Practice 2.11: Building Functions from Context A

Write an explicit function to represent each pattern.

1. Mr. Ramos notices a pattern in the number of people attending the weekly student government meetings. For weeks 1, 2, 3, 4, and 5, the number of students attending the meeting was 31, 43, 55, 67, and 79, respectively.

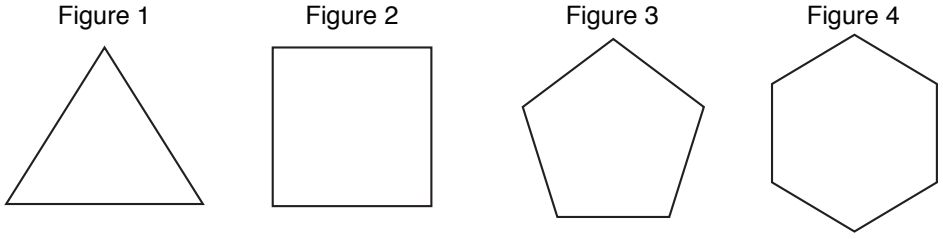
2. Hannah borrows $30 from her parents. Each week, she pays them back the same amount. The total amounts she owes her parents after weeks 0, 1, 2, 3, and 4 are $30, $25, $20, $15, and $10, respectively.

3. Angelo sells cookies in packages, where each package contains the same number of cookies. The total number of cookies he has after 1, 2, 3, 4, and 5 packages are sold are 110, 88, 66, 44, and 22, respectively.

4. Cameron tracks the number of people who read his blog. In weeks 1, 2, 3, 4, and 5, the blog had 100, 150, 200, 250, and 300 visitors, respectively.

5. As a treat, Nia eats a portion of a chocolate bar each day. She eats the same portion of the remaining bar each day. On day 0, the bar of chocolate starts with 32 pieces. After 1 day, 26 pieces remain. After days 2, 3, and 4, there are a total of 20, 14, and 8 pieces remaining.

6. Given the diagram, if the pattern continues, describe the number of sides in Figure x.



continued

7. Given the diagram that follows, describe the number of blocks in Figure *x* if this pattern continues.

Figure 1

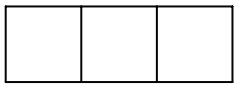
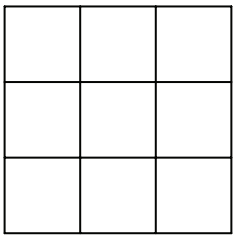


Figure 2

Figure 3



8. Brandon sells candy in packages, and each package contains the same number of pieces of candy. The total number of pieces of candy he has after 1, 2, 3, 4, and 5 packages have been sold are 15, 30, 45, 60, and 75, respectively.

9. A hotel charges a room fee per night, plus an additional fee if more than one guest is staying in a room. Good Nights hotel charges $150 per night for a room, plus $25 per guest if more than one guest is staying in a room. Find an explicit function to represent the nightly cost for any number of guests.

10. The population of a city is growing. Each year, the population increases by approximately 5,000 people over the previous year's population. The population this year is 10,000. Find an explicit function to represent the population of the town in any year. Consider that year 0 is this year.