HW#1

EXERCISES

1. On his way to the local Hunting and Gathering Convention, caveperson Stony Grok picks up a rock, drops it into a lake, and notices that it sinks. He picks up a second rock, drops it into the lake, and notices that it also sinks. He does this five more times. Each time, the rock sinks straight to the bottom of the lake. Stony conjectures: "Ura nok seblu," which translates to ?. What counterexample would Stony Grok need to find to disprove, or at least to refine, his conjecture? ⓗ

2. Sean
angle
conje

For Exercises 3–10, use inductive reasoning to find the next two terms in each sequence.

3. 1, 10, 100, 1000, ?, ?

4. $\frac{1}{6}, \frac{1}{3}, \frac{1}{2}, \frac{2}{3}$, ?, ? ⓗ

5. 7, 3, −1, −5, −9, −13, ?, ?

6. 1, 3, 6, 10, 15, 21, ?, ?

7. 1, 1, 2, 3, 5, 8, 13, ?, ? ⓗ

8. 1, 4, 9, 16, 25, 36, ?, ? ⓗ

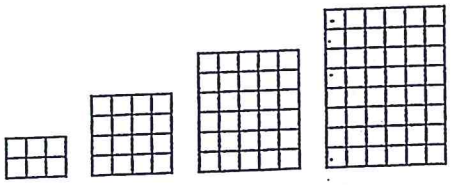
9. 32, 30, 26, 20, 12, 2, ?, ?

10. 1, 2, 4, 8, 16, 32, ?, ?

For Exercises 11–16, use inductive reasoning to draw the next shape in each picture pattern.

11.

12.

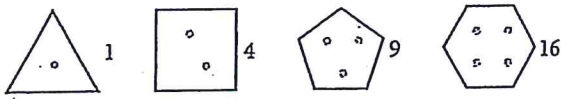


EXERCISES

1. When you use ? reasoning you are generalizing from careful observation that something is probably true. When you use ? reasoning you are establishing that, if a set of properties is accepted as true, something else must be true.

2. $\angle A$ and $\angle B$ are complementary. $m\angle A = 25°$. What is $m\angle B$? What type of reasoning do you use, inductive or deductive reasoning, when solving this problem?

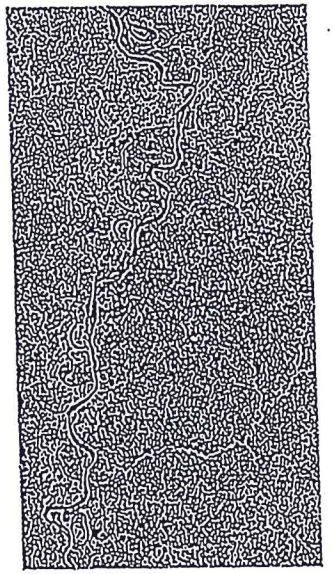
3. If the pattern continues, what are the next two terms?
What type of reasoning do you use, inductive or deductive reasoning, when solving this problem?



4. $\triangle DGT$ is isosceles with $TD = DG$. If the perimeter of $\triangle DGT$ is 756 cm and $GT = 240$ cm, then $DG =$?. What type of reasoning do you use, inductive or deductive reasoning, when solving this problem?

Review

11. Mark Twain once observed that the lower Mississippi River is very crooked and that over the years, as the bends and the turns straighten out, the river gets shorter and shorter. Using numerical data about the length of the lower part of the river, he noticed that in the year 1700 the river was more than 1200 miles long, yet by the year 1875 it was only 973 miles long. Twain concluded that any person "can see that 742 years from now the lower Mississippi will be only a mile and three-quarters long." What is wrong with this inductive reasoning?



Aerial photo of the Mississippi River

For Exercises 12–14, use inductive reasoning to find the next two terms of the sequence.

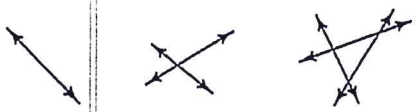
12. 180, 360, 540, 720, ?, ? ⓗ

13. 0, 10, 21, 33, 46, 60, ?, ?

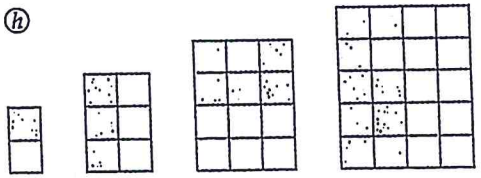
14. $\frac{1}{2}$, 9, $\frac{2}{3}$, 10, $\frac{3}{4}$, 11, ?, ?

For Exercises 15–18, draw the next shape in each picture pattern.

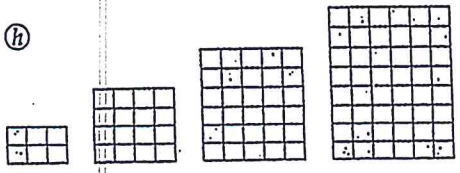
15.



16. ⓗ



17. ⓗ



18.