

# PROBLEMS IN REASONING 1

1. Four volumes containing the complete works of Shakespeare are in order, left to right on a bookshelf. Each cover is  $\frac{1}{8}$  inch thick and in each volume the pages between the covers take up 2 inches. If a hungry bookworm eats his way from page I of volume 1 to the last page of volume 4, how many inches will the bookworm have travelled?
2. Suppose you enter a room in which you find a kerosene lamp, a natural gas wall fixture, and a candle. If you had only one match and you needed light in the room, what would you light first?
3. What does  $(a - x)(b - x)(c - x)\dots(z - x)$  equal?
4. Two people who knew each other, but had not seen each other in a long time were walking down the street in opposite directions and met. They exchanged greetings and politely asked about each other's family. The woman, who knew that the man had three children, asked how old the kids were now. To which the man replied, "I won't tell you, but I'll give you a hint. The product of their ages is 36." The woman said that she still didn't know their ages. So the man said, "I'll give you another hint. The sum of their ages is equal to your house number." The woman again responded that she didn't know the children's ages. So the man said, "I'll give you one more hint. My youngest one is blond." To which the woman replied, "Now I know."

How old were the children and what is the woman's house number?

5. Give the date of the shortest day of this year in the city of Philadelphia. (You may need a calendar to do this)
6. Many years ago there was a well-known beggar in my home town. One day we heard that the beggar's brother had died. All of us who knew the beggar knew that the man who died had no brother. How was this possible?
7. After my two friends and I finished our drinks the barman brought three new drinks and I idly arranged the glasses in a row: three full glasses followed by three empty glasses\* There was just enough space between any two neighboring glasses to place another glass. I asked my two companions if they could rearrange the glasses so they were alternately full, empty, full, empty, full, empty, by moving only one glass. How can this be done?
8. "Each day," said the pirate to his captive, "you must fill a certain number of sacks with gold. You must do this until all of the sacks are full. Moreover, the work will become more strenuous each day, since every new day you must fill double the number of sacks that you have filled up to that time. Thus, if you fill three sacks the first day, you must fill six sacks the second day and eighteen sacks the third day and so on."

At the end of six days one-third of the sacks were filled. How long did the entire job take?

9. If eight men smoke eight cigarettes in eight minutes, how long will it take seven men to smoke seven cigarettes?
10. An observant person noted that the bottom two rungs of a ladder hanging from a ship in the harbor were submerged\* She further noticed that each rung was twelve inches wide and that the rungs were ten inches apart. If the tide rose at the rate of five inches per hour, how many rungs would be submerged after three hours?
11. How many cubic inches of dirt are there in a hole two feet wide, three feet long, and one foot deep?