*Name:* _____
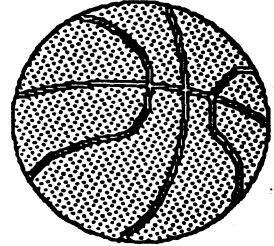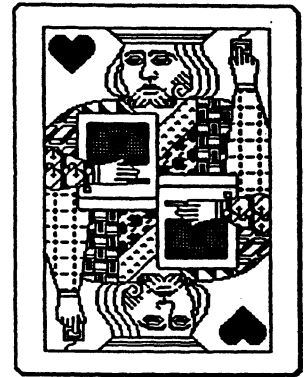
*(This shows my own thinking.)*

★ 1. You want to make a basketball hoop from a metal bar. You can shape the bar without cutting off any part of it. How long would the bar have to be in order to have a hoop with a 20 inch diameter?
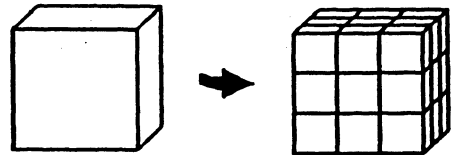
Answer: _____ inches

★★★ 2. John is showing his friends a card trick. He first draws a king, does not put it back in the deck, and then draws a second king, supposedly at random. What is the probability of drawing two kings in a row with a regular, well-shuffled deck of cards?

Answer: _____

★★★★ 3. A 3-foot cube of Styrofoam is painted purple all over as a prop for a school play. For ease of storage, the big cube is then cut into 27 smaller, 1-foot cubes. How many of the small cubes have paint on exactly 3 faces? On exactly 2 faces? On exactly 1 face? How many of the smaller cubes will be unpainted?

Answer:    ___ cubes have 3 faces painted
           ___ cubes have 2 faces painted
           ___ cubes have 1 face painted
           ___ cubes are unpainted

★ 4. The scale on a map of Florida is 1 inch to 40 miles. If the distance between Citrus Springs and Homassassa Springs is $7\frac{1}{2}$ inches on the map, what is the distance in miles?

Answer: _____ miles

41

★★★★ 5. Mrs. Nielsen is rewarding her math students for all doing well on a test. She passes out 50 pieces of candy, one-by-one, and starts over in the same order after every student gets one piece. Each student takes a piece of candy, in turn, until the plate is empty. Sherwood gets the first piece and he also gets the next-to-last piece. How many students could be in the class for this to be possible, if the minimum class size in the school is 20 students?

Answer: There could be either ___ or ___ students in the class.

★★ 6. A certain number $x$ is greater than 1 but less than 10. When you divide 45, 192, and 353 by $x$, you get the same remainder. What is the number $x$?
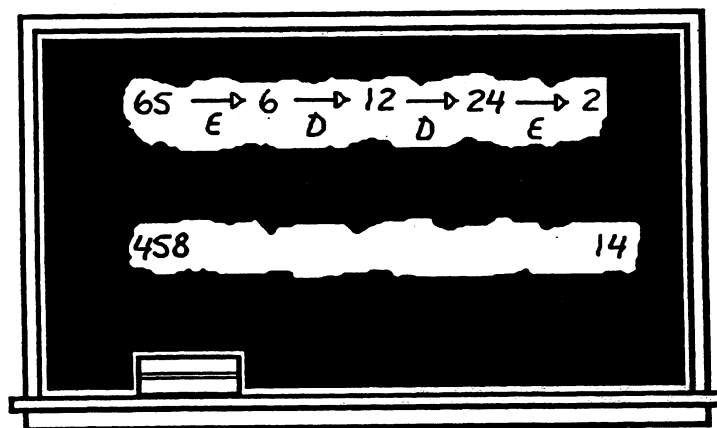
Answer: $x =$ _____

★★ 7. The River Ridge Middle School gymnasium holds 4000 people. The gym was sold out for every home basketball game. If there were 4 times as many single admission tickets sold as season tickets, how many season tickets were sold?

Answer: _____ season tickets

★ 8. Express 53 as the sum of four or less perfect squares.

Answer: _____

★★★ 9. A math game to play when you've got time to spare is to pick any two numbers, and combine the two rules: 1. Erase the last digit, and 2. Double the number, to change one number into the other. The example on the chalkboard shows that E, D, D, and E is one combination that can change 65 into 2. Find a combination of these rules to change 458 into 14.

$$65 \xrightarrow{E} 6 \xrightarrow{D} 12 \xrightarrow{D} 24 \xrightarrow{E} 2$$

458                    14

Answer: One combination is: _____

42