Chapter 1 Exercises

Identify whether each statement is an example of inductive or deductive reasoning.

1. An online store determines that sales are highest on Tuesday evenings based on sales data from the past two months.

2. In order to qualify for a $25 discount each month at Things and Stuff, you need to make three $75 purchases during the first three weeks of the month. Emilia made purchases of $85.53, $75.29, and $77.82 during the first three weeks of the month. So Emilia qualifies for the $25 discount.

Find a counterexample to each statement

3. The Super Bowl is played on the first Sunday in February.

4. The product of an even number and an odd number is odd.

5. If the sum of two numbers is odd, then both numbers are odd.

Find the missing terms of each sequence and determine if the sequence is arithmetic, geometric, or neither. If it is an arithmetic sequence, state the common difference; if it is a geometric sequence, state the common ratio.

6. 4, 7, 10, ____ , ____ , ____

7. 3, 6, 18, 36, ____ , ____ , ____

8. $\frac{1}{3}, \frac{1}{9}, \frac{1}{27}$, ____ , ____ , ____

Use inductive reasoning to predict the next line of each pattern. Complete the computations to verify.

9. Consider the following pattern.

$$1 \cdot 8 + 1 = 9$$
$$12 \cdot 8 + 2 = 98$$
$$123 \cdot 8 + 3 = 987$$
$$1234 \cdot 8 + 4 = 9876$$
$$12{,}345 \cdot 8 + 5 = 98{,}765$$
$$123{,}456 \cdot 8 + 6 = 987{,}654$$
$$1{,}234{,}567 \cdot 8 + 7 = 9{,}876{,}543$$

10. Consider the following pattern.

$$999{,}999 \cdot 1 = 999{,}999$$
$$999{,}999 \cdot 2 = 1{,}999{,}998$$
$$999{,}999 \cdot 3 = 2{,}999{,}997$$
$$999{,}999 \cdot 4 = 3{,}999{,}996$$

11. Determine the most appropriate order of magnitude for the daily temperature in degrees Fahrenheit

12. You are hosting a graduation party for your child who just graduated from high school. Your child wants to invite 25 friends, and you will also invite 50 family members. How could you break this situation down into smaller parts to estimate the total cost of the party?

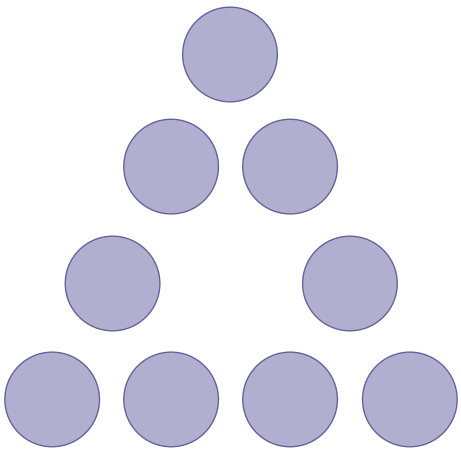
13. A local newspaper is estimating the number of people attending a championship parade based on aerial footage. A single block of the parade route is determined to hold 142 people. The parade route is 32 blocks long. Estimate the number of people who attended the parade.

14. A pet store employee counts 23 heads and 68 feet on the animals in the store. The store currently only has kittens and parakeets left in the store. How many of each are there?

15. A box office sells tickets for a concert at two different prices: \$35 and \$55. The box office sold a total of 95 tickets at a value of \$4325 today. How many of each of the different tickets did the box office sell?

16. The product of two whole numbers is 234 and their sum is 31. What are the two numbers?

17. Place the numbers 1 through 9 in the given circles so that the sum of the numbers on each side of the triangle is 20.



18. Find the sum of the whole numbers from 1 to 200.

19. How many line segments are there in each of these figures?