ten Pieces) and Paper-and-Pencil to get the answer.

15. Simplify the square root so that the smallest possible whole number is left under the square root symbol: $\sqrt{288}$

16. Rationalize the denominator for the following fraction: $\frac{2}{3\sqrt{6}}$

17. Use your calculator to approximate $\sqrt{30}$ to the nearest tenth.

18. Caleb has a Pythagorean problem. You see he is planning a big bonfire/campout on his pig farm. He wants to invite Jenna, Kelly, Brittany, and Jessica as well as Luke, Jim, and Matt.

The problem is that the girls' parents won't let them attend unless they have their own tent. Well Caleb found an extra tent in his root cellar. It only has a little bit of mold on it, but it smells like old pig feet. He needs to get it set up and aired out before the party, but the support stick is missing. If the tent is 78 inches on the bottom and 42 inches on each side, to the nearest inch, how tall of a stick does he need to find?

![Diagram of a tent with dimensions: 78 inches, 42 inches, 42 inches.]

19. If the ratio of private school students to public school students in a city is 3 to 16 and there is a total of 18601 students, how many students are in public schools?
Use the box plots to compare the starting salaries for first year graduates in agriculture and engineering.

Starting salaries in $ thousands

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<th>20</th>
<th>25</th>
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Agriculture

Engineering

1. The graph of the engineering salaries is
   a. Symmetric  b. Skewed to the Left  c. Skewed to the Right  d. Bimodal
2. The graph of the agricultural salaries is
   a. Symmetric  b. Skewed to the Left  c. Skewed to the Right  d. Bimodal
3. Which of the 2 majors has the larger std deviation in its starting salary range?
4. Ted earned a z-score of 1.25 on a quiz in Biology. For this quiz the standard deviation was 8 and the mean was 45. What was Ted’s score on the quiz?
5. Ted earned a score of 10 on a quiz in Mathematics. For this quiz the standard deviation was 1.5 and the mean was 8. What was Ted’s z-score on the quiz?
6. Suppose that Die I has two 3s and four 5s and Die II has four 4s and two 6s. If winning is tossing a larger number, what is the probability the person tossing Die II will win a random toss of the two dice?
7. If you toss 2 regular six-sided dice, one white die and one red die and the pips on the dice are added:
   i. List all of the outcomes in the Sample Space; include the dice roll and the sum information. The table is to help organize your outcomes. Label clearly.
   ii. The probability of getting a sum of 7 or 8, P(sum 7 or sum 8) =
   iii. The odds in favor of getting a sum of at least 4 is ____.
8. If you randomly guess the answers on a true and false test with 15 questions what is the probability of getting the first three answers correct?
9. If you draw one card form a standard deck of 52 cards, what is the probability of drawing a card that is red or a face card?